UNDERSTANDING THE EVOLUTION FROM ACCESSIBILITY TO UNIVERSAL DESIGN

A REFERENCE GUIDE

Uniaccess: Design of Universal Accessibility Systems for Public Transport
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1. PROLOGUE

Some of us walk rapidly, while others do it slowly. Some do not walk at all, but move in a wheelchair. There are people who talk with their hands and people who see through a stick or a trained dog. There are people who do not understand everyday concepts at the speed that a fast pace of life imposes. There are kids. There are elderly people. There are immigrants. We travel and get involved in different cultures, customs, languages and unknown places.

Nevertheless, society seems to be designed for a non-existent average citizen, who is male, young, strong, right-handed, sees and hears at the highest level and interacts with his environment in a skilful way. We often forget that that citizen was once a kid and that he/she will probably become elderly. He/she might likely suffer from illnesses or accidents. In any case, we spend more time out of that imaginary concept of a human being than within. We cannot be surprised therefore when millions and millions of people are systematically discriminated for reasons of gender, language, age or physical, mental or sensorial conditions, just because our environment is designed in such a way that it does not respect human diversity and violates the most basic human and civil rights, condemning millions of human beings to living a life well beneath their

Designing society for all citizens, whatever their abilities, would be the solution to this situation, and this idea applied to public transport has from the outset been the motivation of the UNIACCESS project. Uniaccess was set up to promote and support the networking and coordination of research and innovation activities in the field of universal design of accessibility systems for public transport.
Before going any further with this manual, it is worth presenting the ideological model on which the guide is based: **THE SOCIAL MODEL OF “DISABILITY”**, as opposed to the MEDICAL MODEL.

While the MEDICAL MODEL considers the “problem of disability” having its origin in the person, and therefore tries to HEAL and CORRECT the person, the **SOCIAL MODEL considers the society responsible for causing disadvantageous situations due to a wrong design, and therefore tries to give the same opportunities to all individuals by changing the society.**

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1 For further information on the SOCIAL MODEL, refer to **INDEPENDENT LIVING: FROM SOCIAL MODEL TO ANALYTIC PARADIGM (G. DeJong)**. *Archives of physical medicine and rehabilitation, No 60, pages 435 – 446, 1979.*
2. INTRODUCTION TO THE REFERENCE MANUAL

This reference manual aims at being an introduction to how UNIVERSAL DESIGN can be applied to different public transport modes in as a solution for all citizens, based often on those for whom it is essential—people with reduced mobility (whatever the origin—physical, mental, sensory, short or advanced age…- and duration of the situation). It has been written based on the conclusions arrived at in the work performed within the UNIACCESS project.

Part of the results is shown in this manual, whose primary aim is to make the reader aware of the limitations of the current model of accessibility, and to transmit a different way of thinking. It is neither a compendium of solutions (many are still unknown!) nor an inventory of the deficiencies of the current system. It is not a way of making designs more complicated, but a step towards a change of mentality by means of a tool, Universal Design, which also provides an opportunity to increase the quality, usability and safety of public transport. Guidelines and future trends will illustrate this through examples of different steps of a journey undertaken by people with different kinds of abilities. Not all steps or situations have been chosen, only those which can illustrate the issue sufficiently.

It is often thought that implementing Universal Design is expensive and economically not rentable, but we would like the reader to understand that:

1) Implementing specific solutions for specific users (not only technical solutions but also specific maintenance, trained staff…) is often more expensive than eliminating the barriers once and for all.

2) It is necessary to do a cross – departmental analysis as often, investments are made in one department (for instance transport) and the benefits are reflected in a different one, e.g., social services, education, or employment.
A lack of collaboration between the different stakeholders can be an obstacle for reaching universal design in public transport. This reference manual therefore includes a brief introduction to a possible improved collaborative innovation process, as a key to making implementation of Universal Design a reality.

IF YOU ARE...

a Designer or a Manufacturer
we hope you will be able to find the clues to a new way of thinking which can improve your designs, social image and profitability.

an Operator
we expect you to find the arguments why Universal Design can also help you save costs (no additional support staff, reduced stopping times, different maintenance logistics or different plant facilities, etc.) and increase the acceptance of using public transport

an Authority representative
we believe that you will find a way to understand how Universal Design safeguards and promotes equal rights and quality of life for all citizens and also helps you comply with existing legislation on non-discrimination.

a Citizen (of course you are!)
we hope that you will find a way to understand what your rights are regarding the use of public transport systems.

