INCLUSION Project

D3.3

Compilation of 51 case study profiles; overviews and in-depth investigations

Version: 1.0

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Abstract	This report comprises 51 case studies (37 short overview cases, 4 hybrid cases encompassing several cases related to one solution type, and 10 longer in-depth cases) that examine organisational, technological and social innovations in public transport that have led to improved accessibility, inclusive mobility and equity in the prioritised areas by responding better to their specific needs and demographics/ socio-economic characteristics. These have been conducted through thorough desk research, and in some cases interviews and email correspondences with the people associated with the cases.

Version	Date	Modified by	Comments
0.1	29.03.2019	Kristin Tovaas (RUPPRECHT), contributions from all authors	Integration of all contributions (case studies) received separately from June 2018 to January 2019. All case studies have previously undergone a rigorous internal peer review process. Content and language review. Draft version compiled.
0.2	30.04.2019	Kristin Tovaas (RUPPRECHT)	Final version released following internal quality revision.
1.0	02.05.2019	Michele Masnata (SOFTECO)	Quality Review and release of final version

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1 Introduction

This document presents the final investigation of 51 case studies on innovative collective mobility services that are intended to alleviate the risk of exclusion from transport for a broad range of vulnerable user groups in a variety of spatial settings. It provides an overview of 37 cases, in-depth investigations into 10 cases and 4 "hybrid" cases that examine several examples of good practice related to a specific type of measure (e.g. several ways that cities have implemented disability awareness training for transport operator staff). For more information on how these cases were selected, please see D3.1 *Database of case study nominees with provisional selection and provisional allocation to in-depth or overview category*.

The reader can navigate this document in several ways. **Section 2** provides a navigation matrix which lists the sections where cases can be found that relate to particular combinations of measure types and vulnerable users served. It then gives an overview of the cases, including their location, author, whether they are in-depth/hybrid/overview and a brief description of the case. **Sections 3-9** organise the case studies according to their measure types: Payment and ticketing, New collective transport routes, Sharing schemes, Training & assistance, Information provision & Route planning, Design, and Planning. The cases within these categories cover the following types of measures:

Section 3. Payment and ticketing:

- Lower-cost (subsidised) collective transport services
- Free public transport
- Ticketing

Section 4. New collective transport routes:

- Traditional/ fixed-route services
- Demand responsive transport

Section 5. Sharing schemes:

- Ride-sharing
- Ride-hailing
- Car & bike sharing

Section 6. Training & assistance:

- Training providers
- Training users/ providing assistance

Section 7. Information provision & Route planning:

- Physical information provision (e.g. signs, maps)
- Online/app-based tools (including booking, route planning, navigation, etc.)

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Section 8. Design:

- Stations'/ stops' design
- Vehicle design

Section 9. Planning:

- Gender sensitive planning
- Accessibility planning

These 51 cases form the basis for the final output of WP3 Inclusive mobility practices: identification and critical assessment, which is D3.4 *Typology and description of underlying principles and generalisable lessons*. The data presented in the document at hand will be systematically analysed to identify patterns and develop recommendations for their transferability to other areas in Europe.

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2 Navigation matrix and summary of cases

Table 1: Navigation matrix, listing the sections in this document where cases can be found that relate to particular combinations of measure types and vulnerable users served

