Catalogue of existing solutions and best practices

Innovative transportation services for blind and partially sighted passengers in Danube region

DANOVA

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second edition

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1 INTRODUCTION

Visual impairment is a broad term that refers to any degree of vision loss that affects a person's ability to perform the usual activities of daily living and that cannot be corrected to normal vision, even if the person wears glasses or contact lenses. It is not a disease itself, but a result of disease, injury, or other trauma that affects the structures and functions of the visual system. The term "visual impairment" includes blindness and the term "visually impaired" is used to refer to both blind and partially sighted persons. When a person experiences limitations and impairments in interacting with the environment and/or performing tasks due to an impairment, we speak of a disability.

People with visual impairments may feel disabled if they do not have adequate access to supports and services and face barriers such as discrimination or inaccessible buildings or transportation. It has been estimated that 96% of the transport system in the EU is still not fully accessible to blind and partially sighted people (European Blind Union) and that accessibility is extremely low in many countries in the Danube Region. Furthermore, significant differences in the level of accessibility between countries and also between cities/regions within a country have been identified. As a result, over 30 million blind and partially sighted people cannot travel independently.

For blind and partially sighted passengers, the lack of accessibility features such as tactile walking surface indicators (TWSI), tactile orientation maps, large print and Braille signage, audio signage, screen reader friendly websites and applications makes it extremely difficult and, in some cases, impossible to use conventional transportation systems (airplanes, buses, trains, public transportation). In these cases, they rely on the assistance of a sighted person (their personal assistant, member of a staff or a random passer-by), which ensures their ability to travel, but still imposes some limitations compared to the travel experiences of sighted people.

DANOVA aims to improve the accessibility of airports, seaports, train and tram stations and bus terminals for blind and partially sighted people by developing a range of new services and skills that allow full access to all transport information, facilities and services. Many useful and transferable solutions are available in transport terminals in DANOVA countries, Europe and worldwide. In order to facilitate the transfer of usable solutions and to give an easier insight into the variety of measures that improve the access of visually impaired people to places and services, a catalogue of existing solutions and best practices in the field of solutions for blind and partially sighted passengers in relation to transport systems and mobility was developed. The research began with the development of a common methodology to identify assistive technologies, environments and infrastructures, approaches, strategies and standards in the area of accessibility for blind and partially sighted persons. Using the common methodology, all partners of the DANOVA project contributed with best practice cases and examples of innovative and/or useful solutions. These contributions were reviewed internally, and a selection of cases was chosen for catalogue. As some of the contributions are still being implemented or the descriptions were incomplete, new contributions are going to be added to the catalogue twice a year.

Within the Catalogue cases are described according to different categories, and to facilitate the use of the catalogue, a vocabulary with explanations is added.

2   VOCABULARY

Majority of categories used for description of best practice cases and solutions are self-explanatory. Regardless, this section provides explanations to avoid any misunderstandings.

TYPE OF SOLUTION

Best practices and solutions were grouped according to their type as described below. These types were also used as subchapters so that readers can easily find similar solutions.

Accessibility policies

Best practices on accessibility policies for blind and partially sighted on level of airport, port, train/bus station.

Accessibility service standards

Best practices/s related site accessibility service standards (level of standards) for blind and partially sighted.

AIRA service

Service in which remote agents' direct passengers via video from passengers' smartphone or smart glasses.

Catering facilities/cafés

Best practices/innovative solutions related to catering facilities in airports, ports and rail/bus stations.

Counters

Solutions related to counters located in information area, check-in, baggage drop-off and other (e.g., concierge) counters.

Customer service standards and procedures

Best practices/s related site customer service standards (level of standards) for blind and partially sighted.

Departure/arrival points

Solutions for platforms, gates, queuing areas – accessibility of queuing system etc.

Disability Awareness Staff Training

Staff training programmes for raising disability awareness with the emphasis on visual impairment.

Evacuation routes

Best practices/innovative solutions related to evacuation routes including signage, wayfinding etc.

Facilities for guide-dogs and service animals

Solutions related to service animals like outdoor and/or indoor relief areas.

Guidance/Signage – acoustic

Acoustic guidance/ elements that help to guide passengers like voice announcements in elevators, on platforms, audio descriptions etc.

Guidance/Signage – Braille

Signage in Braille.

Guidance/Signage – tactile

Tactile Walking Surface Indicators (TWSI) and tactile signage/maps.

Guidance/Signage – visual

Raised standard letters, pictograms or other markings or other visual elements with appropriate font, size, contrast for partially sighted.

Horizontal circulation

Solutions related to paths, corridors, horizontal travelators, doors, slip resistance of floor surfaces (horizontal movements).

Interactive map

Physical map that allows interaction either with touch or with voice.

Lighting

Indoor or outdoor innovative lightning solutions (levels of illumination, placement, contrast, colour temperature, glare and shadow avoidance etc.).

Mobile application

Applications for smart-phones or tablets.

Other

All other solution that cannot be classified into any other category.

Sanitary facilities

Solutions related to operating elements, alarm facilities, manoeuvring space etc. in sanitary facilities.

Services (other)

All other services that might be offered to blind and partially sighted but are cannot be classified into any other category.

Shopping facilities

Best practices/innovative solutions related to shopping in airports, ports, and rail/bus stations.

Vending machines

Tactile or braille marking on keyboards, display with large font and optional colour modes, audio guidance).

Vertical circulation

Solutions related to stairs, steps, lifts, ramps, escalators, slip resistance of floor surfaces handrails, operating elements etc. (vertical movements).

Waiting areas

Best practices/innovative solutions related to waiting areas in airports, ports, and rail/bus stations.

Website

Websites or webpages accessible to blind and partially sighted persons.

TRANSPORT MODE

States transport modes where solutions is (or can be) used. Solution can be used in one or several modes of transport:

- Railway
- Road transport (bus, taxi, etc.)
- Air transport (airport, airplane)
- Inland waterways (river transport, lakes...)
- Sea transport (seaports, sea cruisers...)

INCLUSION OF BLIND AND PARTIALLY SIGHTED PEOPLE

Provides information if visually impaired persons were involved in development (and testing) of best practice if such information is available:

- Yes (visually impaired persons were involved)
- No (visually impaired persons were not involved)
- No information (information of visually impaired persons is not available)

LONG-TERM SUSTAINABILITY OF GOOD PRACTICE

Provides information if the best practice is still used (implemented) and if there are special conditions under which the best practice can be used (e.g., financing needed).

ESTIMATED COSTS

Provides information on estimated costs of the best practice (how much it would cost to replicate the best practice in another environment).

IMPLEMENTED BY

Provides the name of organisation implementing best practice.

ACCESSIBILITY POLICIES

1.   ÖBB EXPERTS NETWORK

Country of origin: Austria
Type: Accessibility policies
Transport mode: Rail
Year of implementation: 2013
Description: The Austrian Disability Council arranges consultation of experts from organizations representing persons with disabilities in order to respond to requests from Austrian Railways regarding their internal guidelines and policies, building projects and services in relation to accessibility.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: Austrian Disability Council (ÖBR)
Additional notes: The intensity of the work varies very much depending on available resources at ÖBR. Consultation might be much more reliable and consistent, if ÖBB would host and arrange it (similarly to Vienna Airport).
Information: Emil Benesch - e.benesch@behindertenrat.at
Website: https://www.behindertenrat.at/

2. WORKING GROUP "PASSENGERS WITH REDUCED MOBILITY AT VIENNA AIRPORT"

Country of origin: Austria
Type: Accessibility policies
Transport mode: Air transport
Year of implementation: 2012
Description: Continuous cooperation and consultation with a group of accessibility experts from organizations representing persons with disabilities.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: The working group was primarily established in order to agree on measures to eliminate accessibility deficiencies at the newly built terminal. It turned out to be a very useful and constructive instrument to learn from each other and develop solutions which are customized to requirements of users as well as of airport operations and are therefore more purposeful than just implementing minimum requirements of standards or over fulfilling them arbitrarily.

