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How to make inclusive mobility a reality:

8 principles and tools for a fair(er) transport system

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DOCUMENT TITLE
How to make inclusive mobility a reality:
8 principles and tools for a fair(er) transport system

AUTHOR
Kristin Tovaas, Rupprecht Consult

CONTRIBUTORS
Ralf Brand, Zhi Xin Hoo, Saydrina Govender & Julia Dick (Rupprecht Consult)

CONTACT
Project coordinator: algoWatt
Michele Masnata: michele.masnata@algowatt.com
Project dissemination manager: Polis
Pasquale Cancellara: pcancellara@polisnetwork.eu

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INCLUSION on Twitter: @H2020_INCLUSION
Facebook: H2020-Inclusion project
INCLUSION LinkedIn Group: INCLUSION Project

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CONTACT:

Rupprecht Consult - Forschung & Beratung GmbH
Clever Str. 13-15, 50668 Cologne/Germany
www.rupprecht-consult.eu
Tel. +49.221.6060550
info@rupprecht-consult.eu

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Dear reader...

Whether you want to improve the mobility situation for a certain social group, you are interested in the fundamental principles of inclusive mobility or you exert influence over certain components of the transport system: we have a specific entry point into this document for you.

Surely, you are all in favour of the social dimension of sustainable transport and we assume that you agree that a civilised society should "leave no one behind" – literally - even if it comes at a cost. A mobility system is only genuinely inclusive if no one is excluded from normal social life simply because one cannot reach certain destinations; irrespective of a trip's purpose: work, education, health care, shopping, leisure.

Consider this: Women represent half of the population but many of them are afraid to use public transport alone late at night. Combined with the other "at risk" groups, the majority of people is affected! And yet, transport systems are typically designed for an idealised group of middle-class, adult, self-empowered users who have no major mental, sensory or physical disabilities and who are uninhibited about navigating the transport system by themselves.

So, if you are interested in the fundamental principles of inclusive mobility, start with Chapter 2. It briefly introduces eight principles because they keep coming back throughout the document. They are further explained in Chapter 6 covering

these aspects: accessibility, affordability, convenience, efficiency, empowerment, empathy, gender equity and safety. Some of them might sound obvious; others less so. But they have all emerged as clear patterns from our research on over 50 case studies.[1]

Another starting point could be Chapter 4. This is for you, if you want to improve the mobility situation for certain user groups such as older people, children, students, women and care givers, physically or sensorially disabled and cognitively impaired people, migrants, job seekers, people in rural areas, those without a driver's license and people with a low income. The key message in each category is a needs diagram along the eight principles of inclusive mobility. This information is complemented with references to corresponding good practice case studies.

Chapter 5 is a good entry point for readers with influence over certain components of the transport system. It guides your thinking through various elements like vehicle design, stations, network density and connectivity, information provision, service frequency and reliability, ticketing and intermodality. This chapter is solution-focused to inspire and to suggest certain measures – again with references to the eight principles of inclusive mobility.

Lastly, Chapter 7 addresses readers in their different institutional roles: representatives of the public sector, of the private sector and of the civic society and community organisation. All of them will find inspiration here about particular strengths and – correspondingly – possible intervention points from which they could start experimenting or directly implementing. Ideally, this is done in a cooperative spirit across these different sectors.

Good luck and satisfaction in your efforts to make the world a more inclusive place! And remember: What is good for disadvantaged groups is good for everyone and could therefore boost overall ridership.

The INCLUSION team

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[1] For full case study descriptions, see the document "Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

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GETTING STARTED: What is inclusive mobility?

This section provides a summary of the patterns we've observed across the 50+ case studies and the resulting recommendations we have for decision makers and anyone interested in initiating a solution to improve the inclusivity of a transport system.

2.1 Eight general principles of inclusive mobility initiatives

A systematic analysis of all 50+ case studies[2] revealed eight main patterns that popped up over and over again across multiple cases. These represent underlying principles, which explain the success of various inclusive collective transport initiatives. If users' needs are not met with regard to these principles, then any initiative is at risk of causing or perpetuating transport poverty for the affected group(s). Some of them might seem relatively predictable and obvious, but also directly tangible. We feature them on this page because they simply are of utmost importance and should permeate the thinking and planning of anyone, who intends to make the mobility system more inclusive.

The next page presents four principles, which might not already be on everyone's radar. They are very important though as we learned from our analysis of success factors across the 50+ case studies. In combination, the eight principles on this and the following page should be considered systematically to ensure that an inclusive mobility project does not only work technically and financially, but also does justice to the various types of needs of the target group.

ACCESSIBLE

The transport network, stations, vehicles and information are barrier-free (physically, sensorially and linguistically). This also includes ticket machines, apps for smartphone accessibility features, simple user-centric access to digital devices, acoustic and visual announcements at stations and aboard vehicles.

AFFORDABLE

Transport services are affordable for all users, in particular vulnerable users, relative to their income and proportional to their other overall cost of living. An inclusive society will have to cover related costs and subsidies, and avoid imposing a major cost factor on any particular user group(s).

CONVENIENT

The time and/or effort required for vulnerable users to reach a transport service (e.g. first and last mile) are minimised so that these users can benefit from the service in their everyday lives. Distance to the nearest service, reliability and adequate information provision about the service (e.g. timetables, route planning) contribute to its convenience.

EFFICIENT

Once vulnerable users are aboard a vehicle, the time and/or effort required to use the service (e.g. longer journey times, changing vehicles multiple times) are minimised so that these users can benefit from the service in their everyday lives. The main factors contributing to efficiency are vehicle routes, network coverage and intermodal connectivity.

[2] See D3.3 Compilation of 51 case study profiles at ***http://www.h2020-inclusion.eu/resources/publications/***

Some of the four principles featured on this page might not (yet) be in every textbook on inclusive mobility. Our analysis of 50+ case studies from around the world shows, however, that they can indeed help to explain the success of many projects and should therefore be considered as central ingredients of inclusive mobility initiatives. In fact, ignoring them can cause complete failure.

The reason for the lower prominence of these principles in the mainstream discourse about inclusive mobility might have to do with the fact that they are difficult to operationalise and measure; also because they all have to do – at least partly – with the subjective experience of people. In addition, catering to related needs is not always possible through money, for example, by buying and providing a product or a service. In other words, implementing these principles can require rethinking the mobility system more fundamentally and admitting a genuine human dimension into the overall equation. In doing so, we can create new degrees of freedom for users who often feel constrained or boxed-in by the transport system.

EMPOWERING

Mobility solutions that build vulnerable users' capacities to get around confidently in their everyday lives. This idea can manifest in a training course or a scheme of "travel buddies" for certain social groups so that they are enabled to use certain transport options without requiring help by other people. Also technology can play a role here if it creates new degrees of freedom.

EMPATHETIC

Empathy-building initiatives foster awareness and build capacities (e.g. through training) among the transport provider and general public for vulnerable users' needs and increase their readiness to help. Sometimes, mobility options would be more accessible if there were some kind of "helping hand" (literally or metaphorically) to support vulnerable users.

GENDER EQUITABLE

Gender equitable mobility services enable all users, regardless of gender identity or orientation, to have access to transport services that meet their daily needs. This does not require providing equal services for all, but rather providing services that are equivalent but different, recognising that not all groups have the same mobility needs. Measures that improve and facilitate intermodality, accessibility and safety are primary considerations for gender equity.

SAFE

Mobility services that increase the perceived and actual safety of all vulnerable users by preventing accidents, theft, violence and harassment. Related interventions include hard measures (e.g. lighting, spatial layout, station and vehicle design, signage, emergency buttons, etc.) as well as soft measures such as human surveillance, communication, staff training and public awareness campaigns.

2.2 Recommendations for practitioners

STRIKE A BALANCE: ADOPT ALL PRINCIPLES OF INCLUSIVE MOBILITY

When seeking to improve the inclusivity of mobility services, **practitioners tend to focus on the first four "traditional" principles:** improving **accessibility, affordability, convenience** and/or **efficiency** of mobility services. These attributes are the most visible, tangible, measurable and immediately felt by both the users and the transport providers.

At the same time, mobility solutions that directly respond to the subjective experiences of people who are vulnerable to transport exclusion are often under-prioritised or overlooked entirely. **Our research has shown that adopting the last four "supporting" principles (empowering, showing or fostering empathy, improving gender equity and perceived or actual safety) can be the keys to success for the more innovative case studies.** These principles respond to needs that are very personally felt by users and often act either to enable or – when these needs are not met – to inhibit their mobility.

As illustrated in Section 4 User profiles, each user benefits from the "traditional" and "supporting" principles to varying extents. However, it is clear that **a balanced approach between these two groups of principles is essential to create an inclusive mobility system for all users.**

ADDRESS ALL NEEDS OF USERS VULNERABLE TO EXCLUSION

Source: Harry Schiffer, Eltis.org

INCLUSION has defined 12 user groups that are vulnerable to exclusion from the transport system (see Chapter 4 User profiles). **Each user group has varying needs in terms of accessibility, affordability, convenience, efficiency, empowerment, empathy, gender equity and safety** (see Section 4. User profiles). To sufficiently address these needs, it is important to be aware of the following:

Many users are associated with more than one of the 12 user categories, and therefore 1) have compounded needs, and 2) are consequently even more seriously affected. For example, an elderly migrant woman tends to face greater challenges than someone who only identifies as an elderly user.

When measures are implemented to improve the inclusivity of the transport system, they often target certain user groups (e.g. disabled, elderly) much more often than others (e.g. migrants, women). **It is therefore essential for practitioners to understand the needs and perspectives of these underrepresented user groups** so they can create new services and improve existing services in ways that actively respond to their needs as well.

Source: Aira App, https://aira.io/

Source: Harry Schiffer, Eltis.org

Without an intersectional understanding of vulnerability to exclusion, we risk seeing such users as a homogenous group, creating policies and implementing measures that are assumed to benefit them all equally, but which mostly just work for some. An intersectional understanding of vulnerability to exclusion enables practitioners to have a clearer and more nuanced understanding of users so that policies and measures can more effectively address their needs and work towards balancing out mobility inequalities.

ENSURE GENDER EQUITY

It is well established that different genders experience mobility vastly differently. The case study "9.1 Gender mainstreaming in Vienna" [3] looks at how gender considerations are taken into account in public policy and planning specifically for transport. Gender equity should not only entail the mobility needs of the gender binary (i.e. men and women) but of all non-binary individuals too.

Ensuring equity between men and women

Women and caregivers make nearly 50% more trips than men and non-care givers with more complex routes and trip chains and a wider variety of reasons for travel.[4] They also accomplish their trips more often as pedestrians.[5] Since traditional traffic planning has not prioritised pedestrian traffic and there is still much work to be done to support intermodality and multi-trip chain purposes, a gender bias has been systematically created and needs correction for equitable mobility.[6]

Ensuring equity for the LGBTQ+ community

Public spaces such as public transport are areas where the LGBTQ+ community still face hate crime and higher levels of perceived unsafety than the general population. 68% of the community are unlikely to disclose their sexual orientation through behaviour or dress on public transport[7] and are likely to restrict their use of public transport during times of perceived unsafety.[7] Personal security and safety are key aspects of inclusion for this vulnerable user group.

Tram stop in Krakow (Source: City of Krakow)

Source: Eltis

[3] See D3.3 Compilation of 51 case study profiles at ***http://www.h2020-inclusion.eu/resources/publications/***
[4] Government Equalities Office. (2018). National LGBT Survey: Summary Report. Retrieved from ***https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/722314/GEO-LGBT-Survey-Report.pdf***
[5] International Transport Forum, OECD. (2018). Understanding Urban Travel Behaviour by Gender for Efficient and Equitable Transport Policies. Retrieved from ***https://www.itf-oecd.org/sites/default/files/docs/urban-travel-behaviour-gender.pdf***
[6] City of Vienna. (2011). Gender Mainstreaming Made Easy: Practical advice for more gender equality in the Vienna City Administration. Retrieved from ***https://www.wien.gv.at/menschen/gendermainstreaming/pdf/gender-mainstreaming-made-easy.pdf***
[7] Takács, J. (2016). Social exclusion of young lesbian, gay, bisexual and transgender (Lgbt) people in Europe. ILGA-Europe. Retrieved from ***https://www.salto-youth.net/downloads/4-17-948/ReportSocialExclusionIGLYOilga.pdf***

CO-CREATE INCLUSIVE MOBILITY

It is essential to not just speculate about the needs of users, but to ask them directly. **Solutions that are developed by vulnerable users, for vulnerable users are guaranteed to respond directly to their particular needs.** Many people who are vulnerable to transport exclusion are also part of so-called "hard-to-reach" groups, and often do not have their voices heard in transport planning and decision making (if such participatory processes are conducted at all). This partly explains why transport systems and services are often developed in ways that unintentionally – but unjustly – exclude certain users. But if these vulnerable groups' voices are not heard, transport service providers risk implementing solutions that do not adequately address their needs, resulting in wasted money and time.