Vulnerable users served	Measure types						
	3. Payment and ticketing	4. New collective transport routes	5. Sharing Schemes	6. Training & assistance	7. Information provision & route planning	8. Design	9. Planning
Children/ youth/students	3.5, 3.8	4.5	5.3, 5.5, 5.9, 5.11	6.3	7.11	8.2	
Cognitive disability/ mental health		4.5		6.3, 6.4	7.2, 7.5		
Elderly	3.1, 3.6, 3.7	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8	5.3, 5.4, 5.7	6.2	7.3, 7.5	8.1	9.2, 9.3
Job seekers	3.5, 3.8	4.5					
Low income	3.1, 3.3, 3.5, 3.8	4.3, 4.4, 4.5, 4.7	5.2, 5.4, 5.8, 5.9				
Migrants/ refugees/ ethnic minorities	3.2, 3.3	4.5			7.11, 7.12		
Parents with small children	3.5	4.5	5.2		7.3, 7.9		9.3
People without a driver's license	3.1, 3.5	4.1, 4.5, 4.7	5.3, 5.8, 5.9				
Physically disabled	3.2, 3.3, 3.4, 3.6	4.1, 4.2, 4.3, 4.5, 4.6, 4.7	5.1, 5.6	6.1, 6.3, 6.4	7.2, 7.3, 7.5, 7.9	8.1, 8.3	9.2, 9.3
Poorly served areas (e.g. rural)	3.1, 3.3, 3.5, 3.8	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8	5.2, 5.3, 5.5, 5.6, 5.7, 5.10, 5.11, 5.12				9.2
Sensory disabled	3.2, 3.3, 3.4, 3.6	4.1, 4.2, 4.3, 4.5	5.7	6.1, 6.3, 6.4	7.1, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8	8.3	9.3
Women		4.5	5.8, 5.10		7.10, 7.13		9.1, 9.3

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Table 2: Summary of all 51 case studies

Section	Case study type	Author	Name	Location	Essential idea
3.1	Hybrid	SOFT	**Public Private Partnership car and ride sharing**	Phoenix, AZ Boston, MA Philadelphia, PA Altamonte Springs, FL USA	• Phoenix, AZ: Allows riders in some Phoenix areas to use Lyft at a reduced rate for rides between their homes and one of more than 500 city bus stops. • Boston, MA: MBTA conducted a one-year pilot to reinvent paratransit service by subsidising rides on Uber and Lyft. A contract between the MBTA and ride-hailing companies "allows us to exert pressure on Uber and Lyft to have more accessible vehicles," said Bill Henning, director of the Boston Centre for Independent Living. • Philadelphia, PA: UBER has partnered with the SEPTA transit agency to provide rides from 11 commuter rail stations at a 40 percent discount. The collaboration incentivizes a greater supply of drivers in those more-remote areas, promotes the first-last mile barriers that often hinder transit ridership, and discourages commuters from parking their own car at the station. • Altamonte Spring, FL: City subsidises 20% of Uber costs, helps to provide accessibility in areas poorly served by public transport
3.2	Overview	RUPPRECHT	**Accessible ticket machines in Stockholm**	Stockholm, Sweden	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. Touch screen with good contrast, tactile buttons with embossed printing, spoken information, different height, guide path to the ticket machine and multiple languages.
3.3	Overview	MOSAIC	**Free Municipal Public Transport in the Metropolitan Area of Piraeus Port City**	Pireaus, Greece	Free Public Transport was established in 1995 with the aim to increase mobility of vulnerable social groups, living in hilly neighbourhoods. These areas are not conducive to walking/cycling and cannot be reached by public transport. The scheme is consisting of 5 minibus lines, and is the largest free transport scheme in Greece. It is funded every year through the municipal budget.
3.4	Overview	UNIABDN	**Disabled persons Freedom Pass**	London, UK	The travel pass for disabled people allows free travel across London and free bus journeys nationally.