It is a huge advantage and difference compared to most other cases, that the work and meetings of this working group are organized, coordinated, hosted and kept alive by Vienna Airport. Advocacy organizations of persons with disabilities can rely on Vienna Airport to approach them at a very early stage of any project where accessibility could be relevant.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

3. MUNICIPALITY OF MARIBOR, COUNCIL FOR DISABLED PERSONS

Country of origin: Slovenia
Type: Accessibility policies - Support to policy maker
Transport mode: /
Year of implementation: 2011
Description: Council advocates interests of disabled persons vis-à-vis the municipality as policy maker and regulator. It provides inputs to policies, measures, interventions as a advisory body, it also promotes and supports services for disabled persons.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, in operation since 2011
Estimated costs: n.a.
Implemented by: Municipality of Maribor
Additional notes: Council of the disabled persons of the Municipality of Maribor represents the interests of disabled persons in the area of the Municipality of Maribor. It has been operating since 2011. The basic mission is to help and to provide better conditions for more equality integration of people with disabilities into life and work in society in the city of Maribor and to raise awareness of the general public about the life and work of people with disabilities.
Information: invalidi@maribor.si
Website: https://www.maribor.si/podrocje.aspx?id=744

AIRA SERVICES

1. BE MY EYES

Country of origin: Denmark
Type: AIRA service
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2015
Description: Every day, sighted volunteers lend their eyes to solve tasks big and small to help blind and low-vision people lead more independent lives. Blind or low-vision person requests assistance the visual assistance. Through the live video call, he or she can communicate directly with the volunteer and solve a problem. The volunteer will help guide a visually impaired person which direction to point the camera, what to focus on or when to turn on the torch. A blind or a low-vision user may need help with anything from checking expiry dates, distinguishing colors, reading instructions or navigating new surroundings.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: available to everybody
Additional notes: /
Information: Alexander Hauerslev Jensen - alexander@bemyeyes.com
Website: https://www.bemyeyes.com/
https://www.bemyeyes.com/about

2. SUPPORT AT TICKET MACHINES

Country of origin: Austria
Type: AIRA service
Transport mode: Rail
Year of implementation: 2016
Description: Customer calls customer service with own phone and indicates position and number of the machine; agent connects remotely to the ticket machine and operates it according to customer's information; customer pays on location.
All relevant information is available in raised tactile characters and Braille ("Help?" phone number, machine number).
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Sales
Additional notes: Available at all ÖBB ticket machines
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: https://www.oebb.at/de/reiseplanung-services/am-bahnhof/ticketautomat

Customer service standards and procedures

1. Universal Design and Accessibility Design Guide

Country of origin: Hungary
Type: Customer service standards and procedures
Transport mode: N/A
Year of implementation: 2018
Description: As a requirement for BKK within its competence of constructing customer centres, pedestrian underpasses, tram and bus stops, the provisions of the planning guidelines shall be considered. As for the cases not mentioned in this Guide the applicable legislation and industry standards should be used. The purpose of the guidance prepared for designers is to uniformly define the functional, technical and aesthetic requirements, to create an integrated image for providing unified and transparent passenger information service, and to make it accessible for every kind of passengers.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, periodically updating of content
Estimated costs: /
Implemented by: /
Additional notes: /
Information: /
Website: https://bkk.hu/fejlesztesek/tervezoknek/

2. INFOStation – Panel

Country of origin: Austria
Type: Customer service standards and procedures
Transport mode: Rail
Year of implementation: 2013
Description: Portal at railway stations providing real time information on railway and bus departures via mobile phone
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Postbus / local - regional transport
Additional notes: The system works for all means of transportation, which are integrated in the information platform "SCOTTY". Three new ways of access are provided to customers at railway and ÖBB Postbus stations: query by phone, mobile internet access and NFC technology
All necessary information about the service is provided in raised tactile characters and Braille.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: http://m.oebb.at/ab

3. PROVISION OF MOBILITY AND FAMILY SERVICE AT INFORMATION DESK
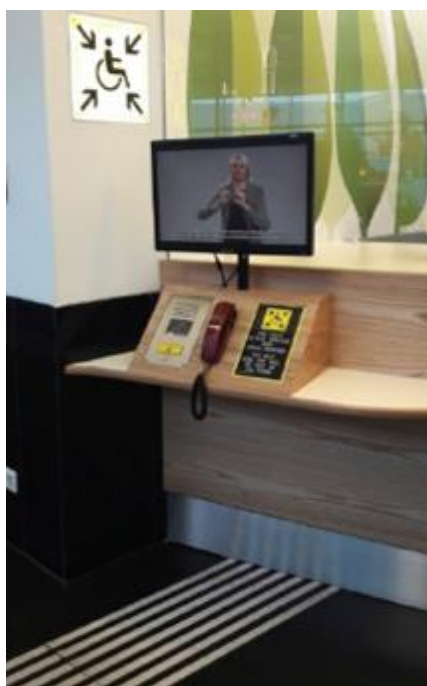
Country of origin: Austria
Type: Customer service standards and procedures
Transport mode: Air transport
Year of implementation: 2014
Description: TWSI guide blind passengers from all entrances directly to an information desk, where adequate support provided by PRM service is reliably available.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: For in case there is no staff member present, the service desk is equipped with an accessible intercom to directly contact the PRM service management center around the clock. Using the TWSI, the intercom can easily be found and tactile signage ensures that it is clear how to use it.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

4. ACCESSIBLE INFORMATION POINT AT THE CONCOURSE

Country of origin: Austria
Type: Customer service standards and procedures
Transport mode: Air transport
Year of implementation: 2016
Description: Calling point for PRM (passengers with reduced mobility) passengers, where Braille signage is available. The purpose of the calling point is to asked for help from the official PRM service provider of BUD, who support PRMs from the arriving at the airport until the boarding to the airplane (based on special requests)
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: It needs to be checked, if the intercom has been connected to the TWSI system in the meantime.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

DEPARTURE/ARRIVAL POINTS

1. CALLING POINT

Country of origin: Hungary
Type: Departure/arrival points
Transport mode: Air transport
Year of implementation: 2009
Description: The information desk in the concourse is equipped with the same accessible intercom to allow persons with disabilities to receive support by PRM service at any time.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: 2500 EUR for totem/pc + 2000 EUR IT software integration
Implemented by: Unicomp Kft.
Additional notes: Please note, BUD solutions cover the whole PRM passenger service, the blind and visually impaired passengers are only part of the total service.
Information:
https://www.bud.hu/en/passengers/flight_and_travel_information/special/special_needs/call_points
Website: /

DISABILITY AWARENESS STAFF TRAINING

1. AWARENESS RAISING FOR STAFF REGARDING INTERACTION WITH PERSONS WITH DISABILITIES

Country of origin: Austria
Type: Disability Awareness Staff Training
Transport mode: Air transport (airport)
Year of implementation: 2005
Description: All staff members are trained on how to attend to persons with disabilities (correct behaviour, wording, support, legal background etc.)
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Sales / Bordservice / Mungos
Additional notes: Train conductors, sales staff, service staff and customer service staff are trained.
The trainings are conducted by ÖZIV, a well known organization representing the interests of people with disabilities. ÖZIV is known for consulting appropriate organizations with specific expertise for the various aspects (e.g. BSVÖ for concerns of people with visual impairments) and employing people who themselves have disabilities as lecturers and trainers at workshops. According to ÖBB, participants in the training sessions are given the opportunity to experience mobility during simulation of disabilities under supervision. They also receive information on how to deal with passengers with disabilities. Visual impairment is one of the topics covered. For example, participants can try out orientation without their sense of sight, blindfolded and using a white cane, and they learn how to provide blind people with the correct assistance.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: /

2. TRAINING OF PEOPLE WITH REDEUCED MOBILITY ASSISTANCE AGENTS OF VIENNA AIRPORT

Country of origin: Austria
Type: Disability Awareness Staff Training
Transport mode: Air transport (airport)
Year of implementation: 2018
Description: Continuous in-house disability awareness training conducted by two staff members of Vienna Airport's PRM service who have a certificate from PassePartout Training Ltd.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: The trainings covering 8 hours are held in-house only by ECAC certified "Train the Trainer PRM assistance agents". Certificates are valid for one year, then trainers receive "refresher" training. Awareness training includes:
- Information on causes and types of visual impairments
- Information on how to interact with passengers who are blind or partially sighted
- Practical training (simulation of visual impairment and mutual practice amongst participants of the training - guiding blind and partially sighted people, use of escalators, etc.)

Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: https://www.passepartouttraining.com/training-programme/airports/
https://www.viennaairport.com/en/passengers/airport/disabled-accessible_travel

FACILITIES FOR GUIDE-DOGS AND SERVICE ANIMALS

1. SERVICE ANIMALS RELIEF AREA

Country of origin: /
Type: Facilities for guide-dogs and service animals
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: For more than 100 years, people with disabilities have relied on service animals and service animals to live and travel independently. These animals provide assistance such as: 1) guiding for people who are blind or visually impaired; 2) alerting to sounds for people who are deaf or hard of hearing; 3) alerting to medical conditions such as seizures, 4) providing physical assistance such as picking up dropped items, pulling wheelchairs for people with mobility disabilities. SARAs are locations in airports where passengers with disabilities can allow their service animals to relieve themselves. As of May 13, 2009, airlines are required to ensure that the airports they use provide such relief areas.
Picture:

Inclusion of the blind and partially sighted: No information
Long term sustainability of good practice: Yes
Estimated costs: /
Implemented by: /
Additional notes: /
Information: https://www.faa.gov/about/office_org
Website: /

2. OWN "SEAT" FOR ASSISTANCE DOGS

Country of origin: Austria
Type: Facilities for guide-dogs and service animals
Transport mode: Rail
Year of implementation: 2008
Description: The train "Railjet" for long-distance traffic is equipped with three suites providing space for an assistance dog.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Fleet management
Additional notes: One of four seats can be folded up to allow the assistance dog to sit down on the floor.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: www.oebb.at

3. GUIDE DOG RESTING SPOT

Country of origin: Hungary
Type: Facilities for guide-dogs and service animals
Transport mode: Air transport
Year of implementation: 2010
Description: Separate resting location for several guide dogs at the same time, water available for them. Restroom facility for dogs when they have to be indoor for a long time.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: /
Additional notes: /
Information: salamonszandi@gmail.com
Website: /

GUIDANCE/SIGNAGE – ACOUSTIC

1. AUDIO GUIDANCE

Country of origin: Hungary
Type: Guidance/Signage - acoustic
Transport mode: n/a
Year of implementation: 2014
Description: The audio-and voice-based traffic lamps, which signal for the blind and visually-impaired persons when they can cross the pedestrian crossings safely. The remotely-controlled traffic lamps switch to the audio mode, only when the visually-impaired persons switch on the device by their remote controller. The remote-controller is available for purchase in shops operated by organizations representing the interests of the visually impaired. The same remote controller can be used for the FUTÁR displays and for the subway escalator. Further details can be found in related records below.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: /
Implemented by: /
Additional notes: /
Information: /
Website: /

2. TRANSPORT-RELATED INFORMATION

Country of origin: Hungary
Type: Guidance/Signage - acoustic
Transport mode: Bus, Tram, Metro
Year of implementation: 2014
Description: Passenger information systems BKK's FUTÁR Journey Planner (state-of-the-art, real-time traffic management and passenger information system) to be found at stops. It can be activated with a remote controller. The same remote controller can be used for the FUTÁR displays and for the subway escalator. A distance of 5-15 m is the detection range, which depends on the shielding of the nearby standing groups of passengers.
The same remote controller can be used for the FUTÁR displays and for the subway escalator. When pressing of the remote control, the operating escalator beeps to support orientation in the correct direction. A distance of 5-15 m is the detection range, which depends on the shielding of the nearby standing groups of passengers.

Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: 6,6000000000 HUF
Implemented by: BKK
Additional notes: /
Information: Attila Oláh - attila.olah2@bkk.hu
Website: https://youtu.be/Jcx5cKKlOug (video)

3. VOICE ANNOUNCEMENT IN PUBLIC TRANSPORT VEHICLES

Country of origin: Croatia
Type: Guidance/Signage - acoustic
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2013
Description: Voice announcements are integral part of the public transportation in Zagreb. Trams and buses have external and internal speakers. External speakers tell the number of the vehicle and its direction. Internal speakers tell the status of the door (opening/closing), indicate the current and the next stop. These two announcements must not overlap to be usable.
Picture:

Inclusion of the blind and partially sighted: No information
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: ZET - Zagrebački električni tramvaj
Additional notes: /
Information: /
Website: /

4. VOICE ANNOUNCEMENT IN ELEVATORS

Country of origin: Croatia
Type: Guidance/Signage - acoustic
Transport mode: /
Year of implementation: /
Description: Voice announcements in the elevators allow people with visual impairment to be independent in using them. The fully accessible elevator needs to have: TWSI leading to the door, lift keypad with raised letters / braille / high contrast labels and tactile orientation marks, and voice announcement of floors.
Picture:
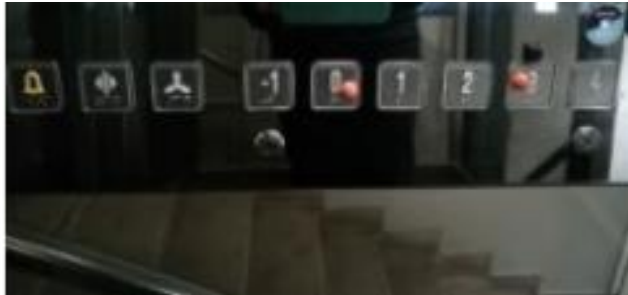
Inclusion of the blind and partially sighted: No information
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: Museum for the Blind (Croatia)
Additional notes: /
Information: /
Website: /

5. ACOUSTIC SOLUTIONS IN THE CZECH REPUBLIC

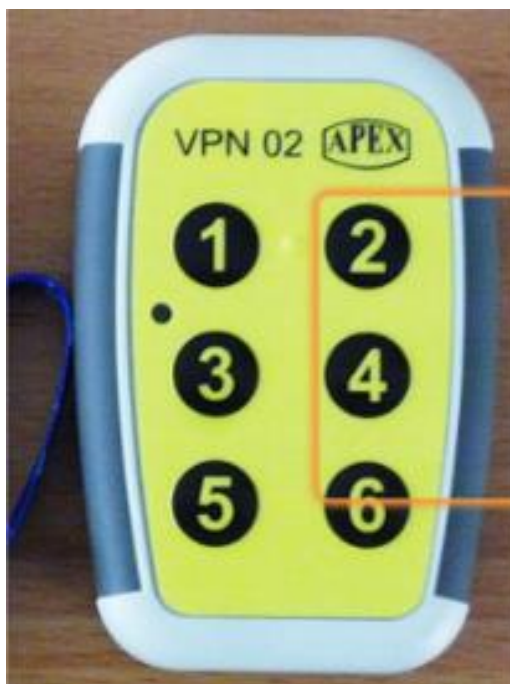**Country of origin:** Czech Republic
Type: Guidance/Signage - acoustic
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: Small separate device or part of white cane handle. Six buttons - 1: short information - whether the light is red or green, 2: extended info or status - the name of the street where the crossing is, 3: vehicle identification - number and direction, bus stop, 4: automatically open the door which are the closest and turn on sound signal for easier locating, activating assistance call to driver if necessary, 5: activation of traffic lights sound information on the other side of the street which helps the transition, 6: info kiosks in the proximity. Once the button is pressed, the transmitter (remote control) emits a radio signal over reserved frequency and activates the acoustic beacons placed in the vehicles, the traffic lights, at the tram/bus/train stops, in the buildings etc. For communication with device/white cane beacons need to be installed on infrastructure/vehicles. If acoustic beacons installed, they are silent by default and are only activated with the remote control (e.g. acoustic signal at pedestrian crossing). For now, audio output is in Czech only, but other languages are being considered.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: /
Additional notes: /
Information: Jan Urbanek - urbanek@sons.cz
Website: /

6. ABEACON

Country of origin: France
Type: Guidance/Signage - acoustic
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: aBeacon is the brand new connected Accessible Pedestrian Signal with on-demand activation. It makes crosswalks safer for blind people. Okeena is the French leading company on the accessibility market. Sound activation by blind and vulnerable pedestrians only. The system remains on silent the rest of the time. 3 means of sound activation: Intelligent remote control, Smartphone application (iOS & Android), existing pushbutton when wired to aBeacon. More service for blind pedestrians: green light call, crossing's name announcement, guiding sound corridor throughout the crossing, audio warning on red light phase not to cross, audio information on green light phase when safe to cross, automatic volume adjustment to ambient noise, high fidelity broadcasting.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: /
Additional notes: /
Information: Sylvain Denoncin - sdenoncin@okeenea.com
Website:
https://www.okeenea-group.com/
http://abeacon.okeenea.com/