Co-creation goes beyond traditional participatory methods to develop innovative solutions for complex problems and aims to bring multiple stakeholders together to jointly produce a mutually valued outcome. It empowers local civic actors and involves them in decision making processes, as well as encouraging new partnerships and networks. **Co-creation involves four main steps[8,9,10]: 1) co-identification of problems and needs, 2) co-development and co-selection of solutions, 3) co-implementation of solutions, and a cross-cutting 4th step: co-assessment and co-evaluation.**

Source: urbanista

[8] EU Horizon 2020-funded CIVITAS SUNRISE project: ***https://civitas-sunrise.eu/***
[9] Horizon 2020 project CIPTEC: ***http://crowdsourcing.ciptec.eu/***
[10] co-creation navigator: ***https://ccn.waag.org/navigator/***

Source: S. Findeisen/City of Bremen

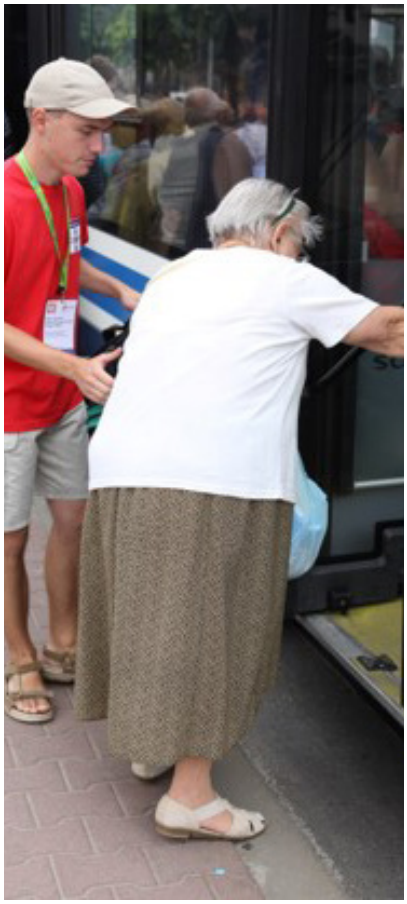
In order to build and maintain trust with these groups – who likely have felt overlooked by previous transport planning processes – it is important to maintain direct, two-way communication with the users throughout the process of developing inclusive mobility solutions. This also enables the organisations responsible for implementing these solutions to continue gathering users' input and feedback. Here are some further tips to ensure successful and productive co-creation of solutions for vulnerable groups:

- Tailor participatory methods and involvement formats to the user's needs
- Ensure that the timing, location and facilities provided during the meetings fulfil their needs (e.g. providing child care services so that working parents can attend)
- Work with trusted intermediaries/ neutral third parties to facilitate the discussions

THE ROLE OF VOLUNTEERS

Volunteers have supported the successful operation of a range of mobility solutions – from acting as guides on apps for visually impaired people to on-demand door-to-door bus services. They often add the necessary human touch for empathetic and empowering mobility solutions. Volunteers add value by supporting the start-up of community-led initiatives, such as car sharing and ride sharing schemes, or by providing services such as driving the vehicles or helping to guide users through the transport system.

However, it is important to note that **volunteers want to add value, not substitute for essential roles that should be filled by the public sector.** For example, volunteers must not be overused to fill gaps created by cutbacks to public transport services. It is **therefore essential to set clear boundaries about where it makes sense to enlist volunteers and where it absolutely does not.** Cost savings should not be the primary motivation or benefit for using volunteers to support a transport service. Furthermore, volunteers should be insured, legally protected and their contracts should be based on a limited number of hours.



Source: City of Krakow

In order to attract volunteers, boost their morale and maintain their commitment in the long-run, the working relationship should be mutually beneficial. To this end, showing appreciation for the volunteers can go a long way. For example, many community bus services, such as the Buurtbussen ("citizen buses") and the Bürgerbuses in the German state of North Rhine-Westphalia throw an annual party for their volunteers. Fostering a sense of community with volunteers helps all actors involved to feel a greater sense of ownership and enthusiasm for the mobility service – which can be the key to its long-term success.

THE ROLE OF ICT

The development of new forms of transport services, including many solutions for inclusive mobility, wouldn't have been possible without the rapid growth of information and communication technology (ICT). **ICT helps to mitigate or solve some of the factors that cause transport disadvantages**, especially in relation to:

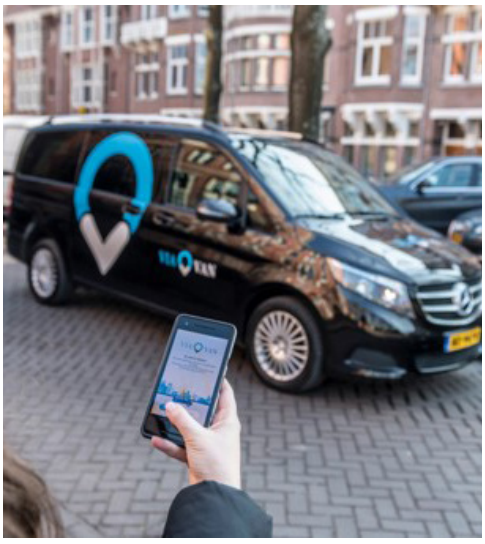
- **Enhancement of the quality of information**
- **Improvement of quality of existing transport services (e.g. on demand transport)**
- **Establishment of new, alternative services able to cope with inclusive needs**
- **More dynamic costs and tariffs, possibility for reducing fares**

However, while technologies may create new facilities, they can also introduce a new degree of inaccessibility due to digital exclusion. This can be due to a lack of one or more of the following:

- **Access to technology: Physical access to devices (such as computers, smartphones, or tablets) that are connected to the internet and allow for communication and information gathering.**
- **Understanding of technology: The skills and understanding of how to use technology and technological interfaces for the purposes you desire.**
- **Presence of underlying infrastructure: The connective services, such as broadband or mobile data coverage, that enable use of digital devices and services.**

Therefore, it is important to **know the technological needs and capabilities of targeted user groups,** and to determine in which cases ICT is best placed as a tool to be used by the end user (e.g. accessible, multilingual route planning apps or booking platforms, which could benefit young migrants), or as a tool to support backend operations of a mobility service (e.g. managing bookings made by phone for DRT services, which could benefit elderly users).

ICT can be a beneficial tool to improve mobility for a variety of vulnerable user groups. It can enable crowdsourcing data which supports real-time information, and it is relatively easy to transfer to different areas while also being customisable to the local context, within the framework of the local data privacy and ownership laws. However, **ICT is not a panacea – it has great potential when it is used in an ecosystem of other supportive solutions,** including hardware, infrastructure, people, trust, knowledge and funding.



Via Van and user (Souce: VIAVAN)

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Local Context

Rural/ remote, peri-urban and urban areas each have a distinct set of mobility challenges and opportunities. Across these area types, different users tend to be affected by the unique local context conditions that contribute to insufficient, inaccessible or non-existent collective mobility services. At the same time, these areas each have their own strengths and opportunities that can act as catalysts to achieving inclusive mobility.

This section provides a brief overview of these characteristics and points to INCLUSION case studies that are relevant for each area type. Case studies with a star next to them indicate particularly good practice. If you only have time to read one case from any given solution category, the stars are there to guide you.

Please note that the main challenges presented under each area type are to be understood as the most pressing issues in the given area; they are not exclusive to that area and may also be present in other area types.

Many public transport providers are not expanding into peri-urban or rural areas and are often cutting back on existing services because of depopulation. In these areas, private transport dominates the landscape and is virtually the only mobility option. Declining populations characterised by more pronounced ageing are leading to a higher dependence on individual motorised transportation and social isolation for those who cannot or do not drive. Throughout Europe, there is a lack of integration between the primary collective transport system that serves urban centres and last-mile, feeder and targeted services that reach into catchment areas in the periphery.

RURAL/REMOTE

MOST PRESSING CHALLENGES:
Inaccessible neighbourhood, social isolation, insufficient public transport services, high car dependency, low car ownership among low-income residents, service withdrawal (bus service and other services, e.g. post office, doctors, shops, etc.), dependence on neighbouring town centres, not encouraging for cycling and walking, employment opportunities low/ decreasing (businesses and industry closing down)

PRIMARY AFFECTED USERS:
Elderly, students/ youth, women, people without a driver's license

TOP INCLUSIVE MOBILITY AIMS:
Efficiency, Accessibility, Convenience, Affordability

STRENGTHS AND OPPORTUNITIES:
Tight-knit social network, trust among neighbours

COMMON APPROACHES:
Feeder systems (e.g. on-demand and flexible services), car sharing, ride sharing, pedelecs

CASE STUDIES:

3. Payment and ticketing
- ★ 3.5 T2E - Transport to Employment
- 3.8 Wheels2Work

4. New collective transport routes
- 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- ★ 4.4 Formentera Taxibus
- 4.8 Wensbus ("Wish bus") Limburg

5. Sharing schemes
- 5.1 AVIRA wheelchair-accessible car sharing
- ★ 5.2 CarSharing Pfaffenwinkel
- 5.3 Die Mitfahrerbank (The Passenger Bench)
- 5.6 Haltetaxi Zeeland
- 5.7 ITNCountry

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

PERI-URBAN

MOST PRESSING CHALLENGES:
Insufficient and discontinued public transport services, social isolation, development and infrastructure do not encourage walking and cycling, first-last mile challenges, high car dependency, low car ownership among low-income residents

PRIMARY AFFECTED USERS:
Elderly, disabled, students/youth, job seekers, low-income, women, people without a driver's license

TOP INCLUSIVE MOBILITY AIMS:
Accessibility, Convenience

STRENGTHS AND OPPORTUNITIES:
Medium density (lends itself to flexible bus services); social cohesion

COMMON APPROACHES:
On-demand services, car sharing, multimodal trip planners

CASE STUDIES:

3. Payment and ticketing

- ★ 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City

4. New collective transport routes

- 4.1 Bürgerbuses in NRW
- ★ 4.2 De Bij Bus
- 4.6 GO MOBIL
- 4.7 Mobuur neighbourhood service

5. Sharing schemes

- ★ 5.4 Go Go Grandparent
- 5.5 GoKid Carpool app
- 5.6 Haltetaxi Zeeland
- 5.7 ITNCountry
- 5.11 Taxi-Scuola
- 5.12 Via (on demand ride share via app)

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

URBAN AREAS

MOST PRESSING CHALLENGES:
Inaccessible transport options (infrastructure or equipment, barriers), high costs, social isolation, insufficient information provision, perceived or actual safety concerns

PRIMARY AFFECTED USERS:
Elderly, disabled, students/youth, unemployed/low-income, women, migrants/refugees/ethnic minorities

TOP INCLUSIVE MOBILITY AIMS:
Accessibility, Affordability, Safety, Gender equity

STRENGTHS AND OPPORTUNITIES:
More dense tax/ member base to fund solutions, existing infrastructure

COMMON APPROACHES:
Safety measures, barrier-free infrastructure, accessibility planning, wayfinding and signage, integrated ticketing, chaperone apps, female-only taxis

The continued growth in population and geographic size of many European cities has, for the most part, outpaced the improvement of transport systems to accommodate this growth. As travel distances continue to increase for all trip purposes, it has led to increased traffic congestion and travel times. In many cases, this is due to insufficient provision of collective transport and infrastructure for cycling and walking. Cities are experiencing overall higher but more fragmented transport demand, with longer distances being travelled for all trip purposes.

CASE STUDIES:

3. Payment and ticketing
- ★ 3.1 Public Private Partnership car and ride sharing
- 3.2 Accessible ticket machines in Stockholm
- 3.4 Disabled persons Freedom Pass

4. New collective transport routes
- ★ 4.3 De Witte Raaf (The white raven)
- 4.5 France le Busway

5. Sharing schemes
- 5.8 RideAustin
- 5.9 RideshareKC's Guaranteed Ride Home programme
- ★ 5.10 She Taxi
- 5.12 Via (on demand ride share via app)

8. Design
- ★ 8.1 Krakow - more accessible public transport stops
- 8.2 Reading's 'Claret Spritzer' student bus
- 8.3 Rennes wheelchair accessible public transport

9. Planning
- 9.1 Gender mainstreaming in Vienna
- ★ 9.2 KOLLA (Kollektivtrafik för alla) project
- 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

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User profiles:

People's needs and possible solutions

The INCLUSION project has identified 12 user groups who are vulnerable to exclusion from the transport system: elderly, students, women, children, physically disabled, sensorially disabled, cognitively impaired, migrants, people living in rural/ remote areas, people without a driver's license, job-seekers and people with a low income.

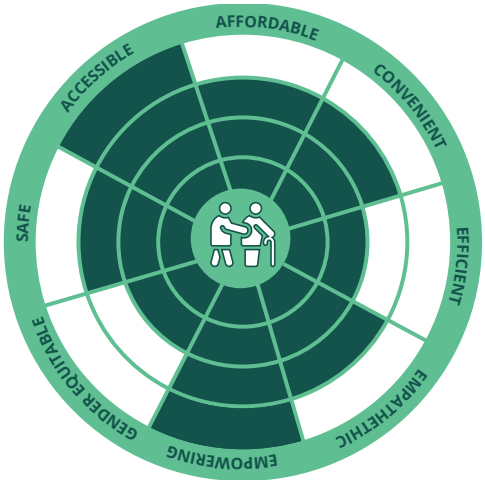
This section explains each user group's needs in detail in relation to the eight principles outlined in Chapter 2 Getting started: What is inclusive mobility?. In addition, case studies of good practice that address the respective users' needs are also featured throughout this chapter.

As noted in Chapter 2 of this document, many users are associated with more than one of the 12 user categories, and therefore 1) have compounded needs, and 2) are consequently more often at risk to be excluded from the transport system. It is therefore essential to form an intersectional understanding of vulnerability so that solutions can be more precisely tailored to meet users' specific needs and ultimately work towards balancing out mobility inequalities.

How to interpret the user profiles:

- The diagrams that outline each user group's mobility needs in relation to the eight principles of inclusive mobility have been filled in qualitatively. Of course, all categories are relevant for all user groups. But these diagrams are meant to be interpreted as a sort of "heat map" of each user group's most pressing (and most commonly unmet) needs.
- Case studies with a star next to them indicate particularly good practice within their solution category. If you are pressed for time, start reading the starred case studies.

ELDERLY



Mobility needs:
In order to keep older people actively involved in their daily activities, it is vital that they are able to travel and have access to acceptable levels of mobility. However, public transport use by older persons is low, indicating a potential barrier to mobility access.

Factors such as long-term illness or disability, social isolation and lack of independence make older people a group at risk of becoming socially excluded. Elderly people in rural areas, which typically have a declining population and less collective mobility options, are particularly at risk of exclusion. **Accessible** solutions such as barrier-free stations, low-floor vehicles, clear audio and visual information, sufficient lighting, provision of seating and shelters empower elderly people to navigate transport systems with a sense of security and independence.

Community-organised and volunteer-run on-demand and door-to-door solutions are especially accessible, **convenient** and **empowering** for elderly people, as they provide flexible services that can be tailored to their irregular trip patterns, as well as offering the opportunity for social interaction during their journeys. Solutions that facilitate independent living (e.g. through travel training) further empower elderly people. Related to this, **empathetic** approaches can add to elderly people's sense of security, such as friendly public transport staff who are ready and able to lend a helping hand or transport "buddies" to overcome uncertainties about how to navigate public transport.