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Section	Case study type	Author	Name	Location	Essential idea
3.5	Overview	UNIABDN	**T2E - Transport to Employment**	Scottish Highlands, UK	A centrally co-ordinated shared taxi service, providing access to workplace, training and childcare where no alternative transport is available. The flexibility of using taxis enables the chaining of trips allowing access to child care and then on to the work location. Users pay equivalent to bus fares (approx. 35p per mile). Av. trip length=11 miles. Service was fully sustainable with 3 passengers per journey. Ran into funding problems but still lessons to be learned.
3.6	Overview	UNIABDN	**TaxiCard scheme**	UK (nationwide)	TaxiCard allows the user to make a set number (up to 144 per annum) of subsidised journeys in licensed taxis. The number of trips allocated differs depending on location; e.g. TaxiCard London entitles eligible users to receive a discount of up to £10 per taxi trip with the passenger paying the initial £2.50 per trip and anything above £12.50. Fares can still be expensive so TaxiCard is more likely to be used to make essential journeys. Health related trips make up around 40% of TaxiCard journeys
3.7	Overview	MOSAIC	**UK free public transport for the elderly**	UK (nationwide)	Nation-wide free PT pass for the elderly (UK)
3.8	In-depth	UNIABDN	**Wheels2Work (W2W) scheme**	UK (nationwide)	Aimed at unemployed people with a job offer or training placement but who do not have any way of travelling to their place of work. Particularly important for young people living in isolated rural communities where public transport is inadequate. Currently 34 schemes operating in the UK that offer the loan or rental of mopeds, small motorcycles, bicycles, subsidised bus travel. Schemes run by local authorities, charities, social enterprises and community interest companies on not-for-profit basis
4.1	In-depth	RUPPRECHT	**Bürgerbuses in NRW**	North Rhine-Westphalia, Germany	110 Bürgerbuses where there is no regular bus service
4.2	Overview	RUPPRECHT	**De Bij Bus**	Wassenaar, The Netherlands	To fill transport gaps locally for elderly /lightly handicapped and wheelchairs. 4 8-persons buses in possession of the Bij Bus Foundation. Run by volunteers. Contributions for costs covered by local funds and a monthly contribution of â,¬ 35 per member. 34 recruited voluntary drivers and one centralist collecting requests. Active from Monday to Saturday 09.00-17.00 p.m. two days in evening. Outside Wassenaar only to medical facilities max 5 km. Buses financed by a welfare Foundation SWOV.

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Section	Case study type	Author	Name	Location	Essential idea
4.3	Overview	RUPPRECHT	**De Witte Raaf (The white raven)**	Eindhoven, The Netherlands	Thanks to the enthusiastic efforts of a large group of volunteers, older people and people with other mobility restrictions can move to Eindhoven with a high level of service and for a low fee. Users must be members of the association. Three wheelchair buses + one ordinary car. Each bus runs with two volunteers so that they can properly accompany and support each other.
4.4	Overview	UNIABDN	**Formentera Taxibus**	Island of Formentera, Spain	Taxis are being utilised in the non-tourist season to provide FTS for local people. The main objective was to reduce cost, maximise the use of existing resources (taxis with limited demand in winter) and also improve the level of service for residents. The taxi only operates on the route if it is called on demand by passengers though intercom devices installed at the bus stops. It never runs empty. In addition to cost savings of over 25% there has been a reduction in CO2 emissions of over 70%.
4.5	Overview	MEM	**France le Busway**	Nantes, France	A 7 km long BRT line which connects the ring road to the centre of Nantes in less than 20 min. Accessibility is guaranteed through low-floor buses with automatic ramps and stations with level access, passenger- boarding assistance, adapted seats for persons in wheelchairs and acoustic interfaces for ticketing and information.
4.6	Overview	MEM	**GO MOBIL**	Carinthia, Austria	PPP initiative that is part of the PT system. Provides last-mile solution in 31 peripheral communities where PT service was insufficient. Available to all, but especially helps elderly and young people to travel safely on their own.
4.7	Overview	MEM	**Mobuur neighbourhood service**	Apeldoorn, The Netherlands	Through this neighbourhood initiative, residents of Kerschoten and De Naald who are less mobile can book short trips. Volunteers then transport them in an electric shared car. The municipality of Apeldoorn supports Mobuur with advice and a subsidy and pleads for sustainable zero emission transport for less fortunate, lightly handicapped and elderly.