7. DOOR OPENING BUTTON WITH TACTILE INDICATION AND SIGNAL FOR LOCATION

Country of origin: Austria
Type: Guidance/Signage - acoustic
Transport mode: Rail
Year of implementation: 2008
Description: Door opening buttons emit an acoustic signal that makes it easier to be found. They are also equipped with tactile arrows to allow identification of their function.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Fleet management
Additional notes: The door opening button is surrounded by a vertical visually contrasted and rough surface (adhesive tape) to support its location. The peep-sound is emitted when doors are closed.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: www.oebb.at

8. DETAILED DIRECTIONS FOR SUBWAY STATIONS AND THEIR SURROUNDINGS

Country of origin: Austria
Type: Guidance/Signage - acoustic
Transport mode: Subway
Year of implementation: 2003
Description: POPTIS provides very precise directions for stations including their surroundings of all Viennese subway lines.
To comply with the requirements of visually impaired persons, these directions contain details about orientation elements such as walls, entrances, furniture, TWSI etc. along the paths, which are relevant for visually impaired persons and usually are not mentioned in navigation applications.
The modular system allows to combine directions for individual routes.
The text information is also available as mp3 files, which can be downloaded and directly used for navigation.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: Wiener Linien GmbH & Co KG
Additional notes: Blind and partially sighted users and experts as well as orientation and mobility trainers are involved in the development and maintenance of the service in order to ensure it complies with the needs of those who use it.
Information: Luke Meysner, Netzentwicklung und Infrastrukturplanung at Wiener Linien GmbH & Co KG - luke.meysner@wienerlinien.at
Website: www.poptis.at

9. EXTERIOR ANNOUNCEMENTS AT PUBLIC TRANSPORT VEHICLES

Country of origin: Austria
Type: Guidance/Signage - acoustic
Transport mode: Tram, Bus
Year of implementation: 2013
Description: In Linz (Upper Austria), acoustic announcement of line number and direction of a tram or bus in a station can be activated with a radio transmitter carried by passengers who want to use this service.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: € 48.600, - for development (€ 39.000,- hardware, remaining costs for staff); radio receiver to be installed in the tram or bus € 208,- each (costs for material certificate according to railway legislation included); device needed for activation € 25,- (available at organizations for visually impaired persons and for rent at tourist information in the city center of Linz)
Implemented by: Linz AG Linien
Additional notes: According to the provider Linz AG Linien, all trams and busses in Linz (Upper Austria) are equipped with LiSA (two exceptions: particular small local lines called "Pöstlingbergbahn" and "Stadtteilbusse").
Vehicles are equipped with hardware to receive the request signal and transfer it to the on-board computer. The pre-recorded announcement is emitted through the exterior loudspeaker of the vehicle. For safety reasons, the announcement can only be activated while it is possible to enter and exit the vehicle.
Information: Egon Pischinger, Linz AG Linien - egon.pischinger@linzag.at
Website: https://www.linzag.at/

10. AUDIO GUIDE MAP

Country of origin: Hungary
Type: Guidance/Signage - acoustic
Transport mode: Air transport
Year of implementation: /
Description: Audio map is a voice file that can be uploaded to the website and helps visually impaired persons to navigate within the building. The navigation instructions can be memorized previously, thus they are familiar with the way upon arrival.
Example: "1 meter after entering the building there are 7 steps of stairs down with a rail on your left hand. Once you get down the stairs..."
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, easily changeable once implemented
Estimated costs: No information
Implemented by: /
Additional notes: /
Information: salamonszandi@gmail.com
Website: /

11. AIRPORT FLIGHT ANNOUNCEMENTS

Country of origin: Austria
Type: Guidance/Signage - acoustic
Transport mode: Air transport (airport)
Year of implementation: 2017
Description: As part of the standard process at airports, prior to aircraft departure, Audio (acoustic) announcements are made and passengers are invited to prepare for boarding or to board aircraft. Announcements are made at least three times for each flight and if necessary additional calls are made. Announcements are easy to understand. Often, each Airline has its own announcements, but after checking them and analysis of each announcement, we concluded that they are quite similar and each announcement has same parts but differences been flight number, destination, gate used, etc.
Announcements used are quite useful because passengers can be informed or called to the Gate prior to the boarding of the aircraft even before they notice that boarding started. This can be especially useful for the blind and partially sighted.
Picture: /

Inclusion of the blind and partially sighted: No
Long term sustainability of good practice: Audio system for announcements can't be easily changed (part of infrastructure and emergency system) but operational procedures can be modified.
Estimated costs: /
Implemented by: Dubrovnik Airport Ltd
Additional notes: /
Information: Maro Lukšić, Dubrovnik Airport Ltd - maro.luksic@airport-dubrovnik.hr
Website: https://www.airport-dubrovnik.hr/en/business/project-zld-development-s72

GUIDANCE/SIGNAGE – BRAILLE

1. ACCESSIBLE SIGNAGE ON THE DOORS AND KEYS

Country of origin: Croatia
Type: Guidance/Signage – Braille
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: Accessible signage on the doors and on pendants/keychains is appropriate for general public, partially sighted and the blind. The text is larger in size, its color provides a high contrast from the background. The font is easy to read. Numbers and letters on the doors and the pendant/keychain are also raised (in relief), which makes them detectible and perceivable by touch. This is useful for visually impaired people who do not read Braille but are familiar with standard letters (ex. they lost their sight later in life). For Braille readers, there are Braille labels below the letters and on the other side of the pendant/keychain.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: The material is firm, easy to clean and endurable.
Estimated costs: Depending on the size, material, quantity
Implemented by: Croatian Blind Union
Additional notes: The placement of the signage is very important. It must be easily reachable by the person with visual impairment.
Information: Mladen Menićanin - mladen.menicanin@savez-slijepih.hr
Website: https://tiflotehna.hr/pristupacnost-i-prilagodba/brajicni-natpisi-i-oznake/

2. TRANSLATION CONFIGURATOR FOR 3D MODELS AND PRINTING IN BRAILLE

Country of origin: Germany
Type: Guidance/Signage – Braille
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2017
Description: A translation configurator automatically translates content into Braille and generates the corresponding 3D models to be used for 3D printing in aluminum or other materials. This allows printing of Braille ad-ons for (handrails or similar) that can be used at all transportation terminals.
Picture:

Inclusion of the blind and partially sighted: No information
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: Deutsche Bahn
Additional notes: Deutsche Bahn is using 3D printing to create metal parts with braille in order to help the disabled navigate. In Berlin's Central railway station, Deutsche Bahn has employed 3D printing for individualized handicapped signs for handrails.
Information: Ole von Seelen, Head of Business Development & Strategic Marketing - ole.vonseelen@trinckle.com
Website: https://3dprintingindustry.com/news/deutsche-bahn-extends-use-3d-printing-revolutionize-maintenance-113320/

GUIDANCE/SIGNAGE – TACTILE
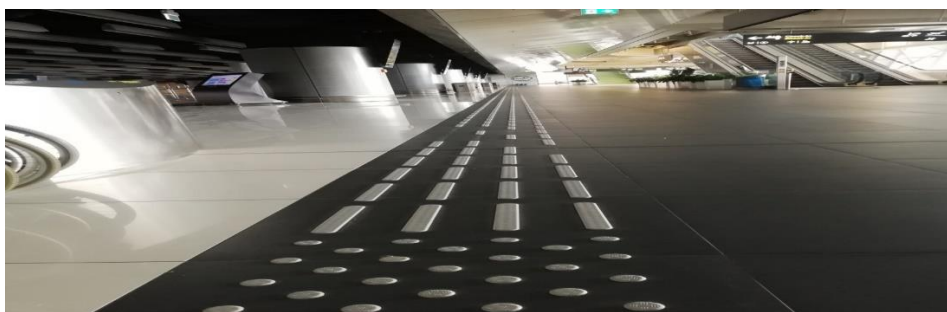
1. CHECK IN AREA TWSI