CASE STUDIES ADDRESSING ELDERLY PEOPLE'S NEEDS:

3. Payment and ticketing
- 3.1 Public Private Partnership car and ride sharing
- 3.6 TaxiCard scheme
- ★ 3.7 UK free public transport for the elderly

4. New collective transport routes
- ★ 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- 4.3 De Witte Raaf (The white raven)
- 4.4 Formentera Taxibus
- 4.5 France le Busway
- 4.6 GO MOBIL
- 4.7 Mobuur neighbourhood service
- 4.8 Wensbus ("Wish bus") Limburg

5. Sharing Schemes
- 5.3 Die Mitfahrerbank (The Passenger Bench)
- ★ 5.4 Go Go Grandparent
- 5.7 ITNCountry

6. Training & assistance
- ★ 6.2 Donostia - public transport for over 60s

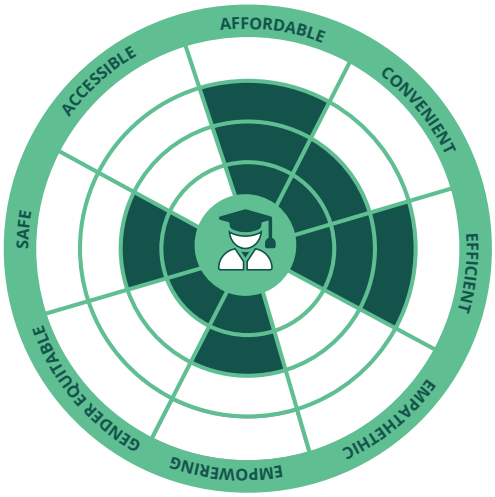
7. Information provision & Route planning
- ★ 7.3 Barrier-free digital journey planner and travel assistance for disabled and elderly
- 7.5 Blue Badge-Safe Journey Card-Customer Injury Cards

8. Design
- ★ 8.1 Krakow - more accessible public transport stops

9. Planning
- ★ 9.2 KOLLA (Kollektivtrafik för alla) project
- 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at **http://www.h2020-inclusion.eu/resources/publications/**

STUDENTS/YOUTH



Mobility needs:
As a user group, students/ youth (defined here as people above the age of 16, until the end of their education) include young people who attend secondary school, vocational training schools and universities. There is, therefore, an overlap with the user group 'children'. However, students' mobility needs are centred around their need to have an affordable, efficient and convenient means of transport so they can reach educational opportunities. Barriers to accessing public transport can socially disadvantage young people. Poor availability and high public transport fares may hamper access to education, cultural and leisure activities, and, for young people, jobs

In the case of students attending university or vocational schools, they may also need to reach employment opportunities in order to pay for rent, food and leisure activities. Therefore, **affordable** fares are particularly necessary for this user group. Students require collective transport with **convenient** (and reliable) timetables that align with the start and end times of classes and that enable them to work irregular hours. Stops and stations should also be within walking distance of their school.

Services should also be **efficient** so that they minimize travel time to school. Long, inefficient routes mean that students have less time available to study in an environment conducive to learning and productivity, and it may in turn also impact the amount of sleep they're able to get.

Furthermore, to a certain degree, students require **safe** and **empowering** mobility services. Many students in higher education move to a new town and may for the first time need to get around independently. Solutions such as travel training and route planning apps can help. They may also often travel at night for social events or late-night study sessions, and therefore require adequate, well-lit facilities and secured transport services during these hours. This is particularly true for female students, who are more often the targets of harassment on collective transport modes during evenings and nights.

CASE STUDIES ADDRESSING STUDENTS'/ YOUTHS' NEEDS:

3. Payment and ticketing
- 3.5 T2E - Transport to Employment
- ★ 3.8 Wheels2Work (W2W) scheme

4. New collective transport routes
- ★ 4.5 France le Busway

5. Sharing schemes
- ★ 5.9 RideshareKC's Guaranteed Ride Home programme

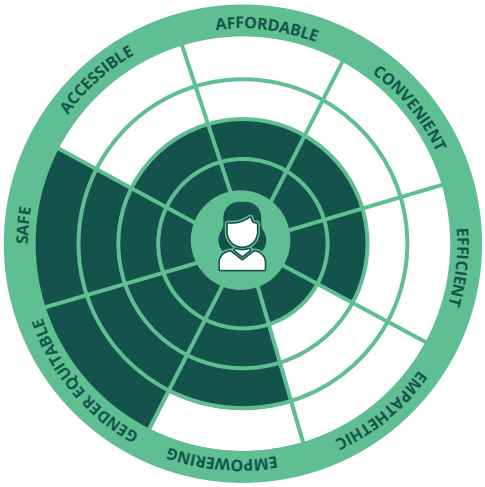
6. Training & assistance
- ★ 6.3 Manchester - travel training

7. Information provision & Route planning
- ★ 7.11 Showing the way in Toulouse using pictograms

8. Design
- ★ 8.2 Reading's 'Claret Spritzer' student bus

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

WOMEN



Mobility needs:
Women's safety and equitable access to transport are still the primary barriers for women's mobility, with direct impacts on their participation in economic, social and political opportunities. Widespread distinctions between men and women have been identified regarding the use and operation of transport and in broader patterns of mobility. In the EU, 55% of car users are male, whereas 66% of non-car users are female[11], which points to the tendency for women to more often use public transport.

Women also make more multiple-trip chains using public transport and are also still the primary group responsible for caregiving for children or elderly relatives. **Accessibility** is therefore an important consideration, as they will more often require barrier-free access to vehicles and within stations for e.g. prams, wheelchairs, walkers. Public transport staff's readiness to help with this equipment could also provide an **empathetic** approach.

Where gaps in public or collective transport services exist, the gap between women's and men's economic, social and political participation in society widens. According to Eurostat[12], the gender pay gap in the EU 28 (as of 2017) was 16%. Women also tend to live longer, and therefore are more likely to reach old age, which often comes with reduced mobility and increased difficulty using public transport. With these two factors in mind, **affordable** collective mobility services are increasingly necessary.

For women, mobility is affected not only by availability and access to public transport; **safe**/secure, affordable, reliable and **efficient** transport services are crucial in relieving the time burden of their workload and facilitating their economic empowerment. In particular, personal safety is a key concern for them. Women are often deterred from using public transport if they do not feel safe. They may not want to wait for public transport for fear of harassment and are therefore less likely to use transport services with an unreliable schedule or at night. Therefore, solutions that improve safety (e.g. lighting, security features, crowdsourced information on safe areas, women-only taxis) are closely linked to **empowering** women to get around securely in their everyday lives.

CASE STUDIES ADDRESSING WOMEN'S NEEDS:

3. Payment and ticketing
- ★ 3.5 T2E - Transport to Employment

4. New collective transport routes
- ★ 4.5 France le Busway

5. Sharing schemes
- 5.8 RideAustin
- 5.9 RideshareKC's Guaranteed Ride Home programme
- ★ 5.10 She Taxi

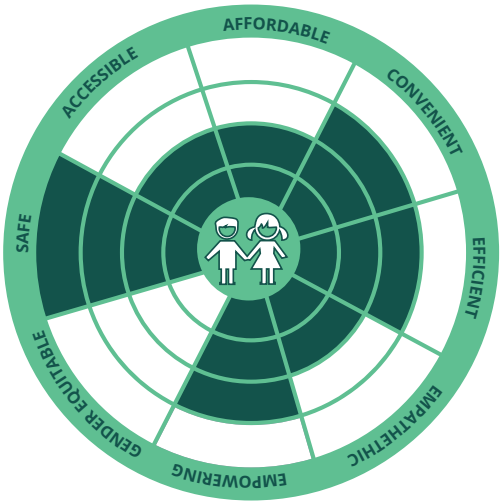
7. Information provision & Route planning
- 7.10 SafetiPin (score) - My SafetiPin, SafetiPin Track, SafetiPin Nite
- ★ 7.13 Wher app

9. Planning
- ★ 9.1 Gender mainstreaming in Vienna
- 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

[11] SARTRE4 project. (2012). Social Attitudes to Road Traffic Risk in Europe. Retrieved from ***http://www.attitudes-roadsafety.eu/***
[12] eurostat. (2019). Gender pay gap statistics. Retrieved from ***https://ec.europa.eu/eurostat/statistics-explained/index.php/Gender_pay_gap_statistics***

CHILDREN



Mobility needs:
Children (defined here as people under the age of 16) are generally heavily reliant upon their parents or other caregivers to fulfil their mobility needs, as they often have limited capacity for undertaking solo trips by public transport. When they do travel solo – which usually happens from around age 10 and up – **safety** is the primary concern. Safety measures, such as lighting, spatial layout, design, signage, emergency buttons and human surveillance support children's sense of security when navigating public transport.

Safety is also closely linked to **empowerment.** Children can gain a sense of empowerment in their mobility from participating in specially designed training courses (e.g. as part of a school trip) so they can become familiar with the vehicles, stations and people who are there to help them. This builds their capacities to get around confidently and independently. **Convenient, efficient** transport services are also essential for school-age children. Similar to older students, timetables should align with the start and end times of classes. Stops and stations should also be within walking distance of their school. Services should be efficient and reliable so that they minimize travel time to school. Long, inefficient routes mean that students have less time available to study in an environment conducive to learning and productivity, and it may in turn also impact the amount of sleep they're able to get.

Children definitively also benefit from **empathetic** approaches, such as having a friendly, approachable member of the public transport staff who is ready and able to assist them if they get lost or need help. Related to this is children's need for accessibility features, e.g. buttons, handles and information within reach and eyelevel, acoustic announcements at stations and aboard vehicles, etc.

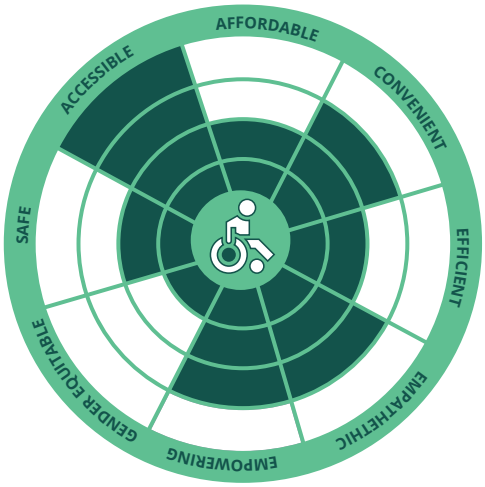
CASE STUDIES ADDRESSING CHILDREN'S NEEDS:

5. Sharing schemes
- ★ 5.5 GoKid Carpool app
- • 5.11 Taxi-Scuola

7. Information provision & Route planning
- ★ 7.11 Showing the way in Toulouse using pictograms

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

PHYSICALLY DISABLED



Mobility needs:
By definition, disability is the result of our interactions with our environment, so in fact it is not the person who is disabled, but the environment which is not ready to accommodate the way the person moves or interacts with it. This is true for physically, sensorially or cognitively disabled people.

People with physical disabilities (e.g. those who have trouble walking or require a wheelchair or walker to get around) require first and foremost physically **accessible** mobility services. The transport network, stations, vehicles and information should be barrier-free. This includes level platforms, low-floor buses, trams and trains, ticket machines, buttons and handles that are reachable from a wheelchair, and information on which stations, stops and vehicles are barrier-free. The primary goals are to provide accessible and **empowering** mobility services for physically disabled people. Travel training can help users to navigate transport systems more confidently, whether with or without someone accompanying them. Where it is not (yet) possible to provide accessible or empowering solutions, **empathetic** approaches can fill the gap. At stations and in vehicles that are not physically accessible, physically disabled people can also benefit from the presence of trained public transport staff who are ready and able to lend a helping hand. This can also contribute to a greater feeling of **safety** and security, especially since physically disabled people are prone to being targeted for harassment and theft and can tend to have a lower level of perceived safety due to their physical impairments.

Convenient collective mobility solutions are also required for this user group, particularly for the first and last mile to public transport stops, where door-to-door services are often required. **Efficient** services – with as few interchanges as possible – are also highly beneficial, also to make up for the longer amount of time needed to do their daily activities. Many transport systems currently require physically disabled people to take detours or inefficient routes due to lack of barrier-free access.

Many public transport systems across Europe offer physically disabled people more **affordable** access to public transport through reduced fares – and rightfully so, as their access to jobs is lower and they tend to have higher expenses than others for their mobility (e.g. equipment such as a wheelchair or walker).

CASE STUDIES ADDRESSING PHYSICALLY DISABLED PEOPLE'S NEEDS:

3. Payment and ticketing

- ★ 3.2 Accessible ticket machines in Stockholm
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- 3.4 Disabled persons Freedom Pass
- 3.6 TaxiCard scheme

4. New collective transport routes

- 4.1 Bürgerbuses in NRW
- ★ 4.2 De Bij Bus
- 4.3 De Witte Raaf (The white raven)
- 4.5 France le Busway
- 4.6 GO MOBIL
- 4.7 Mobuur neighbourhood service

5. Sharing schemes

- ★ 5.1 AVIRA wheelchair-accessible car sharing
- • 5.6 Haltetaxi Zeeland

6. Training & assistance

- ★ 6.1 Disability Awareness Training for Transport Operator Staff
- • 6.3 Manchester - travel training
- • 6.4 Travel Buddy

7. Information provision & Route planning

- • 7.2 APP&Town Compagnon
- ★ 7.3 Barrier-free digital journey planner
- and travel assistance for disabled and elderly in Berlin
- • 7.5 Blue Badge/Safe Journey Card/ Customer Injury Cards
- • 7.9 Route4U

8. Design

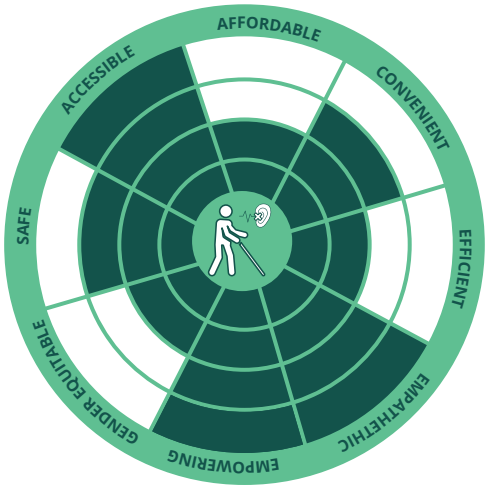
- ★ 8.1 Krakow - more accessible public transport stops
- • 8.3 Rennes wheelchair accessible public transport

9. Planning

- ★ 9.2 KOLLA (Kollektivtrafik för alla) project
- • 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

SENSORIALLY DISABLED



Mobility needs:
People with sensory disabilities (e.g. blind, visually impaired, deaf or hard of hearing) require first and foremost sensorially **accessible** mobility services. The transport network, stations, vehicles and information should be barrier-free for them. This includes clear visual and acoustic information at stations and in vehicles on timetables, next vehicles arriving, wayfinding and ticket machines, as well as apps ready for smartphone accessibility features.