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4.8	In-depth	RUPPRECHT	**Wensbus ("Wish bus") Limburg**	Province of Limburg, Belgium	Wensbus is additional demand influenced transport run by volunteers supported by the province of Limburg. Run with minibuses (occasionally cars) that are suitable for transporting a maximum of 4 to 8 people. The Wensbus runs in areas where there is no public transport left do to cutbacks on public budgets. Mainly geared at the elderly with no private car or no license. Operates in several municipalities in Limburg
5.1	Overview	RUPPRECHT	**AVIRA wheelchair-accessible car sharing**	Flanders, Belgium	Car sharing (optionally incl. drivers) with wheelchair friendly vehicles in rural area of Belgium
5.2	Overview	RUPPRECHT	**CarSharing Pfaffenwinkel**	Pfaffenwinkel, Germany	CarSharing Pfaffenwinkel works in a relatively rural area, mainly because of the closely-knit social network and the vast amount of energy volunteers have put into the system during the early phases
5.3	Overview	RUPPRECHT	**Die Mitfahrerbank (The Passenger Bench)**	Speicher, Germany	Car sharing from a fixed pick up stop in rural Germany - Benches placed along roads in rural areas with signs that waiting travellers can put up to indicate which direction they want to travel (or none if they'd just like to sit). Like semi-organised hitchhiking, but it relies on the close social network or rural areas - if you don't want to drive with a stranger, you can wait until a familiar face stops.
5.4	Overview	SOFT	**Go Go Grandparent**	USA & Canada (nationwide)	Ride sharing for elderly - A third party hotline that seniors can call if they can't or don't want to use a smartphone to get a ride using Uber or Lyft. Drivers are carefully screened, making sure they're wheelchair and walker accessible.
5.5	Overview	SOFT	**GoKid Carpool app**	USA (nationwide)	App that allows children to carpool to school with families they know. Schedule and track.
5.6	Overview	MEM	**Haltetaxi Zeeland**	Province of Zeeland, The Netherlands	Haltetaxi (start: March 2015) runs on routes/times where standard PT-bus or 'Buurtbus' lacked, at a low rate, similar to public transport fare. Haltetaxi runs as a supplement to a local bus that does not drive early in the morning and in the evening. The Haltetaxi allows only trips not served by local bus services. GVC Gemeentelijke Vervoerscentrale (pro) coordinates demand, combines vehicles with (WMO-legal beneficiaries). Passengers of Haltetaxi pay â,¬ 0,89 euro boarding rate and â,¬ 0,15 per km.

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Section	Case study type	Author	Name	Location	Essential idea
5.7	Overview	UNIABDN	**ITNCountry**	USA (nationwide)	Transportation is provided by private automobiles 24 hours a day, for any purpose, through a combination of paid and volunteer drivers. Riders become members by opening Personal Transportation Accounts, which hold ride credits that can be earned in several ways- by driving, by trading in cars or by purchasing. This innovative business model enables delivery of sustainable transport more rural areas.
5.8	In-depth	RUPPRECHT	**RideAustin**	Austin, TX, USA	Non-profit rideshare via app - Direct Connect is a one of a kind feature that allows riders and drivers to pair directly through the RideAustin app. Includes live ETA.
5.9	In-depth	UNIABDN	**RideshareKC's Guaranteed Ride Home programme**	Kansas City, KS, USA	Guaranteed Ride Home program that people can sign up for so they can get home in case of an emergency or illness — day or night, weekday or weekend. Up to 2 free rides per year. Call a taxi or use a transportation service like Uber or Lyft. Pay for the ride, then submit the reimbursement form within 10 days.
5.10	Overview	MEM	**She Taxi**	Kerala, India	Initiative of the Gender Park under the Social Justice Department to make travelling of women safe. Female taxi drivers, female passengers.
5.11	Overview	MEM	**Taxi-Scuola**	Livorno, Italy	Operates basically like the typical yellow school buses in the US. Seems to be an innovative concept in Europe.
5.12	Overview	MOSAIC	**Via (on demand ride share via app)**	Arlington, TX, & Sacramento, CA, USA	First-ever on-demand PT system (via app) as alternative to bus service in Arlington, TX, replacing the city's single-route bus service and offering transportation options in areas where none existed before. Via is also working closely with city staff to design a ground-breaking fully dynamic city-wide service that will complement other public transportation options.