Figure 1: Picture showing diversity of population in a crowded space
Design of Universal Accessibility Systems for Public Transport

3. FROM ACCESSIBILITY TO UNIVERSAL DESIGN

Our society has committed itself to providing all citizens with equality of opportunity. In this framework, the ability to use public transport is fundamental to lead an “ordinary” daily life. This means that people with different degrees of mobility² (the young, older people, people with diverse abilities, people carrying babies or shopping, expectant mothers, etc.) should be granted the same comfort, speed, security and economic capacity when using public transport.

The only way to guarantee this is to ensure that all the public transport (railway, buses, taxis and its supporting infrastructure) becomes accessible for everybody under the same conditions, and, as far as we understand, that is only possible through Universal Design.

In recent years, more importance has been attached to accessibility in all fields of life including transportation, but as experience shows, accessibility is not a good solution for many of the situations in which those for whom it was “created” (those traditionally called people with disabilities, but who we prefer to call people with diverse abilities) find themselves, talk less of the rest of society.

We are, however, not saying that we have been wrong all these years. The evolution in this field has been logical and we have a much fairer society today than 30 or even 10 years ago. Universal design implies a new way of thinking and designing, and therefore affects the very first step in the creation of a new product, service or process. It implies starting from zero, in a society that tends to opt for retrofitting (making modifications to existing designs) for cost, ease and occasionally

² With the word “mobility” we don’t means the physical movement of the body but the ability to move around using, in our case, the public transport systems. We are not referring, then, to mobility difficulties exclusively caused by physical impairments, but also those caused by any other reason that might produce a decrease of ability to move around if the environment is not correctly designed.
technical reasons. **This situation has led to the current accessibility model, based on specific solutions for specific target groups.**

Universal design ensures a **solution or group of solutions that is valid for everybody** (to be more realistic, we will say **nearly everybody**). Some people with very limited abilities may require product/service specifications beyond any achievement in the field of universal design – today at least -, but most people have an easily achievable requirement level, albeit with some relatively small changes in the usual design.

**TARGET GROUP**

Universal design is not just a more politically correct way of referring to accessibility, **NOT ONLY a change in the name but a change in terminology that leads to a definite change of mentality** even if that was not the main goal which motivated that change.

So, while the term **ACCESSIBILITY** does not give any clue of the target group for which it is considered to be a solution, or of when those solutions have to be implemented, the term **UNIVERSAL DESIGN suggests something meant for everybody (universal) and implemented at the beginning of a process (in the step of design).**

We could therefore say that the public for which UNIVERSAL DESIGN is meant is the general public, with all its DIVERSE ABILITIES, even if inspiration often comes from those with the highest level of requirements for design (such as the older people, people “with disabilities”, children, immigrants…). Designs made for them would be equally valid for those with lower requirement levels.
There are 7 principles of universal design that may be applied to evaluate existing designs, to guide the design process and to educate society:

**EQUITABLE USE: The design is useful and marketable to people with diverse abilities**

1. Provide the same means of use for all users: identical whenever possible; equivalent when not.
2. Avoid segregating or stigmatising any users.
3. Provisions for privacy, security, and safety should be equally available to all users.
4. Make the design appealing to all users.

**FLEXIBILITY IN USE: The design accommodates a wide range of individual preferences and abilities**

2. Provide choice in methods of use.
3. Accommodate right- or left-handed access and use (and alternative ways to hand access).
4. Facilitate the user's accuracy and precision.
5. Provide adaptability to the user's pace.

Figure 2: User disembarking a 3 step doorway in a train, making use of stigmatising, unsafe and uncomfortable portable ramps.
Figure 3: The design of this bathroom doesn’t allow anybody but some wheelchair users and small people or children to enter, due to the 1.5 m high doorway.

SIMPLE AND INTUITIVE (content of information): Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Eliminate unnecessary complexity.
Be consistent with user expectations and intuition.
Accommodate a wide range of literacy and language skills.
Arrange information consistent with its importance.
Provide effective prompting and feedback during and after task completion

Figure 4: Confusing streetlights layout. It is difficult to know which one to obey.
PERCEPTIBLE INFORMATION (form of information): The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
Provide adequate contrast between essential information and its surroundings.
Maximise "legibility" of essential information.
Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

Figure 5: Information is not effectively given in this button set of a car. Icons are difficult to understand.

TOLERANCE FOR ERROR: The design minimises hazards and the adverse consequences of accidental or unintended actions.