The primary goals are to provide accessible and **empowering** mobility services for sensorially disabled people. Travel training can help users to navigate transport systems more confidently, whether with or without someone accompanying them. Where it is not (yet) possible to provide accessible or empowering solutions, **empathetic** approaches can play an important role. At stations and in vehicles that are not fully accessible, sensorially disabled people can also benefit from the presence of trained public transport staff who are ready and able to lend a helping hand. This can also contribute to a greater feeling of **safety** and security, especially as they are not able to detect different types of threats as acutely as sensory-abled people. This is also where **gender** considerations come into play, as women with sensory disabilities are especially prone to being targets of harassment and theft in public transport.

Convenient collective mobility solutions are also required for this user group, particularly for the first and last mile to public transport stops, where door-to-door services and tactile/ auditory wayfinding are often required. **Efficient** services – with as few interchanges as possible – are also highly beneficial, also to make up for the longer amount of time needed to do their daily activities.

Many public transport systems across Europe also offer sensorially disabled people more **affordable** access to public transport through reduced fares – and rightfully so, as their access to jobs tends to be lower.

CASE STUDIES ADDRESSING SENSORIALLY DISABLED PEOPLE'S NEEDS:

3. Payment and ticketing
- 3.2 Accessible ticket machines in Stockholm
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- ★ 3.4 Disabled persons Freedom Pass
- 3.6 TaxiCard scheme

4. New collective transport routes
- 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- ★ 4.3 De Witte Raaf (The white raven)
- 4.5 France le Busway

5. Sharing schemes
- ★ 5.7 ITNCountry

6. Training & assistance
- 6.1 Disability Awareness Training for Transport Operator Staff
- 6.3 Manchester - travel training
- ★ 6.4 Travel Buddy

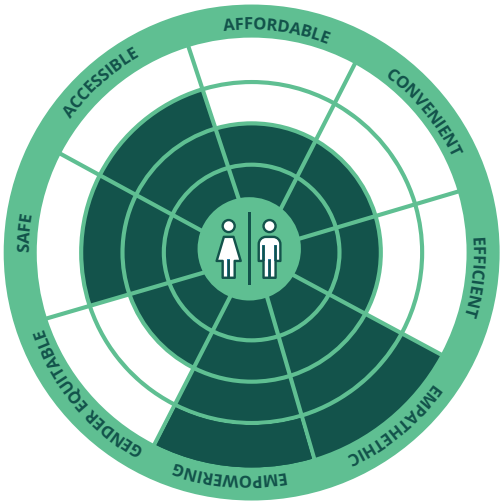
7. Information provision & Route planning
- 7.1 Aira app
- 7.3 Barrier-free digital journey planner and travel assistance for disabled and elderly in Berlin
- 7.4 Be My Eyes app
- 7.5 Blue Badge/Safe Journey Card/Customer Injury Cards
- 7.6 E-Paper
- 7.7 Guidance for visually impaired and barrier free access at all stations/stops in Prague by 2025
- ★ 7.8 Audio Atlas Project & Ways4Me
- 7.11 Showing the way in Toulouse using pictograms

8. Design
- ★ 8.3 Rennes wheelchair accessible public transport

9. Planning
- ★ 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

COGNITIVELY IMPAIRED



Mobility needs:
Cognitively impaired people (e.g. those with developmental delays, difficulties with information processing and memory impairments) are vulnerable to exclusion from transport because it is not feasible for them to travel on their own in a **safe** or secure manner. However, this also provides a good opportunity to **empower** users with creative initiatives to be included in society.

The travel needs of people with cognitive impairments are centred around personal security (such as dealing with public harassment or crime) and safety (being able to avoid physical danger or harm). Another concern is the **accessibility** of transit-related information. This group is reliant on accessibility of websites, in-transit signs and info boards, audio announcements not hindered by background noise, accessible ticketing machines, etc. Since this group navigates with adequate assistance such as an app, prior "travel training", or a combination of both, there is a need for **empathy** to build capacities between transport operators and the public to encourage their readiness to assist cognitively impaired users should they require it.

Users also need **convenient** and **efficient** trip chains that minimize their time and effort spent on journeys. A lesser mobility need includes affordability since most EU transport systems already offer reduced fare. However, this need would be as high as safety if reduced fares were removed, since many disabled people have a significantly lower income.

CASE STUDIES ADDRESSING COGNITIVELY IMPAIRED PEOPLE'S NEEDS:

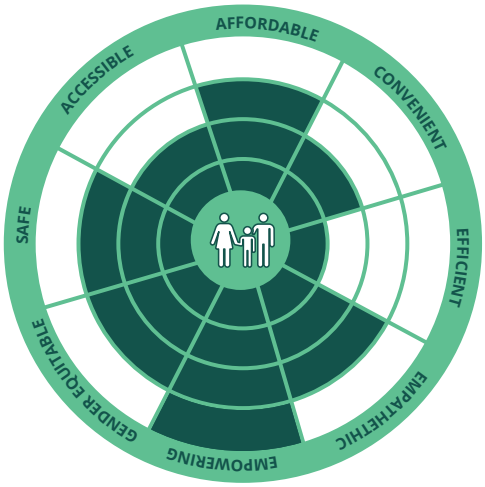
4. New collective transport routes
★ 4.5 France le Busway

6. Training & assistance
- 6.1 Disability awareness training for transport operator staff
★ 6.3 Manchester - travel training
- 6.4 Travel Buddy

7. Information provision & Route planning
★ 7.2 APP&Town Compagnon
- 7.5 Blue Badge/Safe Journey Card/Customer Injury Cards

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

MIGRANTS



Mobility needs:
The term "migrants" is used here to include both immigrants and refugees. To varying degrees, these groups face transport exclusion in their new environment because they have several mobility needs; primarily, the **availability** and **affordability** of using transport to overcome social and economic exclusion. Without possessing a valid driving licence, migrants are reliant on public transport or active modes, which may reduce options for accessing employment, education, legal institutions, and other facilities and services if there is not enough access to the transport network. From a **gender equity** perspective, this is particularly for mothers and care-givers. Many migrants who are refugees or have immigrated to find better economic opportunities live in more affordable areas in the surrounding or periphery of cities, which tend to have less frequent transport options. For migrants, the selected mode of travel is often influenced by the availability of information in their known language[13]. Therefore, solutions that **empower** migrants to understand how to navigate public transport are the most beneficial. Technology can also play a role here if it creates new degrees of freedom, e.g. apps which route planning and travel information in multiple languages. **Empathetic** approaches are also beneficial to this group, who may not yet have enough language or cultural knowledge to singlehandedly complete a journey independently. Friendly, helpful public transport staff can go a long way in helping migrants to feel welcome and able to navigate public transport.

Relatedly, feeling **safe** when using active modes to access a transport network is a high need of this group, particularly at night. Reliable and comfortable mobility options have great potential to **empower** this group and increase their sense of freedom and integration into a new society.

CASE STUDIES ADDRESSING MIGRANTS' NEEDS:

3. Payment and ticketing

- ★ 3.2 Accessible ticket machines in Stockholm
- • 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City

4. New collective transport routes

- ★ 4.5 France le Busway

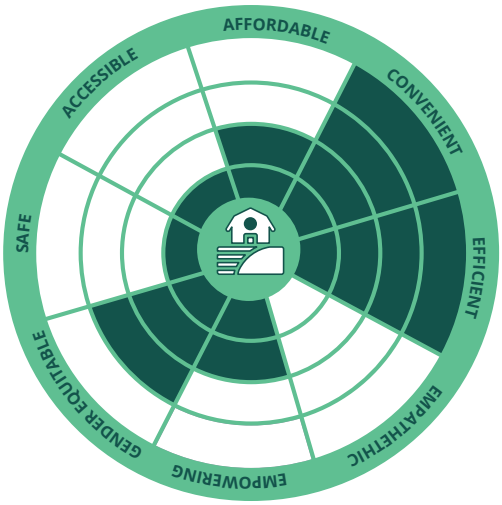
7. Information provision & Route planning

- • 7.11 Showing the way in Toulouse using pictograms
- ★ 7.12 The Welcome Card

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

[13]Wixey, S., Jones, P., Titheridge, H., & Christodoulou, G. (2003). Measuring Accessibility as Experienced by Different Socially Disadvantaged Groups. Transport Studies Group - University of Westminster. Retrieved from ***https://www.researchgate.net/publication/37183599_Measuring_accessibility_as_experienced_by_different_socially_disadvantaged_groups***

PEOPLE IN RURAL/REMOTE AREAS



Mobility needs:
People living in rural/ remote areas face transport exclusion due to the geography of functional urban areas, i.e. cities characterised by centralised business districts that are surrounded by suburban areas with lower access links to the rural areas on the further outskirts.

Bridging the rural-urban divide with enough **access** to transport networks has long been a challenge of transport operators, especially during off-peak travel times. Low levels of access impact the elderly, young people and women without a car or license by reducing their mobility options. Yet it is increasingly clear that the isolation of rural areas is itself a catalyst that encourages young people in particular to move into cities, resulting in depopulation and ageing of the rural population, which in turn exasperates the primary challenges of providing **convenient** and **efficient** transport options to a diminishing number of users.

This group is characterised by its shared travel need of **affordability**. Some residents have moved to rural areas not entirely by choice, but because they cannot afford to live closer to cities, which tend to be the main areas of economic, educational and leisure activity. Furthermore, travel between rural areas and cities tends to require longer trips by public transport, on less-popular routes, with a lower volume of passengers when compared to the more frequent and shorter (in time and distance) of inner-city journeys. Rural users of public transport therefore incur the high financial and time costs with low levels of transport options when they do not have access to a private vehicle. Particularly in ageing areas with elderly people who are on a tight budget, affordability is a major concern.

In rural areas, there also tends to be a lack of information or adequate communication of existing offers that residents can make use of. Therefore, solutions that improve access to such travel information and route planning would **empower** rural residents to make use of existing offers. Self-organized bus or car sharing services are also examples of ways that residents can empower themselves.

In terms of **gender equity** in rural areas, the multi-trip chains that women tend to make are much more difficult to do in such poorly served areas, especially for those who are living in a single-car household where the man would tend to be the primary user of the car. **Safety** is also a concern, as travelling at night or during off-peak hours on mostly empty vehicles can make especially women, elderly and young people feel unsafe.

CASE STUDIES ADDRESSING THE NEEDS OF PEOPLE LIVING IN RURAL/ REMOTE AREAS:

3. Payment and ticketing

- ★ 3.1 Public Private Partnership car and ride sharing
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- 3.5 T2E - Transport to Employment
- 3.8 Wheels2Work (W2W) scheme

4. New collective transport routes

- ★ 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- 4.3 De Witte Raaf (The white raven)

- 4.4 Formentera Taxibus
- 4.5 France le Busway
- 4.6 GO MOBIL
- 4.7 Mobuur neighbourhood service
- 4.8 Wensbus ("Wish bus") Limburg

5. Sharing schemes

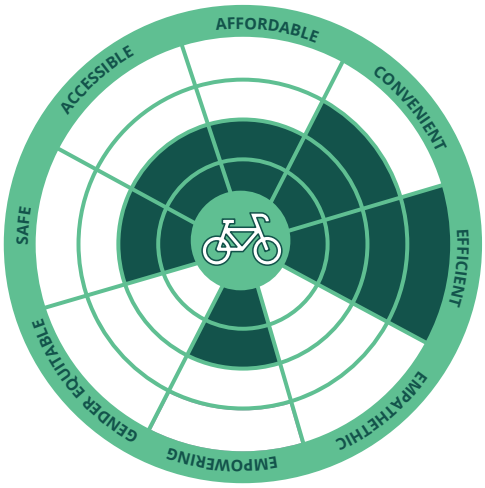
★ 5.2 CarSharing Pfaffenwinkel
- 5.3 Die Mitfahrerbank (The Passenger Bench)
- 5.5 GoKid Carpool app
- 5.6 Haltetaxi Zeeland
- 5.7 ITNCountry
- 5.10 She Taxi
- 5.11 Taxi-Scuola
- 5.12 Via (on demand ride share via app)

9. Planning

★ 9.2 KOLLA (Kollektivtrafik för alla) project

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

PEOPLE WITHOUT A DRIVER'S LICENSE



Mobility needs:
People without a driver's license are vulnerable to transport exclusion particularly in areas with insufficient public transport service, as they are either partly or entirely reliant on others with a driver's license to meet their mobility needs. They are also (entirely or partly) dependent on public transport and active modes to access employment, education, legal institutions, leisure activities and other facilities and services to lead a healthy and high-quality life. This group has an observed gender difference and age stratification, with women and children making up a higher proportion than adult men.

Their reliance on public transport and active modes necessitate their greatest travel needs: **convenience, efficiency,** and **affordability** which together determines the level of independence they can lead in their life. This is also the reason why the potential of inclusive transport options for this group is highly **empowering.** Without a driver's license, people have one less mobility option and have to know how to fulfil all their daily needs by other modes (e.g. public transport) – requires multi-trip chain planning, etc.

Since the group's demographics are skewed to women and children, their mobility options are also largely determined by the levels of **safety** experienced with a particular mode and/or route, and is therefore a significant travel requirement. Ridesharing is a popular solution that benefits people without a driver's license. However, in order for these solutions to be accessible for women, elderly and young people, steps need to be taken to support greater levels of perceived and actual safety.