Country of origin: Croatia
Type: Guidance/Signage - tactile
Transport mode: Air Transport - Airport
Year of implementation: 2017
Description: Tactile Walking Surface Indicators are set up at Check in area so that Passenger can access check in counters or Self-check in devices by himself and after check in, PRM service takes him to the gate and PRM area (if needed)
Picture:

Inclusion of the blind and partially sighted: No
Long term sustainability of good practice: Implemented and can be easily changed with financial investment
Estimated costs: n/a
Implemented by: Dubrovnik Airport Ltd
Additional notes: /
Information: Maro Lukšić - maro.luksic@airport-dubrovnik.hr
Website: /

2. TACTILE ORIENTATION PLAN

Country of origin: Croatia
Type: Guidance/Signage - tactile
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2017
Description: Orientation plan is created in relief. The lines and shapes are detectable and discernible by touch. Braille labels are applied. For partially sighted, there is the usage of colors and large print.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: Depending on the size, material, quantity, production technique
Implemented by: Zadar Public Hospital
Additional notes: The placement of the orientation plan is very important: it must be easily reachable by the person with visual impairment.
Information: Mladen Menićanin - mladen.menicanin@savez-slijepih.hr
Website: https://tiflotehna.hr/pristupacnost-i-prilagodba/orijentacijski-planovi/

3. TACTILE MAP FOR ORIENTATION AND MOBILITY OF THE AREA OF THE CITY CENTER OF MARIBOR

Country of origin: Slovenia
Type: Other - plastic tactile map with reliefs
Transport mode: /
Year of implementation: 2013
Description: The tactile map for orientation and mobility of the Maribor city center covers the area of the city center from Aškerčeva street in the north to Vojašniški Square in the south and from Ljudski vrt in the west to the main bus station in the east. The map contains all the streets and squares located in the selected tactile display area on the map.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, in use since 2013
Estimated costs: ca. 20.000 EUR
Implemented by: Geodetic Institute of Slovenia
Additional notes: Tactile maps for the blind and partially sighted were created as part of the implemented project Removal of architectural barriers for the disabled, blind and partially sighted. It represents one of the pilot activities of the project, where, with the participation of the professional public, blind and partially sighted citizens, tactile maps were made in an adapted ratio. The Municipality of Maribor took the initiative for the first such activity in Slovenia. 1.400 pieces of tactile maps were produced.
Information: invalidi@maribor.si
Website: https://www.maribor.si/povezava.aspx?pid=7882

4. TACTILE WALKING SURFACE INDICATORS FOR INDOOR USE

Country of origin: Croatia
Type: Guidance/Signage - tactile
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: Tactile walking surface indicators are relief surfaces that are detectable by the tip of the white cane and under the feet. They also have to be in the high contrast with the background, so partially sighted can easily notice them. TWSIs that are parallel indicate the safe passage for the visually impaired people and help them maintain the direction while moving around, leading them to the right place without obstacles. TWSIs that are dotted indicate some change in the route (intersection, doors, steps, changing direction etc.).
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: Depending on the length, material, quantity, production technique
Implemented by: Multiple organizations
Additional notes: There is a difference in the material used for TWSIs that are placed indoors and outdoors. The TWSIs placed outdoors must be done to endure different weather conditions. Also, there are guidelines and standards proscribing proper size (width and height) of TWSIs, rules for proper placement and installation depending on the specific environment. Each situation is specific and needs to be considered separately.
Information: Mladen Menićanin - mladen.menicanin@savez-slijepih.hr
Website: https://tiflotehna.hr/pristupacnost-i-prilagodba/taktilne-povrsine/

5. TACTILE MARKING INSIDE TRAINS, TACTILE INDICATION OF FIRST CLASS AT ENTRANCE

Country of origin: Austria
Type: Guidance/Signage - tactile
Transport mode: Rail
Year of implementation: 2005
Description: Interior design of trains contains tactile information where particularly relevant
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Fleet management
Additional notes: Example: tactile indication of wagon class right at the entrance
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: www.oebb.at

6. Continuous consultation regarding TWSI details

Country of origin: Austria
Type: Guidance/Signage - tactile
Transport mode: Air transport
Year of implementation: 2012
Description: Placement and layout of TWSI in- and outdoors is developed in close cooperation with the PRM WG and continuously improved.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: /
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - dco.nettel@viennaairport.com
Website: /

7. PROVISION OF TEMPORARY TWSI DURING ALTERATION WORKS

Country of origin: Austria
Type: Guidance/Signage - tactile
Transport mode: Air transport
Year of implementation: 2019
Description: During alteration works, blind passengers were redirected by temporarily applied TWSI
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, knowledge gained for similar situations in the future
Estimated costs: No information
Implemented by: Flughafen Wien AG

Additional notes: /
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien
AG - dco.nettel@viennaairport.com
Website: /

8. ACOUSTIC ANNOUNCEMENT OF VISUAL INFORMATION (TIMETABLES) DISPLAYED AT TRAM AND BUS STATIONS

Country of origin: Austria
Type: Guidance/Signage - acoustic
Transport mode: Tram, Bus
Year of implementation: information to be added
Description: At tram and bus stations in Innsbruck (Tyrol), passenger information displayed on screens (overhead) can be read aloud by pressing a button.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: IVB - Innsbrucker Verkehrsbetriebe und Stubaitalbahn GmbH
Additional notes: /
Information: /
Website:
https://www.ivb.at/en/passenger/lines/smart-info.html
https://www.ivb.at/fileadmin/downloads/ivb_servicefolder_2016.pdf

9. GUIDE STICK

Country of origin: Hungary
Type: Guidance/Signage - tactile
Transport mode: Air transport
Year of implementation: /
Description: The ARIADNÉ guiding system, or "A-bot", enables visually challenged people to find their way around similarly to a traditional white cane. The key difference between the two is in the sensor and the built-in electronics of the "A-bot". The electronic circuitry located at the tip of the ARIADNÉ cane detects the road and the special guiding strip attached to the road. With this cane, people can follow the lane using traditional panning movements. When the end of the cane passes over the ARIADNÉ guide area, it emits a detectable signal, a sound or a vibration.
Picture:

Inclusion of the blind and partially sighted: /
Long term sustainability of good practice: /
Estimated costs: No information
Implemented by: Elmatit Kft. , FAL 2001 Kft., Tesa Tape Kft., Normark Hungary Zrt., SPIE AGIS Fire & Security Kft., BAR-GRAPH Kft.
Additional notes: /
Information: /
Website: https://abot.hu/

GUIDANCE/SIGNAGE – VISUAL

1. PASSENGER TERMINAL SIGNAGE

Country of origin: Croatia
Type: Guidance/Signage - visual
Transport mode: Air Transport - Airport
Year of implementation: 2017
Description: Signage through Passenger Terminal is with appropriate font and size. Letters are yellow on a black surface. The design is based on ICAO recommendations for Passenger terminal signage
Picture:

Inclusion of the blind and partially sighted: No
Long term sustainability of good practice: Signage is implemented and can be changed with significant financial investment.
Estimated costs: n/a
Implemented by: Dubrovnik Airport Ltd
Additional notes: /
Information: Maro Lukšić - maro.luksic@airport-dubrovnik.hr
Website: /

2. ACCESSIBLE SIGNAGE – TACTILE AND COMPATIBLE WITH SMARTPHONES

Country of origin: Croatia
Type: Guidance/Signage - visual
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2019
Description: Accessible signage, as used in the museum to describe the exhibits, can be used for different purposes. There is high contrast between the text and the background. Braille labels are included and detectable by touch. The QR code is always placed in the same location, so that the visually impaired can scan it by their mobile phone and access the audio description of the exhibit and the additional information.
Picture:
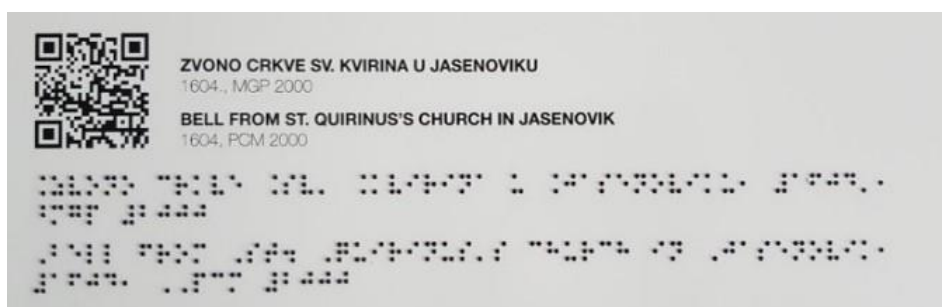
Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: The material is firm, easy to clean and endurable.
Estimated costs: Depending on the size, material, quantity, production technique
Implemented by: Archaeological Museum Istria
Additional notes: The placement of the signage is very important. It must be easily reachable by the person with visual impairment.
Information: Mladen Menićanin - mladen.menicanin@savez-slijepih.hr
Website: https://tiflotehna.hr/pristupacnost-i-prilagodba/brajicni-natpisi-i-oznake/