Arrange elements to minimise hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
Provide warnings of hazards and errors.
Provide fail safe features.
Discourage unconscious action in tasks that require vigilance.
LOW PHYSICAL EFFORT: The design can be used efficiently and comfortably and with a minimum of fatigue.

6

- Allow user to maintain a neutral body position.
- Use minimum operating forces.
- Minimise repetitive actions
- Minimise sustained physical effort

SIZE AND SPACE FOR APPROACH AND USE: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

7

- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.

Figure 6: Portable ramp manually installed in the doorway of a metro, few centimetres far from a wall that doesn’t allow space for manoeuvring and using it at all.

3 Repetitive actions should be eliminated without forgetting the need of people with learning, hearing or visual impairments to have continuous/consistent signage and way finding tools.
4. GUIDELINES AND FUTURE TRENDS

As mentioned previously, valid solutions for all types of users may not be possible for technical, economic, safety or other important reasons. Therefore, some MIDDLE WAY solutions may have to be accepted in some cases, and then ADAPTABLE DESIGN and ASSISTIVE TECHNOLOGY APPROACH (e.g. standardization) will have to be used. Where products/services have to be used in combination with assistive devices, these should be indicated by the designer or manufacturer.

Taking into account this reality and the 7 principles of Universal Design, this section will try to explain the differences between the current situation, whether accessible or not, and a solution or group of solutions designed in a universal manner, by pointing out the principles of Universal Design that are not fulfilled in given situations today. A selection of journey steps and different types of users are used to illustrate the point.

So, imagine you are…
Design of Universal Accessibility Systems for Public Transport

...planning a trip

1) and you are an older person

Current Situation

1. The most important issue for trip planning by older people is “willingness to travel”. Many older people lack the confidence to travel, especially when they do it alone. In general, transport information systems and personal support services do not meet the requirements of older people.

Principles Unfulfilled: 1, 2, 3, 4 and 5

They have to be able of arrange the whole journey in advance. This is complicated today because service information sources are not always integrated.

PRINCIPLES OF UNIVERSAL DESIGN

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use

Figure 7: Image taken from the Royal National Institute for the Blind (RNIB). United Kingdom, showing different information required when planning a trip.
**Principles Unfulfilled:** 1, 2, 3, 4 and 7

**Universal design solution**

Universal Design criteria should be applied not only for technical aspects but also for information contents.

- Information should be given via the web, in hard copy (e.g., timetables), by phone and through personal services (i.e., travel agencies or customer services).

- All information delivery means should provide:
  - Easy to read documents
  - Clear Information
  - “Step by step” provision following the logic of the journey

- Trained personal support at any time. (Universal design does not mean eliminating any kind of support, not even support given by people. Personal support can often be as good as, or even better than, technological-based solutions).

- Universal design therefore entails the provision of standard information platforms where users may easily find all the information and support they need for planning a trip.
This figure\textsuperscript{4} below illustrates a video display using a variety of different media. The video and electronic signal display is located in a transportation terminal. It combines audio and text information as well as a pictorial explanation providing details of security information and procedures for passenger screening. The text at the bottom of the screen is well contrasted, and the audio output is automatically adjusted to the surrounding ambient noise level to ensure maximum hearing.

\textbf{2) or you are a person with a visual impairment}

\textbf{Current Situation}

Nowadays, planning a trip is an activity based on visual tools. Although Internet is becoming the most popular tool for trip planning, it does not meet users’ requirements if he or she uses non-visual means to read information.

**Principles Unfulfilled: 1, 2, 3, 4 and 5**

**Universal design solution**

![Figure 9: Web-page to do the “Test of Accessibility to the Web”.

Compliance with existing legislation and guidelines for websites construction could make the planning of a trip easier. The combination of TIC (Technologies of Information and Communication) and text (and graphic) to speech technologies should be available, as an option, in any electronic information service.

The accessible ticketing\(^5\) and fare dispensing machine below is an example of a good practice as it may be used by everyone.

The buttons and instructions are coloured in such a way to provide contrast with the background, and the text and font are sufficiently large to be easily readable by anyone. The buttons are also large and easy to press. The operable controls are at an appropriate height making them accessible to people who are sitting or standing. The machine is located along a pedestrian route with adequate manoeuvring space in front. The location of the audio output is clearly marked tactically and with Braille and therefore allows the dispensing machine to be used by people who are blind or visually impaired, or by those who prefer an audio format.