CASE STUDIES ADDRESSING THE NEEDS OF PEOPLE WITHOUT A DRIVER'S LICENSE:

3. Payment and ticketing

★ 3.1 Public Private Partnership car and ride sharing
- 3.5 T2E - Transport to Employment

4. New collective transport routes

- 4.1 Bürgerbuses in NRW
- 4.5 France le Busway

★ 4.7 Mobuur neighbourhood service

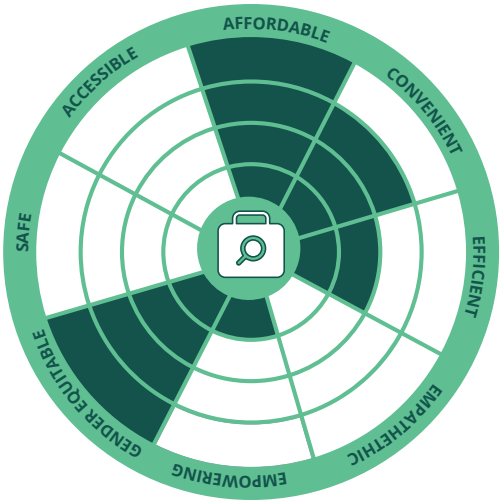
5. Sharing schemes

- 5.3 Die Mitfahrerbank (The Passenger Bench)

★ 5.8 RideAustin
- 5.9 RideshareKC's Guaranteed Ride Home programme

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

JOB SEEKERS



Mobility needs:
Job seekers are vulnerable to transport exclusion due to the important need of **convenient** and **affordable** transport options. Individuals who experience mobility limitations such as high mobility cost either in terms of time or money; a reliance upon perceived unsafe modes or routes; a change in situation such as moving house away from an urban area; or a company relocation to a peripheral urban area, have lost job opportunities at some point during their working lives.

Mobility limitations also restrict individuals from attaining new job opportunities in comparison to persons with access to a vehicle. Job seekers need to be able to access transport for trips during potentially areas. This group has a particularly pressing need to minimize any unnecessary time and financial costs already associated with job searching. Therefore, two of the most important travel needs for job seekers is a high level of **convenience** and **affordability** of the transport services, particularly so for individuals living in surrounding areas of the city or its periphery where public transport is less frequent and more expensive to reach the city centre.

Mobility solutions for job seekers especially need to support **gender equity** by responding to women's mobility needs, and especially women who are single mothers or the primary caregiver for their children or elderly relatives. As previously mentioned, women also still experience a 16% pay gap on average in the EU 28, which means that they especially require affordable mobility solutions to reach employment opportunities.

When inclusive solutions help meet these needs, job seekers are enabled and **empowered** to reclaim autonomy and more independence in their lives.

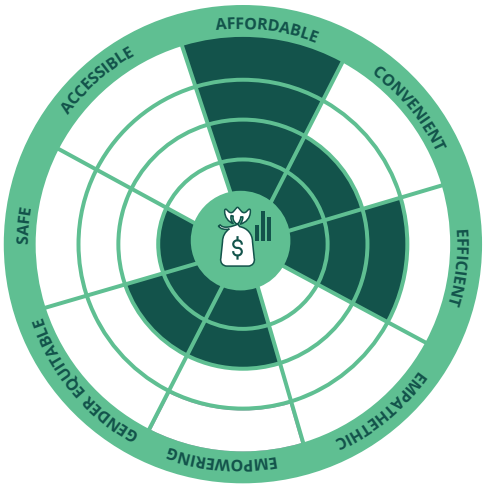
CASE STUDIES ADDRESSING THE NEEDS OF JOB SEEKERS:

3. Payment and ticketing
- 3.5 T2E - Transport to Employment
- ★ 3.8 Wheels2Work (W2W) scheme

4. New collective transport routes
- ★ 4.5 France le Busway

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

PEOPLE WITH A LOW INCOME



Mobility needs:
People with a low income are vulnerable to transport exclusion because of their financial limitations and geography. Low-income households tend to be in neighbourhoods that are spatially dislocated from the centralised services on which they depend, including public transport. Low-income people tend to be captive to the cheapest mode alternative and spend a significant proportion of their income on travel. The high costs of transport can trap low-income families in poverty, since the lack of transportation is a major disincentive to employment.[14]

The strong need for **affordability** is closely followed by **efficiency**, such as better network connectivity, public transport links, as well as **convenience**, which includes the need for higher levels of services particularly during off-peak times (e.g. to provide access to shift work).
In the case of people who have a low education level, do not speak the local language or are illiterate, training or information that helps them to better understand and navigate the transport system would **empower** them to be more autonomous.

Especially in low-income single-car households, priority use of the vehicle is typically given to the man, pointing to the need for not only affordable, but also **gender equitable** mobility solutions.

CASE STUDIES ADDRESSING THE NEEDS OF PEOPLE WITH LOW INCOME:

3. Payment and ticketing
- 3.1 Public Private Partnership car and ride sharing
- ★ 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- 3.5 T2E - Transport to Employment
- 3.8 Wheels2Work (W2W) scheme

4. New collective transport routes
- 4.3 De Witte Raaf (The white raven)
- ★ 4.4 Formentera Taxibus
- 4.5 France le Busway
- 4.7 Mobuur neighbourhood service

5. Sharing schemes
- 5.2 CarSharing Pfaffenwinkel
- 5.4 Go Go Grandparent
- 5.8 RideAustin
- ★ 5.9 RideshareKC's Guaranteed Ride Home programme

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at **http://www.h2020-inclusion.eu/resources/publications/**

[14] Zhao, P. (2013). The Impact of Urban Sprawl on Social Segregation in Beijing and a Limited Role for Spatial Planning. Tijdschrift Voor Economische En Sociale Geografie, 104(5), 571–587. doi: 10.1111/tesg.12030

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5

Mind the Mobility gaps

When a transport system does not sufficiently meet a user's needs, this constitutes a mobility gap; or, conversely: A window of opportunity for innovative solutions to improve the inclusivity of the transport system. This chapter delves into the users' experience, connecting mobility gaps with the most impacted users and the eight principles that can help to fill the gaps. The focus is on the actions that can be taken by those who are responsible for any of these parts of the transport system.

VEHICLE DESIGN

POTENTIAL GAPS IN VEHICLE DESIGN	MOST SEVERELY AFFECTED USER GROUP(S)
Access into the vehicle (e.g. level platforms, low-floor vehicles)	Elderly, disabled, women with baby strollers
Accessibility while on the vehicle (e.g. provision of space, audio/visual/tactile information)	Elderly, disabled, women with baby strollers
Safety (e.g. lighting, security cameras, female only cars)	Elderly, women, children
Facilities (e.g. toilet)	Elderly, disabled
Probability of getting a seat (particularly on low frequency services)	Elderly, pregnant women

The design of cars, vans, buses, trams, trains and other collective mobility vehicles can greatly contribute to **accessibility, safety** and **gender equity** in transport systems. Entry into the vehicle and adequate space for e.g. wheelchairs and prams mean that elderly, disabled people and caregivers of any gender can comfortably and confidently use the service. Security features such as lighting and security cameras also enable these groups as well as children to use the service.

To a lesser degree, vehicle design can contribute to **empowering** users, as safe, barrier-free access means that these user groups do not need to rely on help from others – or forego using the mode in the first place.

CASE STUDIES:

4. New collective transport routes

- 4.2 De Bij Bus
- 4.3 De Witte Raaf (The white raven)
- ★ 4.5 France le Busway
- 4.7 Mobuur neighbourhood service

5. Sharing schemes

- ★ 5.1 AVIRA wheelchair-accessible car sharing
- 5.4 Go Go Grandparent
- 5.10 She Taxi

8. Design

- ★ 8.2 Reading's 'Claret Spritzer' student bus
- 8.3 Rennes wheelchair accessible public transport

9. Planning

- ★ 9.2 KOLLA (Kollektivtrafik för alla) project

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

STATIONS

POTENTIAL GAPS AT STATIONS	MOST SEVERELY AFFECTED USER GROUP(S)
Parking (bicycles, kick-scooters, shared and private vehicles)	Young people, Families with young children
Presence of seating and shelter at stations	Elderly, Disabled, Women with young children
Physical accessibility (barrier-free access, elevators, escalators)	Elderly, Disabled, Women with babies/ young children
Audio/visual/tactile information and guidance	Disabled, Elderly, Migrants (for those learning the language, pictures and symbols can help for clarity)
Safety (e.g. lighting, security cameras, utilising natural surveillance, encouraging land uses which increase human activity and reduce feeling of vulnerability e.g. shops, housing)	Elderly, Women, Young people
Ticket machines (at all stops or only hubs? On vehicles too?)	All
Location of facilities (e.g. not too busy or too isolated - no high walls and tight corners; improve accessibility of bus stops by not having them alongside busy roads)	Elderly, Disabled, Children, Women
Waiting environment that is clean, well-kept and stimulating	Women, Children

The **safety, accessibility** and **convenience** of stations' design and location are of main importance so that they are usable for people who are vulnerable to exclusion from the transport system. Lighting, security cameras, a lively appearance and the presence of public transport staff can contribute to a sense of safety. Barrier-free access (e.g. ramps, escalators, elevators) and audio/visual/tactile information and ticket machines contribute to stations' accessibility. Stations should also be conveniently placed within walking distance of users prone to mobility exclusion, e.g. schools, nursing homes, hospitals, major centers of employment. The presence of bike parking and "pedestrian parking" (i.e. seating) further contributes to users' ability to use a station.

CASE STUDIES:

4. New collective transport routes

- ★ 4.5 France le Busway

7. Information provision & Route planning

- ★ 7.11 Showing the way in Toulouse using pictograms

8. Design

- ★ 8.1 Krakow - more accessible public transport stops
- 8.3 Rennes wheelchair accessible public transport

9. Planning

- ★ 9.1 Gender mainstreaming in Vienna
- 9.2 KOLLA (Kollektivtrafik för alla) project
- 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

NETWORK DENSITY & CONNECTIVITY

POTENTIAL GAPS IN NETWORK DENSITY & CONNECTIVITY	MOST SEVERELY AFFECTED USER GROUP(S)
Distance between stations in relation to origins and destinations	All
Connectivity within the region, especially to urban areas (related to intermodality; see the following section)	All

Higher density networks reduce the effort and/or time for vulnerable users to access a transport service, thereby making them more **convenient** to use for daily trips. Network density tends to be sparser in rural areas, particularly those with difficult terrain and low population. This can result in poor connectivity and poor access to public transport resulting in isolation particularly for people without access to a car such as the elderly, children and students. Distance between stations/stops can lead to gaps in public transport provision as people will be reluctant or unable to walk long distances in all weather. Connectivity can also be an issue with urban underground public transport lines; sometimes people have to walk considerable distances between platforms during a change from one line to another.

Efficient connecting services that minimise the need to change vehicles and support easy intermodal connections can enable rural and urban peripheral areas to access the urban areas via feeder services. Supporting intermodality in the transport network also supports **gender equitable** transport, as women tend to make complex multi-trip chains more often than men.

CASE STUDIES:

3. Payment and ticketing

- ★ 3.1 Public Private Partnership car and ride sharing
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- 3.5 T2E - Transport to Employment
- 3.8 Wheels2Work

4. New collective transport routes

- 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- 4.4 Formentera Taxibus
- 4.5 France le Busway
- 4.6 GO MOBIL
- 4.7 Mobuur neighbourhood service
- ★ 4.8 Wensbus ("Wish bus") Limburg

5. Sharing schemes

- 5.1 AVIRA wheelchair-accessible car sharing
- 5.2 CarSharing Pfaffenwinkel
- 5.4 Go Go Grandparent
- 5.6 Haltetaxi Zeeland
- ★ 5.8 RideAustin
- 5.11 Taxi-Scuola
- 5.12 Via (on demand ride share via app)

8. Design

- ★ 8.2 Reading's 'Claret Spritzer' student bus

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

INFORMATION PROVISION

POTENTIAL GAPS IN INFORMATION PROVISION	MOST SEVERELY AFFECTED USER GROUP(S)
Real-time travel information (e.g. apps, live updates on a screen at stations, destination and next stop information on screen on bus and announcements)	All
Offline maps and route information (e.g. posted at stops, paper-based)	All
Effective provision of packages of information/ marketing/ service personnel to give passengers confidence to travel	All

The information provided about collective mobility services (e.g. offline and online maps, timetables, route planning) should first and foremost be **accessible** in audio, visual and tactile formats. In particular, real-time travel information, e.g. apps, live updates on a screen at stations, destination and next stop information on screen on bus and announcements, supports a **convenient** service. It also helps users to feel more secure and **empowered** during their journeys, as they're not left in the dark about when the next vehicle will arrive, and therefore have the opportunity to make a decision for themselves about alternate routes in case of major delays. However, this information tends to be concentrated in urban areas with good levels of service. The more remote areas with less frequent service often lack both online and offline information. From the point of view of a person with a disability or a lone traveller, this lack of information is a significant barrier.

CASE STUDIES:

3. Payment and ticketing

★ 3.2 Accessible ticket machines in Stockholm

5. Sharing schemes

★ 5.4 Go Go Grandparent

6. Training & assistance

★ 6.1 Disability Awareness Training for Transport Operator Staff
- 6.2 Donostia - public transport for over 60s
- 6.3 Manchester - travel training
- 6.4 Travel Buddy

8. Design

★ 8.3 Rennes wheelchair accessible public transport

9. Planning

★ 9.3 Wiener Linien Barrier free mobility

7. Information provision & Route planning

- 7.1 Aira app
- 7.2 APP&Town Compagnon

★ 7.3 Barrier-free digital journey planner and travel assistance for disabled and elderly in Berlin

- 7.4 Be My Eyes app
- 7.5 Blue Badge-Safe Journey Card-Customer Injury Cards
- 7.6 E-Paper
- 7.7 Guidance for visually impaired and barrier free access at all stations/stops in Prague by 2025
- 7.8 Audio Atlas Project & Ways4Me
- 7.9 Route4U
- 7.10 SafetiPin (score) - My SafetiPin, SafetiPin Track, SafetiPin Nite
- 7.11 Showing the way in Toulouse using pictograms
- 7.12 The Welcome Card
- 7.13 Wher app

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

FREQUENCY OF SERVICE

POTENTIAL GAPS IN FREQUENCY OF SERVICE	MOST SEVERELY AFFECTED USER GROUP(S)
Weekdays	Young people, Women, Elderly
Nights, weekends	Young people
Compatibility of timing within network (for making intermodal/ multi-seat journeys)	Women, job seekers
Long waiting times	Elderly, Disabled, Women with young children

Transport services in urban areas are often planned around an assumption that a service frequency of around every 15 minutes or less is an optimum frequency, enabling the passenger to simply turn up. Services in rural areas are inevitably costly to run at this level and in these areas the lower level of service can be a gap in provision for many passengers.

In terms of transport service **convenience**, a gap in service frequency on weekdays can be particularly inconvenient to young people getting to education and work destinations, children getting to school and clubs, women making multiple trips with young children and covering family needs of shopping, taking children to school, medical checks, etc. Buses in rural areas also often run less frequently in the evening and at weekends or are even non-existent at these times.