3. HIGH CONTRAST DESIGN OF TRAINS

Country of origin: Austria
Type: Guidance/Signage - visual
Transport mode: Rail
Year of implementation: 2005
Description: Contrasted design is applied at all new trains.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Fleet management
Additional notes: /
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: www.oebb.at

4. OPTIMIZED VISUAL GUIDANCE SYSTEM

Country of origin: Austria
Type: Guidance/Signage - visual
Transport mode: Air transport
Year of implementation: 2014
Description: Completely new conceptual design of the static visual guidance system at the airport with focus on optimized visual properties (placement of elements, type and size of font and pictograms, contrast, lighting) taking requirements of partially sighted persons into particular consideration
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: The signboards are equipped with LED lighting to ensure optimal visibility. The design contains a color coding system to support the readability, but works just as good for persons who are not able to perceive colors sufficiently.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

5. INFORMATION SCREENS WITH OPTIMIZED VISUAL DISPLAY AND PLACEMENT
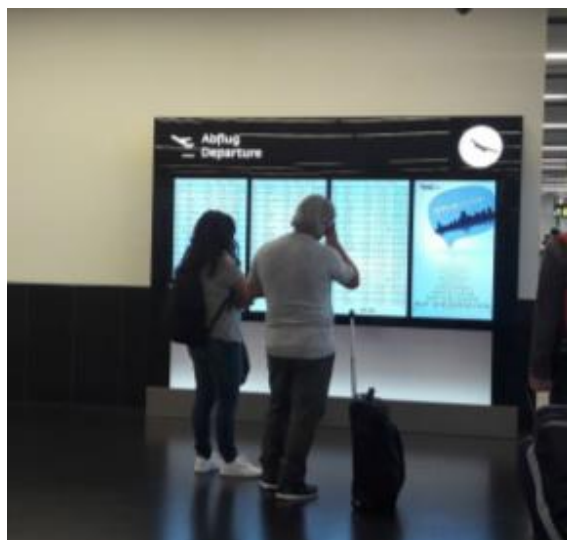
Country of origin: Austria
Type: Guidance/Signage - visual
Transport mode: Air transport
Year of implementation: 2014
Description: Information displays located in many places on the whole airport - easy to approach, passenger information at eye level with optimized visual properties
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: In addition to flight information, the "Air points" provide an airport map and a clock. Some of them also contain sign posts which are part of the static visual guidance system.
The concept as well as the details were developed in very close cooperation with the PRM WG.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

6. MONITORS TO DISPLAY ANNOUNCEMENTS AT THE GATES

Country of origin: Austria
Type: Guidance/Signage - visual
Transport mode: Air transport
Year of implementation: 2015
Description: Digital screens attached to the signboards at the gates provide current additional information
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: The screens were designed to provide best possible readability.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

MOBILE APPLICATION

1. TRANSPORT-RELATED INFORMATION

Country of origin: Hungary
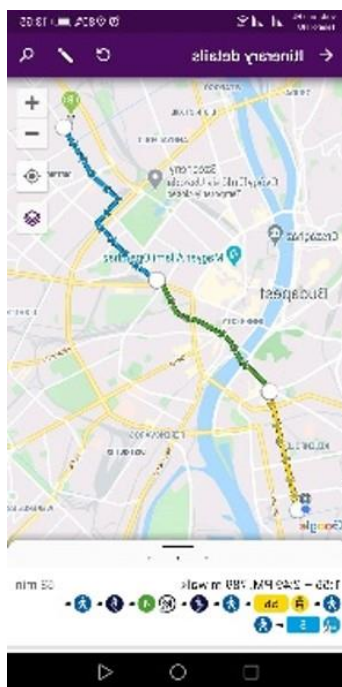**Type:** Mobile application
Transport mode: Bus, Tram, Metro
Year of implementation: 2014
Description: BKK's downloadable journey planner application available at futar.bkk.hu displays the quickest and, if required, accessible routes by tracking the exact location of vehicles and considering the actual transport situation. The FUTÁR app downloadable to a smart phone helps the blind and partially sighted passengers' transport. This app is available on Android and iOS operating systems and can be downloaded from the app stores and also directly from BKK's website. KK FUTÁR application itself and its special features are also available in English. Following features and options help blind and partially sighted people:
- Increasable (larger) map icons for better readability.
- The application supports Voice Assistant (phone settings): the phone assists the user with voice feedback (Text-to-Speech).
- The application also supports Smart Gesture control.

Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: /
Implemented by: /
Additional notes: /
Information: /
Website: /

2. VIDEO CALL SERVICE

Country of origin: Hungary
Type: Mobile application
Transport mode: n/a
Year of implementation: 2019
Description: Távszem application. Video call service to an operator through the application available 24/7. The operators sees the caller's surrounding and explains what he sees, help with instructions. he application can be used only by the visually impaired, it is free of charge for them, but pre-registration is required. Currently only available in Hungarian.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: No information
Estimated costs: No information
Implemented by: Hungarian Federation of the Blind and Partially Sighted (MVGYOSZ)
Additional notes: /
Information: info@tavszem.hu
Website: https://www.tavszem.hu/

3. INTROS - PUBLIC TRANSPORT RADAR

Country of origin: Switzerland
Type: Mobile application
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: In public transport, important information such as route numbers and stop names is provided in the form of visual information. A new app supports passengers who cannot or only with difficulty recognize such information acoustically in their orientation. Blind and visually impaired people face challenges when travelling by public transport: Is the vehicle that just arrives one of the right route? Which of the different buses that stand in line is "my bus"? At which stop do I have to get off? Using the app "INTROS" they can select the desired line and direction at the stop on their own mobile device. The app's voice function then signals the arrival of the right vehicle. An acoustic signal given by the app indicates the location of the proper vehicle door, opens it and signals to the driver that a person may need special attention. The app is beacon-based solution, so the beacons have to be installed in the vehicles. The app communicates with the vehicle via Bluetooth. App on IOS and Android is available in German, English and French.
Picture:

Inclusion of the blind and partially sighted: /
Long term sustainability of good practice: /
Estimated costs: No information
Implemented by: available to everybody
Additional notes: Currently 86.79 MHz (sub-FM radio) frequency is used, research shows that 434 MHz standard frequency would be better to avoid frequency jamming that often occurs. Bluetooth is also under consideration.
The beacons are usually placed:
- In the public transport vehicles (internal and external speakers, doors, driver's cabin)
- On the poles at the tram/train/bus stations (reading timetables, line numbers, directions)
- On the entrances of important buildings (municipality offices, post office)
- In grocery shops where assistance to VI costumers is available
- Traffic lights (activating sound navigation; there are also push buttons for those that have no remote control)

Information: Luciano Butera Luciano - Butera@sbv-fsa.ch
Website:
https://www.trapezegroup.eu/news/app-for-blind-and-visually-impaired-people
https://www.youtube.com/watch?v=KcZTgp-WEmE