Figure 11: Staff prepared to assist passengers in their trips. In the picture, assisting a person using a blind-dog.
3) Or you are a person using a wheelchair

Current Situation

When a wheelchair user wishes to travel by public transport and wishes to plan it in advance, he or she much contact a specific service for disabled people, which often has restricted opening hours. This situation does not provide the same level of service as a web-based journey planner which is available all day, everyday.

**Principles Unfulfilled:** 1, 2, 3, 6 and 7

Universal design solution

A wheelchair user uses a journey planner on a public transport service website. He/She can define his preferences (e.g. no use of stairs or escalator, need low-floor vehicle) in order to get the best itinerary according to his situation.

...trying to get to the right bus stop

1) And you are a visually or hearing impaired person

Current Situation

In general, bus stop identification is only made using the visual channel and, most of the time, it is not made in the best way (small print, unclear information…).

Once the stop has been located, one normally receives visual information only about the next bus to arrive, the countdown or incidents.

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When a bus arrives, it is often difficult to identify whether it is the one you wish to take.

Figure 12: Symbol indicating induction loop available for people using hearing aids in a help point to assist passengers in their trips.

**Principles Unfulfilled: 1, 2, 3 and 4**

**Universal design solution**

- Route numbers and destinations should be in large font. Information should be clearly organised, easy to understand, and well located for people of different height.

- Key information should be given in different languages, and standard icons (e.g., pictograms) should be used as much as possible.

- Loudspeakers should announce the route number and destinations of the buses at all bus stops. They could be activated on demand by pushing a button systematically located in the same place or activated by a personal device.

- Assisted navigation and information systems should be based on GPS enabling confirmation on location, using text, sound or sign language output.
- Entrance door should be easily identifiable
- Buses should stop in alignment with the bus stop
- Suitable audible announcements should give the route number and destination of the bus and ways be considered of discreetly doing this in order to prevent nuisance being caused in the neighbourhood.

...boarding a vehicle

1) And you are a person using a wheelchair or pushchair

Current Situation

Very often, manually operated ramps are installed between the train and the platform in order to bridge vertical and horizontal gaps. This implies that:

- a wheelchair user is not able to use it with his habitual level of autonomy and has to depend on staff.
- a wheelchair user has to call the operator in advance to ‘book’ the ramp(s) and staff.
- manually operated ramps are not an appropriate solution for all types of users, especially people using crutches or with balance disorders
- a ramp is not even suitable for all “standard” wheelchairs.
- a ramp is not easy to operate (accuracy is needed to ensure appropriate distance or fixing in the right direction) and there are safety issues (they are not safely locked, or locked at all)

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Figure 13: Woman with a baby in a pushchair going through a specific entrance for wheelchair and pushchair users, as indicated by the symbol shown on the wall.

- the person who is normally responsible for operating them is not always available, working, ready or correctly informed.

- a ramp could be stigmatising if not designed to be used by all passengers, is deployed at a specific entrance/exit of the vehicle, requires extra services and staff to be used or delays the general operating times of the transport…)

- a ramp does not guarantee a natural position to the user (in this case, the slope generated is too deep, and there is a greater risk of falling – note that wheelchair users often experience balance problems).

Figure 14: Wheelchair user accessing a bus by a ramp, only operated by request of certain users and located in the middle door of the bus. This is not guarantee equal access for all passengers.

### PRINCIPLES OF UNIVERSAL DESIGN

1. Equitable Use
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**Principles Unfulfilled:** 1, 3, 6 and 7

**Universal design solution**

The vehicle should be a low floor vehicle with no barriers inside. The platform/kerb and floor level should be of the same height. The gap between the platform/kerb and vehicle should be small enough to ensure that an external bridging device is not needed.

When “same means” are to be used for everybody, it doesn’t mean that (to reflect a common conflict we often come up against) all users, including wheelchair users or people with prams, should enter by the front door and then aisles should be widened… We should maybe consider converting the middle door into a common entrance for everybody, and also there implement a paying system – also universally designed, of course).

Figure 15: Automatic bridging of gap between platform and metro vehicles. Solution provided by the Metro of Vienna. It’s closer to Universal Design than example in figure 14, but still level access would be the best solution.

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7. Size and Space for Approach and Use
...installing yourself inside the vehicle

1) And you are a person using a wheelchair or with a pushchair

Current Situation

The user has to secure the wheelchairs and or pushchairs - an important step to avoid (serious) injury due to emergency breaking at high travel speed.