Compatibility of timing of services within a network for multimodal or multi-trip journeys is important and any long waits between services are likely to be a **safety** (and **gender equity**) barrier to women, elderly and disabled people (who can feel insecure waiting for a long time) and also job seekers, who need to be able to reach potential work in any possible destination.

More **efficient**, reasonable travel times can **empower** users to reach services, opportunities and activities that support their efforts to meet daily needs and life goals.

CASE STUDIES:

3. Payment and ticketing

- ★ 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City

4. New collective transport routes

- 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- ★ 4.4 Formentera Taxibus
- 4.5 France le Busway
- 4.7 Mobuur neighbourhood service
- 4.8 Wensbus ("Wish bus") Limburg

5. Sharing schemes

- 5.3 Die Mitfahrerbank (The Passenger Bench)
- 5.4 Go Go Grandparent
- 5.5 GoKid Carpool app
- 5.6 Haltetaxi Zeeland
- ★ 5.7 ITNCountry
- 5.8 RideAustin

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

RELIABILITY OF SERVICE

POTENTIAL GAPS IN RELIABILITY OF SERVICE	MOST SEVERELY AFFECTED USER GROUP(S)
Frequency and total duration of delays	All
Timely and adequate information on delays	All
Up to date timetables available	All

When delays to a service are frequent, then passengers perceive the service to be unreliable. Passengers may tolerate an occasional delay but once this becomes frequent, the impact can become intolerable for people travelling to work and also for vulnerable users, in particular the elderly, disabled and those with young children who may find waiting physically uncomfortable and also stressful and unpleasant. Long waiting times at stops also pose a **safety** concern for these groups. Mobility services that are reliable are therefore much more **convenient** and **efficient** for vulnerable users.

When it is not possible to mitigate delays, timely and adequate information on delays can help people plan an alternative route or time to travel. Service reliability therefore also has a direct impact on intermodality, which most severely affects physically disabled people. If a rerouting is necessary because of a missed connection, the options become far fewer if the next vehicle or interchange is not barrier-free. This reduces the ability of the transport service to **empower** vulnerable users to be able to get around confidently.

CASE STUDIES:

3. Payment and ticketing
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- ★ 3.5 T2E - Transport to Employment
- 3.8 Wheels2Work

4. New collective transport routes
- 4.1 Bürgerbuses in NRW
- 4.2 De Bij Bus
- 4.4 Formentera Taxibus
- ★ 4.5 France le Busway
- 4.7 Mobuur neighbourhood service
- 4.8 Wensbus ("Wish bus") Limburg

5. Sharing schemes
- 5.1 AVIRA wheelchair-accessible car sharing
- 5.2 CarSharing Pfaffenwinkel
- 5.4 Go Go Grandparent
- 5.5 GoKid Carpool app
- 5.6 Haltetaxi Zeeland
- 5.7 ITNCountry
- 5.8 RideAustin
- ★ 5.9 RideshareKC's Guaranteed Ride Home programme
- 5.10 She Taxi
- 5.11 Taxi-Scuola
- 5.12 Via (on demand ride share via app)

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

TICKETING & PAYMENT SYSTEM

POTENTIAL GAPS IN TICKETING AND PAYMENT SYSTEMS	MOST SEVERELY AFFECTED USER GROUP(S)
Price (overall, schemes for students/ commuters/ low-income/ elderly, disabled people, etc.)	Low-income, Elderly, Young people, Disabled people
Payment system (e.g. existence of accessible ticket booths, machines, apps, integrated ticketing)	All

Various pricing schemes exist across the EU to enable students, job seekers, those on a low income, the elderly and young people to travel at **affordable** reduced rates or for free. However, these are not universal and the availability of these free passes and reductions varies from country to country and from municipality to municipality. This limitation in ticketing and payment can geographically limit these user groups' area of travel. Therefore, greater integration of ticketing and payment schemes would help to **empower** these groups to make full use of transport systems.

With regard to **accessibility**, ticket machines and ticket validation machines at stations and stops should be at varied heights to suit wheelchair passengers. They should also provide audio, visual and tactile information to accommodate sensorially disabled people. Smart ticketing bought through well-designed online services is becoming increasingly popular and is a **convenient** system for many. Other ticketing options for those without access to a computer, smartphone or with limited digital literacy help to bridge the gap they face. Overall, clear and accessible communication is needed about where to buy a ticket, if, how and when it should be validated. This further supports vulnerable users' ability to navigate the transport system with confidence.

CASE STUDIES:

3. Payment and ticketing

- 3.1 Public Private Partnership car and ride sharing
- ★ 3.2 Accessible ticket machines in Stockholm
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- 3.4 Disabled persons Freedom Pass
- 3.6 TaxiCard scheme
- 3.7 UK free public transport for the elderly
- 3.8 Wheels2Work

4. New collective transport routes

- ★ 4.3 De Witte Raaf (The white raven)
- 4.7 Mobuur neighbourhood service

5. Sharing schemes

- ★ 5.7 ITNCountry
- 5.9 RideshareKC's Guaranteed Ride Home programme

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

INTERMODALITY

POTENTIAL GAPS IN INTERMODALITY	MOST SEVERELY AFFECTED USER GROUP(S)
Integration of mobility services (e.g. across modes, across the city and region)	All (but particularly Women, job seekers)
Presence and functionality of multimodal hubs	All (but particularly Women, job seekers)
Links to shared transport that feed into public transport	Elderly, Disabled

Well designed multimodal hubs are the pivot points of any with multi-trip chains and therefore the cornerstone of an inclusive transport network. They particularly support and **empower** women and job seekers, while providing more convenient services for all. Shared transport, including car share and bike share, also provides more links into the network and is more inclusive, enabling more people to connect with the public transport network, especially those outside of an urban public transport network.

The quality of service provision and **accessibility** of interchanges and connecting routes supports physically, sensorially and cognitively disabled people's ability to make intermodal journeys. Barrier-free access, as well as audio, visual and tactile information are therefore necessary at all interchanges and on all connecting routes.

Empathetic approaches can be particularly beneficial at multimodal hubs, as transport staff could be trained to assist people with reduced mobility, impairments or language barriers that might make it more difficult for them to manage multi-seat rides entirely independently. Also the general public should be enabled and encouraged to provide assistance when required.

CASE STUDIES:

3. Payment and ticketing
- 3.1 Public Private Partnership car and ride sharing

4. New collective transport routes
- 4.1 Bürgerbuses in NRW
- ★ 4.6 GO MOBIL

6. Training & assistance
- 6.2 Donostia - public transport for over 60s
- 6.3 Manchester - travel training
- ★ 6.4 Travel Buddy

7. Information provision & Route planning
- 7.1 Aira app
- 7.3 Barrier-free digital journey planner and travel assistance for disabled and elderly in Berlin
- 7.4 Be My Eyes app
- 7.6 E-Paper
- ★ 7.8 RATP (Paris) Audio Atlas Project
- 7.8 Ways4all (also operated under this umbrella are Ways4Me, Aim4It)
- 7.11 Showing the way in Toulouse using pictograms

9. Planning
- ★ 9.1 Gender mainstreaming in Vienna

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

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6

Principles & Solutions

Each of the eight principles (accessibility, affordability, convenience, efficiency, empowerment, empathy, gender equity and safety) should be kept in mind when responding to different user needs and mobility gaps. This section provides guidance on the types of measures that have proven to be effective to promote each principle. Example good practice case studies are also provided for inspiration. These include improvements to conventional public transport, innovations around collective/shared mobility and also some tailored individual services such as ride hailing.

This chapter – in contrast with previous section – is cross-cutting, in that anyone who works in the transport sector can and should adopt these principles and has a potential role to play in implementing each of them.

ACCESSIBLE

The main aim of accessible mobility solutions is to provide **barrier-free access** to transport services. This relates not only to the **design of vehicles and stations** (e.g. low-floor buses, tactile pavement, audio announcements), but also the **ticketing and payment systems**, and information provided about the services (e.g. audio and visual announcements, information available in several languages and/or displayed pictorially). ICT can be a useful tool to foster accessible intermodality by providing live and up-to-date information about the next service, whether the vehicle and stops are barrier-free, as well as route planning according to accessibility needs.

Most affected users: physically disabled, sensorially disabled, cognitively disabled, elderly

Source: Trafikförvaltningen Stockholms Läns Landsting

CASE EXAMPLE:
3.2 Accessible ticket machines (Stockholm)

Not everyone is always able to validate, activate or change their ticket when there is no train conductor on board. To address this, an accessible ticket machine was designed together with the provider and the organisations for disabled people. The accessible ticket machine is able to activate, change and primarily validate transport tickets. Touch screens with high contrast, tactile buttons with embossed printing, spoken information, different height, guide path to the ticket machine and multiple languages are provided to impaired users.

CASE STUDIES ON IMPROVING ACCESSIBILITY:

3. Payment and ticketing
- ★ 3.2 Accessible ticket machines in Stockholm

4. New collective transport routes
- ★ 4.2 De Bij Bus
- • 4.3 De Witte Raaf (The white raven)
- • 4.5 France le Busway

5. Sharing schemes
- ★ 5.1 AVIRA wheelchair-accessible car sharing

6. Training & assistance
- ★ 6.2 Donostia - public transport for over 60s

7. Information provision & route planning
- ★ 7.3 Barrier-free digital journey planner and travel assistance for disabled and elderly in Berlin
- • 7.12 The Welcome Card

8. Design
- • 8.1 Krakow - more accessible public transport stops
- ★ 8.3 Rennes wheelchair accessible public transport

9. Planning
- • 9.1 Gender mainstreaming in Vienna
- ★ 9.2 KOLLA (Kollektivtrafik för alla) project
- • 9.3 Wiener Linien Barrier free mobility

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

AFFORDABLE

While transport systems should be affordable for everyone in society, special consideration should be given to people who are on a fixed or low income. **Public subsidies** play an important role by lowering or eliminating the ticket price, based on need. Special care should be given to the design and promotion of such solutions, in an effort to boost public acceptance. This requires **clear communication** targeted to the people who can benefit the most from them. **Bureaucracy related to accessing affordable offers should also be kept to a minimum.** This includes simple, straightforward ticketing and payment systems. Furthermore, providing sufficient, reasonably priced collective mobility solutions can **free people from dependency on the private car** and thereby contribute to affordability, especially in rural and peri-urban areas.

Most affected users: elderly, job seekers, low-income, migrants, students/ youth

CASE EXAMPLE:
3.4 Disabled persons Freedom Pass (London)

The travel pass for disabled people allows free travel on most journeys via train, underground, tram, bus, or Docklands Light Railway, across London and free bus journeys nationally. It is subsidised by the UK national government. With this, the use of public transport off peak is facilitated for disabled people.

Source: https://www.londoncouncils.gov.uk/services/freedom-pass/disabled-persons-freedom-pass

CASE STUDIES ON IMPROVING AFFORDABILITY:

3. Payment and ticketing
- 3.1 Public Private Partnership car and ride sharing
- 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City
- ★ 3.4 Disabled persons Freedom Pass
- 3.5 T2E - Transport to Employment
- 3.6 TaxiCard scheme
- 3.7 UK free public transport for the elderly
- 3.8 Wheels2Work (W2W) scheme

4. New collective transport routes
- ★ 4.3 De Witte Raaf (The white raven)
- 4.4 Formentera Taxibus
- 4.7 Mobuur neighbourhood service

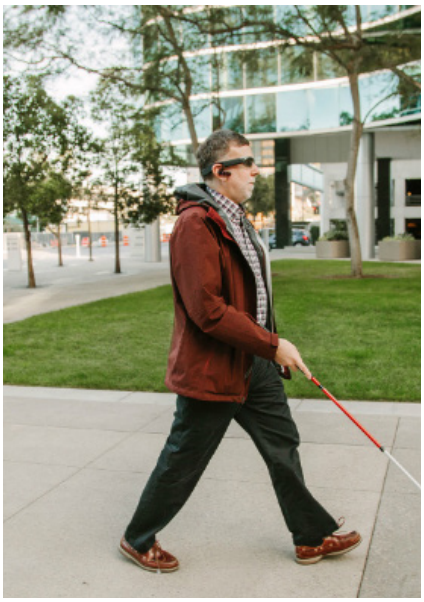
5. Sharing schemes
- ★ 5.2 CarSharing Pfaffenwinkel
- 5.4 Go Go Grandparent
- 5.8 RideAustin
- 5.9 RideshareKC's Guaranteed Ride Home programme
- 5.10 She Taxi

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

CONVENIENT

Convenience relates directly to the **availability and reliability of transport services and feeder systems at the neighbourhood level** (e.g. the first and last mile and the availability of services on nights, weekends and holidays). Stations should be safely and conveniently placed **within walking distance of users prone to mobility exclusion**, including at schools, nursing homes, hospitals and major centres of employment. The presence of bike parking and "pedestrian parking" (i.e. seating) further contributes to users' abilities to use a station. Information provision, such as real-time travel information via apps, signs and announcements, also make a mobility service more convenient. Long waiting times and frequent delays should be avoided. And lastly, the **ticketing and payment system should be within reach for all users**, e.g. accessible ticket machines and booths present at the stations, ticket purchase available via app, and integrated ticketing.

Most affected users: children, elderly, job seekers, people without a driver's license, physically and sensorially disabled, rural residents



Source: https://www.targetcenter.com/assets/img/AIRA-85807d4367.jpg

CASE EXAMPLE
7.1 Aira App (USA - nationwide)

Using augmented reality, Aira connects people who are blind or have low vision to a trained professional agent who acts as a guide during everyday activities, providing hands-free assistance at the touch of a button. Users are instantly connected with a sighted professional agent who delivers visual assistance anytime and anywhere. It supports blind people in managing their daily needs and enables them to access public transport services by guiding them through the system.

CASE STUDIES ON IMPROVING CONVENIENCE:

3. Payment and ticketing
- ★ 3.1 Public Private Partnership car and ride sharing

4. New collective transport routes
- ★ 4.1 Bürgerbuses in NRW

5. Sharing schemes
- ★ 5.11 Taxi-Scuola

7. Information provision & route planning
- ★ 7.1 Aira app
- • 7.6 E-Paper

8. Design
- ★ 8.1 Krakow - more accessible public transport stops

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

EFFICIENT

Everyone wants to get from point A to point B as quickly and smoothly as possible. However, many user groups find that they need to allot extra time and effort during their journeys on collective modes of transport due to the design of the transport system. **New and on-demand transport services – often with barrier-free vehicles** – can provide more direct routes and door-to-door rides for people who previously did not have access due to low network density and connectivity. **Service timetables should also enable intermodality** by aligning with the timetables of connecting services. This can enable people living in rural and peri-urban areas to access the urban areas via feeder services.