4. MYWAYPRO - ORIENTATION AND NAVIGATION APP FOR BLIND AND PARTIALLY SIGHTED USERS

Country of origin: Switzerland
Type: Mobile application
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: /
Description: The Swiss Federation of the Blind and Visually Impaired SFB launched the app MyWay Pro, an orientation and navigation app for blind and partially sighted users to help them get directions and find their way in public places. "Points of Interest" (POI) can be individually defined as orientation points. Finding favorite café, the nearest mailbox or an intersection with "MyWay Pro" is no problem. The directional information reliably guides the user to their destination. Luciano Butera, Head of Technology and Innovation at SBV: "Routes and individual route descriptions can be easily created and shared." The app also recognizes route data from other providers, which can be used to import hiking routes or city tours, for example. In the Pro version, the developers optimized the sensory and acoustic feedback and built in the map view for users with a visual rest. "MyWay Pro" can be operated intuitively and focuses on the highest possible and independent mobility of blind and visually impaired people.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: available to everybody
Additional notes: /
Information: Luciano Butera Luciano - Butera@sbv-fsa.ch
Website:
https://www.trapezegroup.eu/news/app-for-blind-and-visually-impaired-people
https://www.youtube.com/watch?v=KcZTgp-WEmE
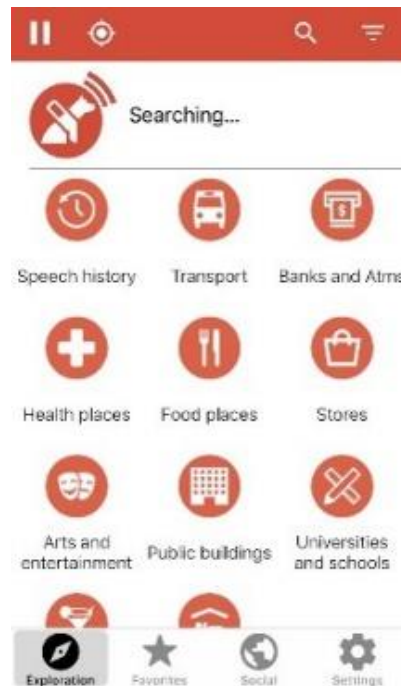
5. LAZARILLO

Country of origin: Chile
Type: Mobile application
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2016
Description: Lazarillo is based on Google Maps, OpenStreetMap and Foursquare alongside they own databases and with this information, Lazarillo collects the necessary data about the surroundings of the user to support the following features. 1. Exploration: Can provide you guidance through voice notifications/warnings. It will tell you where you are and what services are around you. 2. Specific Searches: By the "search" tab you can obtain search a specific location. 3. Search by categories: Look for places around you, using categories; such as restaurants, health centres and services of transportation. 4. Save favorites: In order to quickly access your favorite spots in the city, click on "save" so they become immediately available. 5. Customize: Modify the voice that will pilot you through the city. 6. Routing or guiding from one point to another: By walking, car, bus or subway, you will get from one point to other by the guidance service. Following the place you want to reach, an alarm will announce if you are getting closer to the spot. This feature also works if the scan mode is paused.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: available to everybody
Additional notes: /
Information: Rene Espinoza - hello@lazarillo.cl
Website: /

6. MOOVIT - URBAN MOBILITY APP

Country of origin: Israel
**Type:** Mobile application
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2012
Description: Moovit is available for IOS, Android and Web Browsers to guide people in getting around town effectively and conveniently using any mode of transit. It now serves over 1B riders in 3,400 cities in 45 languages. The app helps people change the way they consume mobility by fully integrating all forms of transport, including all modes of public transit, local bicycle services, ride-hailing (Uber / Lyft), scooters, car-sharing, carpooling, and more into the Moovit app. The Moovit app combines information from public transit operators and authorities with live information from the user community to offer travellers a real-time picture, including the best route for their journey.

Moovit has optimized every screen across the app for VoiceOver and TalkBack technologies (screen-reading) on iOS and Android devices. The app supports "Dynamic Type," providing users with the ability to increase font size. The content and layout on the app screens do not break and the reading experience is consistent. With Moovit's "Live Directions" feature, the user gets step-by-step GPS-style guidance for their journey and even receives alerts when the bus is arriving or "Get Off Alerts" to get ready before they've reached their destination stop.

Picture:
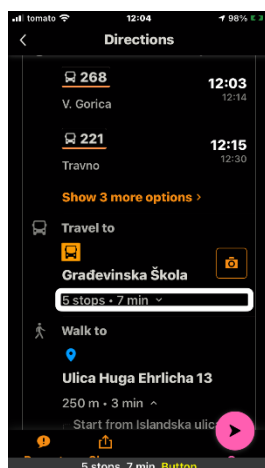
Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, in use worldwide
Estimated costs: No information
Implemented by: available to everybody
Additional notes: Application is widely used; new features are constantly added. In 2022 Moovit has begun a partnership with WeWALK enabling blind and partially sighted users to navigate public transportation independently. Moovit's technology allows WeWALK users to identify and navigate to the correct bus stops and train stations; access real-time arrival information; get live step-by-step guidance for the entire journey; receive audio and text Get Off Alerts; and obtain service alerts regarding changes and disruptions on their route. Moovit's multi-modal trip planner calculates trips that are wheelchair/stroller accessible. In certain cities, Moovit also indicates which stations are wheelchair accessible and specific approaching lines that are wheelchair accessible.
Information: https://moovit.com/contact-sales/
Website: https://moovit.com/about-us/

7. NAVILENS - NAVIGATION AND LABELING APP

Country of origin: Spain
Type: Mobile application
**Transport mode:** Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2017
Description: NaviLens is a navigation and labelling app especially designed for blind and partially sighted users. NaviLens tags are used across the world:
- to help people with sight loss navigate and find their way around cities independently;
- by retailers and manufacturers who are incorporating NaviLens into their designs to help users quickly and easily access information;
- by anyone with a smartphone who can create their own unique audio tags.

NaviLens tags can be read aloud simply by pointing your phone in the general direction of that tag. NaviLens algorithm detects the tags when the user is walking or in motion while the cell phone is pointed up. It's free and easy to use. The app works on both the Android and Apple operating systems and is completely accessible.
Picture:
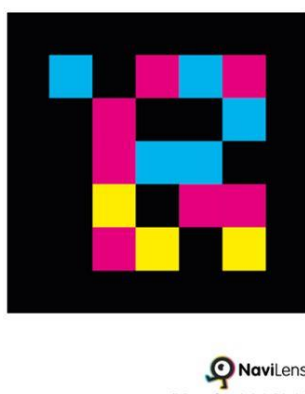
Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, in use in Spain, USA, UK
Estimated costs: No information
Implemented by: New York Metro; Public transport system of the City of Barcelona, underground and bus; Archaeological Museum of Murcia; Madrid's train station „la Atocha"; Transports of Murcia
Additional notes: Some companies are incorporating NaviLens tags into their packaging and onto their directional signage. A NaviLens tag can help customers to access product ingredients and cooking instructions, prices and special offers, and help users to navigate around a building or even identify a transport stop or timetable. Across the world, NaviLens is being used to make cities smarter and more inclusive and to allow users to interact more easily with their environment, in places such as subway stations, bus stops and museums or public buildings. The New York Metro has over 100 NaviLens tags in place to help customers with sight loss be more independent. Tags guide people through the subway system and provide real-time train arrival information in 24 languages. NaviLens tags can be read even if they are far away or high up, and with the app users don't have to rely on GPS or having access to the internet to navigate the underground. On the underground and bus transport system of Barcelona, NaviLens tags are placed on the signage, bus stops and ticket machines. In Murcia NaviLens tags are inside and outside the busses and trams, and the Archaeological Museum has used NaviLens tags to provide information on their exhibits and installations. The app can detect your native language and read information to you in that language, so a Spanish sign would be translated and relayed instantly in

English or any one of 24 languages. In London, RNIB have incorporated NaviLens tags into their head office directional signage so staff and visitors with sight loss can independently find their way around. Soon, all RNIB staff ID badges will incorporate NaviLens tags so any visitor with the app can tell who is present and what their role is. You can create your own NaviLens tags to label food in the cupboard, put appointments onto a calendar, note the tracks on a CD or even record banking details so you can access them independently. NaviLens supply a selection of free tags for personal use at home.