In the current situation, most of the reserved areas for wheelchair users of people with prams offer suitable width but very few offer securing devices or safety belts.

Principles Unfulfilled: 1 and 2.

Universal design solution

Adequate and comfortable safety belts and/or securing devices for wheelchairs and/or pushchairs should be provided (research in this field is
Design of Universal Accessibility Systems for Public Transport

suggested, due to the low popularity and lack of usability of the current devices).

...travelling inside the vehicle

1) And you are a visually or hearing impaired person

Current Situation
   – The user listens to information, which is often redundant, unclear and too loud, leading to complain about volume and redundancy.
   - In some cases, persons have difficulties reading displayed information from their seats.

   Principles Unfulfilled: 1 and 4

Universal design solution

Information has to be provided in visual, acoustic and, when possible, tactile form. The display height should be suitable for both standing up or seated. Sound information has to be tailored in terms of quantity and quality since it should not be a nuisance. Volume is not so much an issue but rather intelligible and intelligent information.

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5. A COLLABORATIVE INNOVATION PROCESS GUIDE

One of the goals of **UNIACCESS** project is to define a new improved collaborative innovation process which breaks down the communication barriers which prevent us nowadays from taking full advantage of the contributions of all stakeholders to improve accessibility to transport.

**The term collaborative process** is used to describe a process which not only keeps the relevant parties informed or in other ways involved, but which ensures that all parties work together in the process. Each participant contributes with his competence, and the tasks assigned to each participant will vary depending on this, but all work should be integrated.

In order to define a new collaborative process between stakeholders, the current situation must be examined. In general, the impression is that relationships between the stakeholders vary a lot, and often do not fulfil the definition of collaboration.

An example of the current situation: local/regional authorities must juggle the demands of end-users and operators whilst complying with legislation in force or planned. End-users request improved accessibility and comfort, while operators must translate the consequences of such measures in their profitability or operational costs. Local/regional authorities must find the best solution possible within a given budget. And the manufacturer will receive the specification from the operators.

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MODTrain:[http://www.modtrain.com/](http://www.modtrain.com/)
A lack of collaboration can be an obstacle for reaching universal design in public transport. For instance, if the task definition does not include a specific request for universal accessibility from the outset, then later attempts to provide such solutions will be add-ons that represent bad or mediocre solutions.

**The vision** is that collaboration should be present from the beginning and during the whole process, and thereby ensuring that the new or improved transportation solutions resulting from the process will be universally accessible.

The importance of the participation of stakeholders other than the manufacturer is high throughout the process, but highest in the early phases, because that is where the most important decisions are made. Likewise, it is more important in the conceptual design phase than in detailed design. Participation in testing is perhaps the most obvious, since participation of stakeholders other than the manufacturer is the only way to prevent them from becoming victims of the decisions made.
Tools to achieve an improved collaborative process

Two principal tools have been explored. Whereas facilitation tries to improve the innovation process by making solutions available, regulation tries to do so by laws, directives, standards or bylaws.

1 Facilitation

1.1 The accessibility specialist

The accessibility specialist could be a response to the paradox that end-user influence is most productive when their representative is competent in the development of processes and public transport. The accessibility specialist could have a mixed background (from a users’ group or similar, and should be educated to represent all users – that is, to understand and know all facets of ability and disability – and to better influence design and development processes.)

The accessibility specialist could intervene as a consultant at each step of the project from design to delivery. He/She could be consulted by, manufacturers, operators or authorities or could be an independent department within the company.

His functions could be:
1) To influence task specifications set by the operator and design solutions proposed by the manufacturer and veto unacceptable solutions not complying with the law or regulation be in place.
2) To evaluate all kinds of projects taking into account operation and maintenance constraints.
3) To be the voice of end users.
4) Member of international standardization organizations (e.g. CEN, UITP, ISO)
1.2 Multi-Stakeholder Forum

A multi-stakeholder forum is a gathering of manufacturers, operators, end users, authorities and others where the issues of universal accessibility is discussed and developed. Such a forum could be organized regionally, nationally or even Europe-wide. The aim of the multi-stakeholder forum would be to raise awareness, to find general solutions and to ensure that the relevant stakeholders are brought into actual development projects. It is a higher-level, more general, less case-specific instrument than the next suggestion, the advisory committee.

These fora should be open to all interested parties, and would represent an element of democracy in public transportation.