Most affected users: children, people with a low-income, people without a driver's license, rural residents, students/ youth

CASE EXAMPLE
4.8 Wensbus/ "Wish bus" (Limburg, Netherlands)

The Wensbus (or Wensauto) is an additional on-demand volunteer transport service supported by the Province of Limburg, NL. The service uses cars or minibuses that transport between 4 and 8 people. The Wensbus runs in areas where there is no public transport left due to public budgets cuts. The service can be considered as a complement to the existing public transport. Wensbus is aimed primarily at older residents who do not have a car or a driving licence.

Source: https://www.gelderlander.nl/maasland/wensbus-mill-rijdt-vanaf-september~ac6f3614/121144762/

CASE STUDIES ON IMPROVING EFFICIENCY:

3. Payment and ticketing
- ★ 3.3 Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City

4. New collective transport routes
- • 4.4 Formentera Taxibus
- • 4.5 France le Busway
- ★ 4.8 Wensbus ("Wish bus") Limburg

5. Sharing schemes
- • 5.11 Taxi-Scuola
- ★ 5.12 Via (on demand ride share via app)

7. Information provision & Route planning
- ★ 7.12 The Welcome Card

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

EMPOWERING

Mobility solutions that empower have the explicit aim of **building vulnerable users' capacities to navigate the transport system confidently** in their everyday lives. Sometimes this manifests in a training course so that certain user groups can become familiar with the collective transport system. Furthermore, **safe, barrier-free access to stations and vehicles** means that these user groups do not need to rely on help from others – or forego using the mode in the first place. **Real-time travel information** also helps users to feel more secure and empowered during their journeys and gives them the opportunity to make a decision for themselves about alternate routes in case of major delays. To this end, ICT-based solutions can play a key role.

Most affected users: children, cognitively disabled, elderly, migrants, physically and sensorially disabled, women

CASE EXAMPLE
5.10 She Taxi (Kerala, India)

She Taxi is a state-owned taxi service that provides safe rides and door-to-door services for women, with only female drivers. It aims to offer a secure, affordable transport service for women (especially for those travelling at night) and to create more jobs for women. The service is bookable by calling a phone number. The customer care centre manages and organises the bookings and the related trips.

Source: REUTERS

CASE STUDIES ON BOOSTING EMPOWERMENT:

3. Payment and ticketing
- ★ 3.8 Wheels2Work

4. New collective transport routes
- ★ 4.3 De Witte Raaf (The white raven)
- • 4.7 Mobuur neighbourhood service

5. Sharing schemes
- ★ 5.10 She Taxi

6. Training & assistance
- • 6.2 Donostia - public transport for over 60s
- ★ 6.3 Manchester - travel training
- • 6.4 Travel Buddy

7. Information provision & Route planning:
- • 7.2 APP&Town Compagnon
- • 7.10 SafetiPin (score) - My SafetiPin, SafetiPin Track, SafetiPin Nite
- ★ 7.12 The Welcome Card

8. Design
- ★ 8.1 Krakow - more accessible public transport stops

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

EMPATHETIC

Sometimes, mobility options would be more accessible if there were some kind of "helping hand" (literally or metaphorically) to support vulnerable users. This requires **building awareness, understanding and capacities among the customer-facing staff** of a mobility provider. Empathetic solutions can also support intermodality, for example when transport staff are trained to assist people with reduced mobility, impairments or language barriers that might make it more difficult for them to manage multiple vehicle changes independently. Clearer and more accessible information can also be provided by **guides either in-person or via an app.**

Most affected users: cognitively disabled people, elderly, migrants, physically and sensorially disabled

CASE EXAMPLE
6.1 Disability Awareness Training for Transport Operator Staff (Germany, UK, New Zealand)

The training provided to transport operator staff fosters greater awareness for passengers with impairments and understanding of their needs. This is achieved through the provision of information, guidelines and trainings for front-line transport operator service personnel (e.g. bus drivers) and personnel at other contact points (e.g. information counters). In addition to providing information and training, transport operators were engaged in a continuous dialogue with advocacy groups on-location (e.g. in busses, at stations) or took courses that focus on the needs of people with specific disabilities.

Such disability awareness efforts enable transport staff to identify impairments and provides them with the right knowledge and skill set to support where necessary. Transport operator staff gets knowledge about potential barriers users may experience and are ready to help vulnerable groups.

The training courses address questions such as: "What is the best way to help a person in a wheelchair into a bus? What to do if a person in a wheelchair is waiting at a bus stop, but the dedicated space in the bus for wheelchairs is already occupied by two prams?"

CASE STUDIES ON PROVIDING EMPATHETIC APPROACHES:

6. Training & assistance
- ★ 6.1 Disability awareness training for transport operator staff

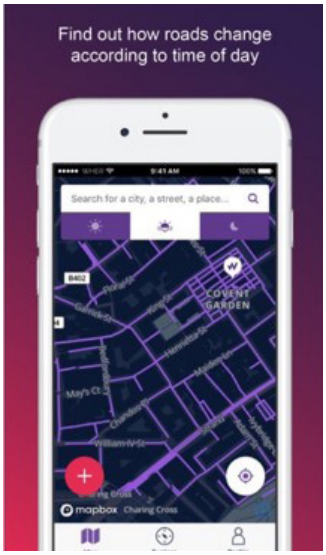
7. Information provision & Route planning
- 7.1 Aira app
- ★ 7.4 Be My Eyes app
- 7.8 Audio Atlas Project & Ways4Me
- 7.12 The Welcome Card

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

GENDER EQUITABLE

A person's ability to make use of a transport system to reach opportunities should not depend on whether they are born male or female. Therefore, measures that improve and facilitate **intermodality, accessibility and safety** are primary considerations for gender equity. **Supporting intermodality** in the transport network also supports gender equitable transport, as women tend to make multi-trip chains more often than men. **Safety considerations at stations and on vehicles** such as lighting, security cameras and security personnel, as well as **greater service frequency (and therefore shorter waiting times at stations)** can also enable people of all genders and orientations to securely navigate transport systems. Pregnant women can also benefit from **designated seats on public transport**, and many women can benefit from **barrier-free design** and areas on vehicles for wheelchairs and prams, as women still more often act as caregivers.

Most affected users: job seekers, migrants, rural residents, women



Source: Apple App Store, https://itunes.apple.com/de/app/wher/id1373678860?l=en&mt=8)

CASE EXAMPLE
7.13 Wher App (Italy & UK)

Wher is an interactive city map app designed to address safety concerns of women when they are out and about. It is based on crowd-sourced safety perceptions of women themselves. Women as a collective, review their city streets and suggest safer travel routes based on their experiences. Safety of different streets are depicted on maps that are categorized by colour according to safety perceptions. It enables women to travel safely and securely in areas that are unfamiliar to them.

CASE STUDIES ON IMPROVING GENDER EQUITY:

5. Sharing schemes
★ 5.10 She Taxi

7. Information provision & Route planning
★ 7.13 Wher app

9. Planning
★ 9.1 Gender mainstreaming in Vienna

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

SAFE

Perceived and actual safety are equally important, as they both can either enable or inhibit certain groups from using a mobility service. Solutions that **prevent accidents, theft, violence and harassment** help to improve the situation. These include security features such as lighting and security cameras, as well as the presence of public transport staff. Stations should not be too busy or too isolated, and services should be frequent and reliable to avoid long waits, which can make certain user groups feel insecure and unsafe.

Most affected users: children, cognitively disabled people, elderly, migrants, sensorially disabled, women

CASE EXAMPLE
5.5 GoKid Carpool App (USA – nationwide)

GoKid Connect is a software platform, website and app that simplifies the planning of school carpools where buses and public transportation are not available. This "schoolpool" program is available for schools to help parents connect, organise carpools, and get kids to school whenever transportation is difficult. It is a safe possibility for children to go to school, because only parents (with kids) who know each other or have children at the same school are allowed to drive. There are no external drivers allowed.

Create a carpool berween 2 points

Invite friends to the carpool

Friends add their location

Route optimization for drivers

CASE STUDIES ON IMPROVING SAFETY:

5. Sharing schemes
- ★ 5.5 GoKid Carpool app
- • 5.8 RideAustin
- • 5.10 She Taxi

6. Training & assistance
- • 6.2 Donostia - public transport for over 60s
- • 6.3 Manchester - travel training
- ★ 6.4 Travel Buddy

7. Information provision & Route planning
- ★ 7.10 SafetiPin (score) - My SafetiPin, SafetiPin Track, SafetiPin Nite
- • 7.13 Wher app

9. Planning:
- ★ 9.1 Gender mainstreaming in Vienna

For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

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7

INITIATORS

As so often in life: When something is obviously not fair, someone has to take the initiative and start developing suggestions about how things could be improved.

This is also what we found in our 50+ case studies. In each one, a specific initiator (group) could be identified. Other stakeholders might get involved at a later stage, depending on technological, funding or political support needs. Initiators typically fall into one of three main categories:

- Public sector
- Private sector
- Community organisations

This section therefore speaks to these three types of initiators, their potential roles, their strengths and weaknesses and highlights certain approaches and solutions they are particularly good at.

If you, the reader, belong to one of these groups we might have some tailored inspiration for you and the next pages. Please note that the „menus“ in this section are not meant to be exclusive, in that measures that are mentioned for one initiator group could also be implemented by another.

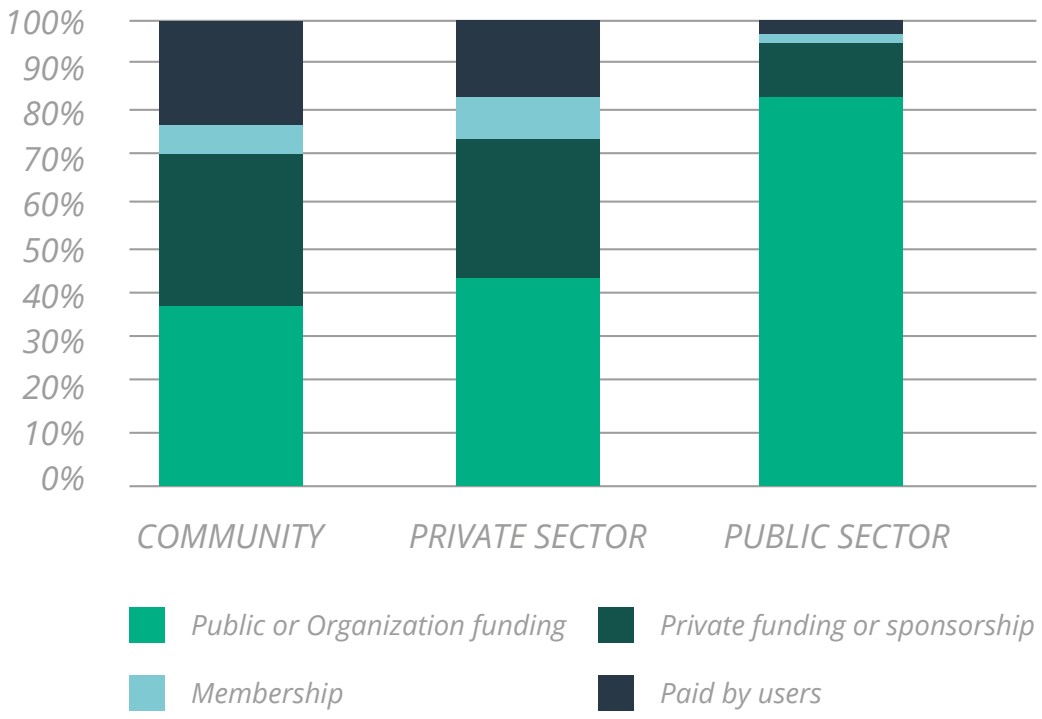
INITIATORS AND THEIR ROLES

We also categorised our 50+ case studies[15] with regards to their financial structure whether they were based on:

- **payments by users (e.g. tickets)**
- **membership fees of users**
- **resources from private actors (incl. sponsoring)**
- **funds from the public sector.**

This revealed interesting patterns as shown in the figure below. Quite obviously, projects that were initiated by the public sector were also primarily financed by the public sector. Less obvious is the fact that user payments (green) can be the financial basis for inclusive mobility projects that were initiated by a range of actors.

Frequency with which inclusive mobility solutions were initiated by actors from the community, private sector and public sector



These figures result from a software-supported analysis of 50+ case studies. They represent the frequency of certain categorisations but not any quantitative parameters of the projects per se.

[15] For full case study descriptions, see the corresponding sections in "D3.3 Compilation of 51 case study profiles" at ***http://www.h2020-inclusion.eu/resources/publications/***

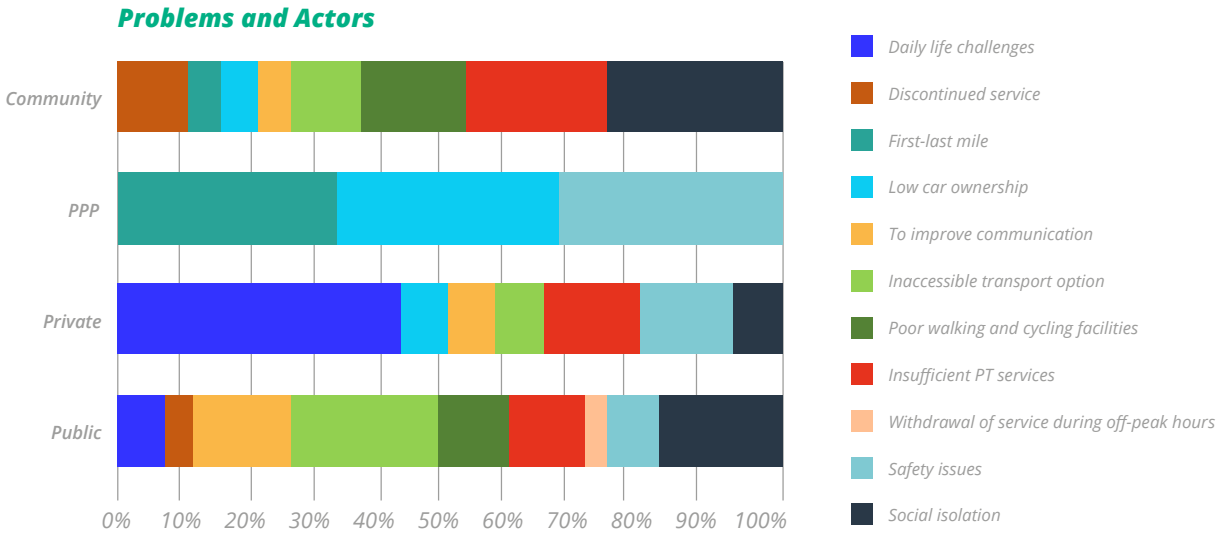
This also needs to be kept in mind for the interpretation of the table below. It shows the frequency distribution of which kind of actors (represented by the four different rows) tend to be particularly good at tackling which types of challenges (represented by the different colours). These different challenges emerged through some kind of "tagging" analysis of all case studies. While not all of them are of equal importance we would like to draw special attention to the following:

- **Daily life challenges (e.g. access to shopping) tend to be in a remarkably high focus of private actors.**
- **Public actors can be an effective initiator to tackle all kinds of challenges, represented by the many different colours in the corresponding row.**
- **Private actors and community groups have a narrower spectrum of challenges which they are good at tackling (represented by fewer different colours compared to the "public" row).**
- **Social isolation and insufficient public transport services are challenges which can effectively be addressed by community groups.**
- **Inaccessible transport options is a challenge which tends to be successfully tackled by the public sector.**

For example, we know qualitative interaction that community initiatives can very well address safety issues or that community groups can play an important role for communication / enabling / training.