Information: info@navilens.com
Website: https://www.navilens.com/

OTHER

1. COOPERATION WITH STAKEHOLDERS

Country of origin: Hungary
Type: Other - Cooperation
Transport mode: n/a
Year of implementation: 2017
Description: In case of certain projects BKK has tightly cooperated with stakeholders both during the preparatory and consultation periods, which represent interests of persons with special needs. Based on the cooperation agreement concluded in 2015, BKK regularly holds professional consultations with the National Council of Associations of People with Disabilities (FESZT) during the planning and implementation of developments affecting the capital. In addition, in 2021 BKK concluded written cooperation agreements with Hungarian Federation of the Blind and Partially Sighted (MVGYOSZ) and the Regional Association of Blind and Visually Impaired Persons (VGYKE).
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: /
Implemented by: /
Additional notes: /
Information: /
Website: /

2. CONSISTENT MARKING OF VERTICAL GLAZED SURFACES AND DOORS

Country of origin: Austria
Type: Other - Protection against impact
Transport mode: Air transport
Year of implementation: 2014
Description: All glazed surfaces and glass doors are marked in a consistent, simple design which complies with the Austrian accessibility standard and is considered very reliable by partially sighted persons.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: The Austrian accessibility standard suggests different ways for marking of glazed surfaces and glass doors. Some of them are actually not sufficient according to partially sighted experts. At Vienna airport, the version, which is clearly preferred by partially sighted persons, was implemented. Moreover, it was also applied in places, where the standard does not contain particular requirements.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

3. FURNITURE TO ENSURE CLEAR HEIGHT BELOW ESCALATORS AND STAIRS

Country of origin: Austria
Type: Other - Protection against impact
Transport mode: Air transport
Year of implementation: 2014
Description: Solutions such as vending machines or storage rooms below escalators and stairs provide useful facilities and at the same time ensure protection against impact.
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: /
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: /

4. **PANEL FOR MOBILITY AND INFRASTRUCTURE (GREMIUM FÜR MOBILITÄT UND INFRRASTRUKTUR)**

Country of origin: Austria
Type: Other - Consultancy provided by NGO
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2011
Description: Blind and partially sighted experts from Blinden- und Sehbehindertenverband Österreich (BSVÖ), who have a lot of experience with regard to accessibility in mobility and road traffic, provide expert advice that is coordinated throughout Austria and authentic from the perspective of a self-help organization of blind and partially sighted persons.
Picture:/

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Blinden- und Sehbehindertenverband Österreich (BSVÖ)
Additional notes: The panel is lead and coordinated by BSVÖ's office for accessibility consulting. Regular training is provided to the panel's members to keep them up to date. Representatives of the panel provide advice for all kinds of projects in relation to accessibility all over Austria. The panel develops position papers and statements to spread their views and knowledge and use them for manifestation in standards and research projects as well as implementation into practice.
Information: Doris Ossberger, BSVÖ - office@blindenverband.at
Website: https://www.blindenverband.at/de/schwerpunkte/barrierefreiheit/82/Mobilitaet-und-Verkehrssicherheit

5. ACCESSIBILITY ADVICE CENTRE FOR BLIND AND PARTIALLY SIGHTED PEOPLE

Country of origin: Austria
Type: Other - Consultancy provided by NGO
Transport mode: Railway; Road transport; Air transport; Inland waterways; Sea transport
Year of implementation: 2011
Description: Blinden- und Sehbehindertenverband Österreich (BSVÖ) office for accessibility consulting provides broad expertise on accessible design/building and web accessibility focussed on requirements of blind and partially sighted persons. It is staffed by a technically skilled person who works closely with the GMI experts who have visual impairments themselves.
The office is well networked with various stakeholders (including service providers and planners in the transport and traffic sector) and, after approx. 10 years of existence, enjoys a certain reputation. As a result, its consulting services are used by many parties and allow BSVÖ to positively influence standards, laws, products and developments in the interest of the group of people it represents.
Picture:/

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Blinden- und Sehbehindertenverband Österreich (BSVÖ)
Additional notes: /
Information: Doris Ossberger, BSVÖ - office@blindenverband.at
Website: https://www.blindenverband.at/de/schwerpunkte/barrierefreiheit

SERVICES

1. ASSISTANCE FOR PASSENGERS WITH DISABILITIES

Country of origin: Croatia
Type: Services (other)
Transport mode: /
Year of implementation: 2013
Description: Many associations for the blind, as well as the Croatian Blind Union offer a sighted assistant service. Sighted assistant is a person trained in providing adequate support to visually impaired in everyday activities: guiding, providing information, escorting to healthcare institutions/shopping/culture events, assisting with administrative tasks etc. Sighted assistant is not personal assistant since he/she provides support to multiple people with visual impairment. Since visually impaired cannot drive, it is important that sighted assistant has a driving license. Usually, sighted assistant is employed by local association and provides support to visually impaired that are members of that association and in that county. Sighted assistant is employed by Croatian Blind Union to provide support to visually impaired persons. In Croatia, all visually impaired persons are eligible to use this service however the service is provided only in the area of the City of Zagreb and the Zagreb county (and not in other parts of the country). Persons arrive to Zagreb by any means of transport, the sighted assistant welcomes them at the terminal, provide assistance and takes them back to the terminal.
Picture: /

Inclusion of the blind and partially sighted: No information
Long term sustainability of good practice: /
Estimated costs: /
Implemented by: Croatian Blind Union
Additional notes: Sighted assistant services started as a national program and continued to gain funds from national and European programs (ex. European Social Fund)
Information: Lovorka Horvačić - lovorka.horvacic@savez-slijepih.hr
Website: /

2. ÖBB CUSTOMER CENTER – MOBILITY SERVICE CENTRAL

Country of origin: Austria
Type: Services (other)
Transport mode: Rail
Year of implementation: 2005
Description: Own department at ÖBB customer service responsible for concerns of persons with disabilities
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Sales / Bordservice / Mungos
Additional notes: Customers can indicate their travel request and receive various kinds of support.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: www.oebb.at

3. NEWSLETTER FOR BLIND AND PARTIALLY SIGHTED PERSONS

Country of origin: Austria
Type: Services (other)
Transport mode: Rail
Year of implementation: 2009
Description: ÖBB Personenverkehr AG provides information and writes text contribution for a specific newsletter used by visually impaired persons in Austria.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: The newsletter is operated by blind persons voluntarily - ÖBB contributions are provided by the department for passenger transport.
Additional notes: The newsletter "Donaukurier" is operated by persons with visual impairment and is available for everyone who subscribes and offers information which is particularly relevant for visually impaired persons. It has existed for 14 years and consist of around 350 email addresses - amongst them many addresses from organizations of persons with disabilities who spread information in their networks.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: mailman-request@ml4free.de

VENDING MACHINES

1. SIMPLIFIED MODE AT TICKET MACHINES

Country of origin: Austria
Type: Vending machines
Transport mode: Rail
Year of implementation: 2016
Description: Ticket machine switches to a mode with another layout with increased contrast and font size; every screen contains just one question; text according to "easy to read" standards (certified).
Picture:

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes
Estimated costs: No information
Implemented by: ÖBB / Sales
Additional notes: All ÖBB ticket machines are equipped with the software; unfortunately available for a limited range of tickets only.
Information: barrierefrei@pv.oebb.at
Christian Schwarzl, ÖBB Pesonenverkehr AG - christian.schwarzl@pv.oebb.at
Anton Burtscher, ÖBB Infrastruktur AG - anton.burtscher@oebb.at
Website: https://www.oebb.at/de/reiseplanung-services/am-bahnhof/ticketautomat

2. ATMs WITH AUDIO OUTPUT AND OPTIMIZED VISUAL DISPLAY

Country of origin: Austria
Type: Vending machines
Transport mode: Air transport
Year of implementation: 2015
Description: All ATMs in public areas are equipped with a software that allows blind and partially sighted to operate them autonomously.
Picture: /

Inclusion of the blind and partially sighted: Yes
Long term sustainability of good practice: Yes, still implemented
Estimated costs: No information
Implemented by: Flughafen Wien AG
Additional notes: The software was developed in another project conducted by BSVÖ together with other organizations and banks.
Information: Oliver Nettel, Head of OTA - Airline and Terminal Operation Development Flughafen Wien AG - o.nettel@viennaairport.com
Website: www.bank4all.at

WAITING AREAS

1. WAITING ZONE

Country of origin: Hungary
Type: Waiting areas
Transport mode: Air transport
Year of implementation: 2009
Description: In the terminal there is an official waiting area for PRM passengers.
Picture:

Inclusion of the blind and partially sighted: No
Long term sustainability of good practice: /
Estimated costs: No information
Implemented by: /
Additional notes: Please note, BUD solutions cover the whole PRM passenger service, the blind and visually impaired passengers are only part of the total service
Information: /
Website: /