1.3 Advisory committee of transport authority

Many cities today have established advisory committees on local transport matters comprising the authorities, operators, end user groups, business interests, etc. These committees typically have representatives of end-user organizations but not of all types of end users. This can lead to situations of low or no representation within the advisory committee of people with insight to the conditions and requirements of expectant mothers, parents with small children, older people with orientation problems or similar.

Still, the advisory committee is a valuable tool for transport authorities in their planning and regulation of public transportation. For universal accessibility to become a reality, such instruments should be promoted.

Membership of the advisory committee would normally be by invitation only, since it would go into a level of detail in specific projects which might require confidentiality.
2 Regulation

2.1 Rules for inclusion of universal accessibility in public procurement

The regulation of innovation processes is a controversial issue. It could be argued that innovation can only thrive through the highest degree of freedom. However, transportation authorities already impose strict requirements and standards on manufacturers, therefore adding universal accessibility requirements should not be a fundamental problem. The real issue is whether the same rules should apply everywhere or if such rules should be at the discretion of local authorities. There are several strong arguments in favour of common rules: the variation in human abilities seems to be the same everywhere, and therefore common rules should lead to common solutions, which would provide economies of scale. Since local adaptation is a major factor in the high cost of public transport systems, common solutions everywhere and the savings associated with these are highly desirable.

The main factor against common rules in public transport tendering is that existing installations and infrastructure vary from city to city, and thereby the possibilities and the economy associated with certain demands may vary considerably. Many transportation authorities argue that their circumstances are special and that many requirements cannot be met before the old infrastructure has been replaced by a new and modern one. They claim that forcing them to apply common rules may stop all development within their network.

Between these two extremes – common rules and standards for all of Europe and no rules or only local regulation – there are other possibilities: national rules or regional rules. There are, however, few good arguments for anything but common rules in Europe these days.
2.2 Rules for establishing advisory committees

Advisory committees have no power to make decisions, but could still be a vital key to improving universal accessibility. There are arguments in favour of making them mandatory, but there are also arguments for leaving room for local solutions up to the local stakeholders.

If advisory committees were made mandatory, there should also be regulations regarding participation, so as to secure good representation of all relevant stakeholders. We will not suggest how this should be done here, but again point to the possible conflict between local representation and professionalism of the participants. This could be an argument for not regulating the participation.

The new innovative process

Our suggestion for a new collaboration process for universal accessibility in public transportation can be briefly summarized as followed.

It shows that the traditional participants in such processes, operators and manufacturers, collaborate with authorities and end-user representatives throughout the process. The process itself should be divided into phases, with clear milestones between each phase. At the milestones, an advisory board consisting of user organizations and local authorities should play an important role in ensuring that no shortcuts threatening the goal of universal accessibility have been taken, and that the results in the project so far are coherent with the goal.

In reality, the process will be complex, since the term “manufacturers” hides the integrated development process between functions in the company and possibly with suppliers. It does, however, make sense to keep this separate from end-users and local authorities, to reduce complexity and promote real influence by these groups.
The development of UNIACCESS has been possible thanks to the EU funding (1.3 M€) under the 6th Framework Programme for Research and Technological Development and to the work of the following organizations:

- **GIAT**, a Spanish consulting group of companies in the field of the accessibility to transport.

- **AGE**, which aims to voice and promote the interests of older people in the European Union and to raise awareness of the issues that concern them most.

- **COCEMFE**, a Spanish non-profit umbrella organization for the physically disabled which works to promote and defend their full social integration.

- **ENIL**, the umbrella of individuals and organizations dedicated to promoting Independent Living among people with diverse abilities and the general public in Europe.

- **SINTEF**, a Norwegian private research institute that performs projects primarily within the technology area, but also in natural sciences, medicine, and the social sciences.

- **CRF**, an Italian research organization which promotes, develops and transfers innovation in order to provide competitiveness to its clients and partners (different companies in the FIAT Group, automotive suppliers, other sectors, SMEs, and national and international research agencies.)
• **SIEMENS Transportation Systems GmbH & CO KG**, with its two locations in Wien and Graz is one of the leader in Railway design and manufacturing for Metros, Trams, Passenger Coaches and Bogies

• **POLIS**, the platform for dialogue and cooperation on current transport issues for cities and regions around Europe (represents over 65 cities and organizations from 16 European countries).

• **RATP**, one of the largest multimodal transport operators in France, operating 16 Metro lines, 2 commuter lines (RER), 2 tramway lines and over 300 bus lines, the two main airports and the Orlyval shuttle in Paris.

For more information, contact:

www.uniaccessproject.com