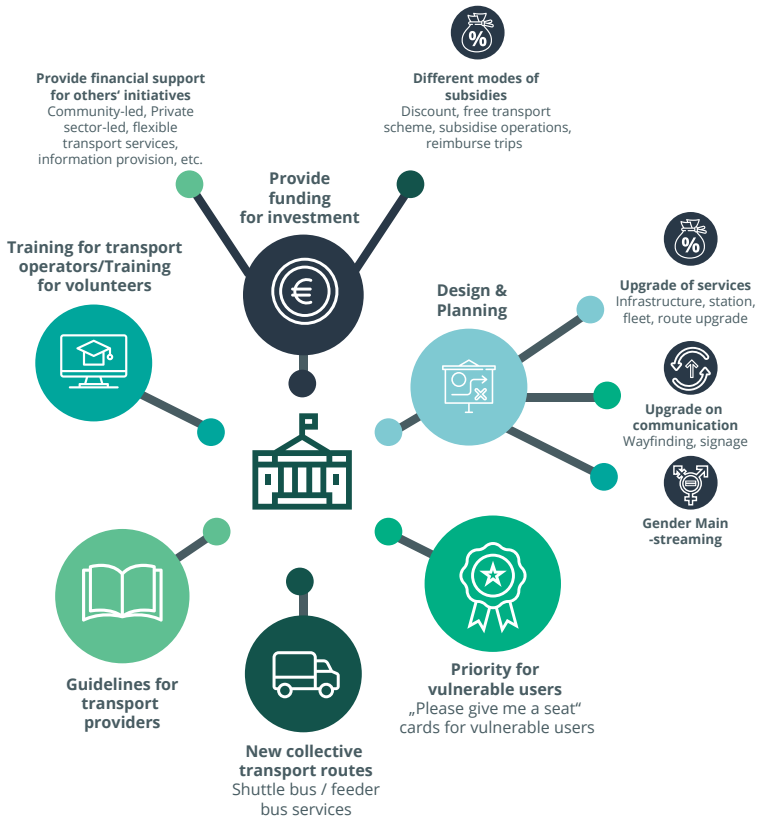
But the categories of challenges as such can be a source of inspiration and so can the message of the diagram.

Frequency distribution within the 51 INCLUSION case studies of the types of actors that tend to be particularly good at tackling different types of challenges



MENU FOR PUBLIC SECTOR-LED SOLUTIONS

The public sector typically is represented by the administration of a city, town, county, etc. the public sector also encompasses authorities with legislative competences and capabilities to define and revise the regulatory framework by which civic or commercial innovative solutions are backed and (financially and legally) enabled and recognised. The public sector has access to specialised know-how, possesses knowledge about laws and regulations, has an ethical and formal mandate to care for all residents (which includes the commitment to provide transport options) and has financial resources. However, the public sector is not typically known for its drive to develop new solutions – especially not if they come with financial risks. This is where public-private partnerships can open up new opportunities to improve inclusive mobility.



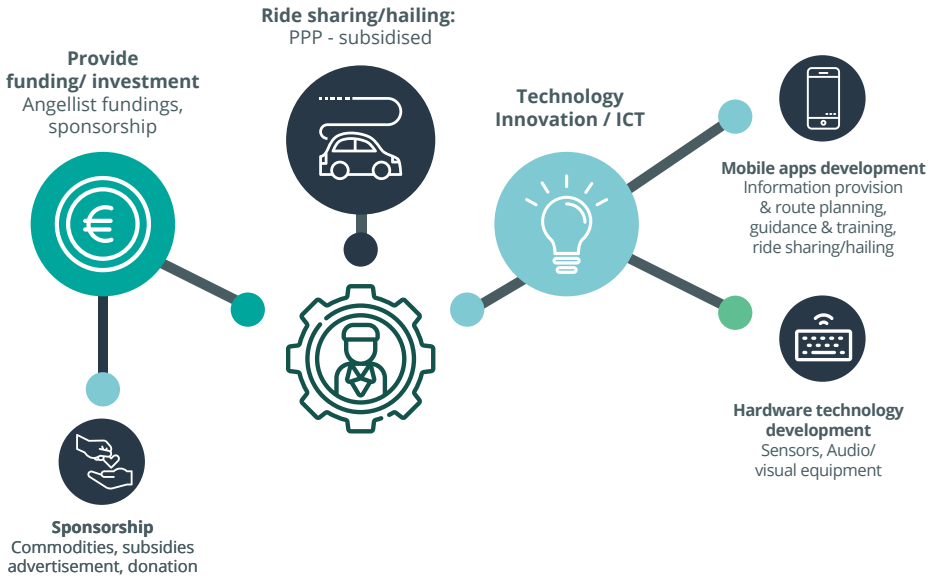
RECOMMENDATIONS FOR NEXT STEPS

Public authorities in cities, municipalities and regions have to take the lead on improving the inclusivity of their transport systems, as it is part of their mandate to provide adequate services for all residents. Although many public authorities are operating on limited budgets, the menu above gives some clear points of entry for the public sector to fill mobility gaps and possibly partner with the private sector or community organisations in co-developing, implementing and maintaining solutions.

The public sector's strengths lay in providing more **accessible, affordable** mobility solutions. The possibility to subsidise the operations and/or fares for collective transport services should be explored. Ensuring that basic needs are met, such as **safety**, is also within the remit of public authorities. Especially in rural areas, public authorities can find cost-effective ways of making use of existing infrastructure, e.g. by partnering with local taxis to extend existing bus lines during off-peak hours. This can help to provide more **convenient, efficient** services at a low cost. Public transport staff should also not be overlooked as providers of **empathetic** services, such as being trained to assist disabled and elderly people during their journeys and to offer more friendly, helpful service overall.

MENU FOR PRIVATE SECTOR-LED SOLUTIONS

The **private sector** entails companies of different sizes, from individual entrepreneurs, via SMEs to multi-national corporations. The private sector is particularly good at developing new products and services that can be sold for a profit – or at low costs in case of public subsidies. This includes transport infrastructure (vehicles, bus stops, bicycles, ...) or transportation services (e.g. bus operator) but also information and related services (e.g. smartphone app about real-time travel options). The last category is of particular interest to the INCLUSION team and was indeed found as key enabler in a number of our 50+ case studies.



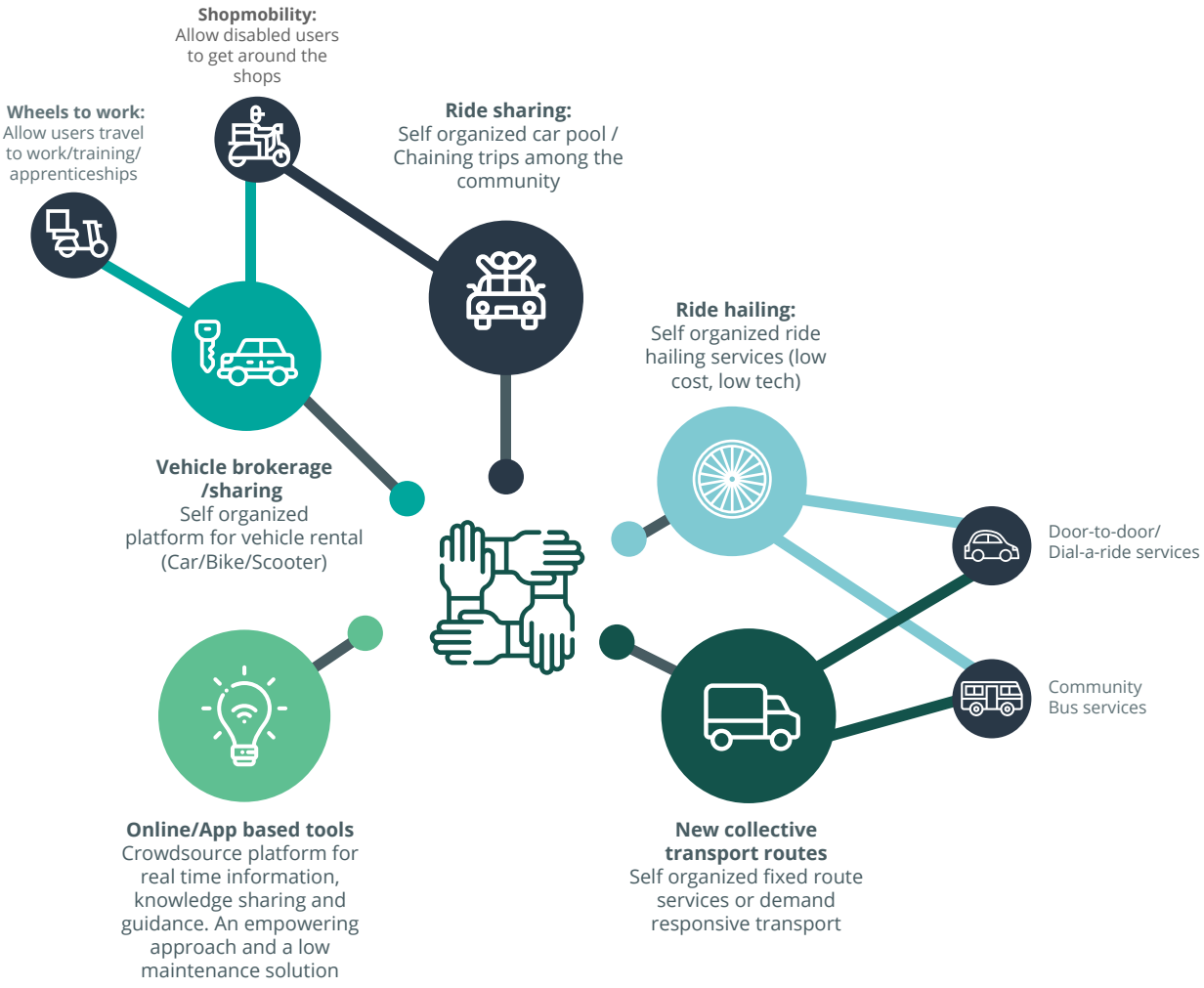
RECOMMENDATIONS FOR NEXT STEPS

The private sector is well-placed to provide highly convenient, efficient mobility solutions for people who are vulnerable to transport exclusion. Particularly when engaged in public-private partnerships, private sector actors can help to ensure optimal affordability and innovativeness of solutions. The public sector is increasingly willing to collaborate and innovate – even to take risks on new ideas, as long as there is sufficient financial backing from the private sector.

Successful case studies have tended to involve partnering with public authorities for ICT and shared mobility schemes. Other types of partnerships can also be considered for initiatives which intend to improve convenience and user empowerment. In many cases, private sector actors have filled mobility gaps by reviving collective mobility services in areas where public transport was discontinued, replacing them with more flexible options. Services that are complementary to the existing public transport network (e.g. flexible transport services, DRT, sharing schemes) are also areas of opportunity for the private sector to get involved. The private sector is also well-versed in marketing and communication efforts, which could help efforts to improve the legibility and accessibility of collective mobility services for a wide range of users.

MENU FOR COMMUNITY ORGANISATION-LED SOLUTIONS

Community organisations can play a vital role for the provision of inclusive mobility options. A number of such solutions revolve around the commitment of volunteers as drivers, information providers and carers. In some cases they fill in those gaps that are left when the financial capacity of the public sector reaches its limits. This, however, is not a carte blanche for the latter to exploit volunteers for anything that is not high on the political priority list). When community organisations are involved in inclusive mobility initiatives, special attention has to be given to questions about reliability, long-term commitment, insurance, etc.



RECOMMENDATIONS FOR NEXT STEPS

The number one resource of community organisations is the tight-knit social network it is part of. This is an asset that should be used particularly in rural and peri-urban areas. Community organisations are in close contact with residents and local businesses, all of whom have a potential role to play in co-developing, implementing and maintaining an inclusive mobility solution. The existing structures of trust and opportunities for face-to-face communication are major drivers in co-creating successful empowering, convenient and affordable solutions – often for the users, by the users. Community-led initiatives also lend themselves to building a local sense of ownership for the mobility solution, which adds the human touch and empathetic approach that is so vital to addressing social isolation.

While volunteers are often crucial during the start-up of a community-led mobility service, they should not be relied on too heavily in the long-term to fill essential roles. Community initiatives that rely exclusively on volunteers (without enforceable contractual obligations) pose a risk of the continuity of service of a project. It is therefore important to make sure to have always one or more professionals on contract as back-up in case the volunteers "driving" a civic initiative have to step back from this role. Where volunteers are well-placed, it is important to incentivize their continued commitment and regularly show appreciation and give recognition for the valuable work they're doing.

Some community-led solutions can survive – even thrive –in the long-term (e.g. demand-responsive transport). However, for many solutions there comes a time – usually when the solution needs to be scaled up – that the responsibility for coordinating its operations should be handed over ideally to the public sector; or if they do not have the capacity then the private sector might be well-placed to take the reins.

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