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Section	Case study type	Author	Name	Location	Essential idea
6.1	Hybrid	EMTA	**Disability Awareness Training for Transport Operator Staff**	Baden-Wurttemberg, Germany UK (nationwide) Worldwide New Zealand Garching, Germany	• Baden-Wurttemberg: Elaborated in cooperation with representatives of citizens with disabilities, published by the association of bus operators of Baden-Württemberg • UK: Outcome of research conducted by the Disabled Persons Transport Advisory Committee (UK). Training framework that is to help transport providers identify the requirements of disabled passengers, and the training staff requires to help assist them properly. • Worldwide: The World Bank's Disability and Development Team compiled this Transit Access Training Toolkit for transit authorities and practitioners to allow them to educate their co-workers in the field of inclusive transportation. • New Zealand: This training focuses on how employees can best assist passengers with vision and mobility impairments. Later, Transdev Auckland paired with Deaf Aotearoa to create an additional training program to help passengers with hearing impairments including identifying deaf passengers and signing. • Garching: A dialogue between handicapped advocacy groups and transport operators showed what issues are generally to consider when interacting with passengers with a handicap. It also laid out what transport staff is allowed to do (concerning legislation, insurance issues, etc.). Passengers with a handicap could explain their issues to transport officials on-site (in the buses, at stations, etc.) to allow for a greater understanding.
6.2	Overview	MOSAIC	**Donostia - public transport for over 60s**	Donostia, Spain	To increase the use of public transport amongst the increasing 60+ age group, the municipality carries out travel training within the AENEAS project. Instructions are provided on how to improve safety, bus lines, transfers and ticketing are explained, while bus drivers are briefed about the needs of older passengers.
6.3	In-depth	RUPPRECHT	**Manchester - travel training**	Manchester, UK	Travel training is provided for a range of target groups including disabled people, young people with special needs, and older people. While training formats for these groups differ, including provision of short-term and long-term support, they all aim at enabling and encouraging independent and safe travelling by public transport.

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6.4	Overview	UNIABDN	**Travel Buddy**	London Borough of Hounslow, UK	Travel Buddies are fully trained adults with disabilities who are paid to accompany service users on their required journeys offering advice and practical support to increase independence, confidence and personal safety awareness whilst in the community and when using public transport (buses, trains and tubes). Eligibility: aged 16 or over and have a disability (learning disability, autism, physical disability, mental health difficulty, sensory impairment or a long-term health condition).
7.1	Overview	MOSAIC	**Aira app**	USA (nationwide)	Using augmented reality, Aira connects people who are blind or low vision to a trained professional agent who is dedicated to further enhancing their everyday experience – completely hands-free assistance at the touch of a button. Aira is today's fastest growing assistive community. One tap of a button instantly connects you with a sighted professional agent who delivers visual assistance anytime and anywhere.
7.2	In-depth	RUPPRECHT	**APP&Town Compagnon**	Barcelona, Spain	App&Town Compagnon tackles mobility challenges for:
7.3	Overview	RUPPRECHT	**Barrier-free digital journey planner and travel assistance for disabled and elderly in Berlin**	Berlin, Germany	Journey planner that gives information on barrier-free travel chains in public transport. The journey planner provides information on connections that are barrier-free and also gives additional details on the accessibility of interchanges (e.g. interactive station plans), stops and vehicles. VBB is also offering a free of charge door-to-door travel assistance service for all mobility or visibly impaired persons and older people that need help to use public transport. Also provide free travel training and free bus and train escort services.
7.4	Overview	MOSAIC	**Be My Eyes app**	USA (nationwide)	Free app that connects blind and low vision people with sighted volunteers and company representatives for visual assistance through a live video call

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Section	Case study type	Author	Name	Location	Essential idea
7.5	Hybrid	UNIABDN	**Blue Badge/Safe Journey Card/Customer Injury Cards**	Greater London, UK UK (nationwide) Melbourne, Australia	• Greater London: Blue badge, which reads "Please give me a seat" to help people with invisible disabilities. • UK: Free print-out that helps passengers let the driver know if they need any help with their journey (e.g. visually impaired, hard of hearing) Melbourne: A customizable card for regular customers with special needs. These cards help drivers identify and aid people with special needs that are less known or not directly visible. Showing the card mandates the driver to act appropriately.
7.6	Overview	UNIABDN	**E-Paper**	Vienna, Austria	Improvement of passenger information at stations by replacing old-fashioned printed timetables. The E-paper system will show the current timetables and will be equipped with a text-to speech mode that will enable blind and visually impaired persons to receive information by voice output.
7.7	Overview	EMTA	**Guidance for visually impaired and barrier free access at all stations/stops in Prague by 2025**	Prague, Czech Republic	DPP has implemented an innovative remote-control activated navigation system for passengers who are blind, which informs them on the number and direction of incoming vehicles, while sending the driver an audio signal notifying of the person's intent to board. DPP staff is also trained to assist passengers who have disabilities.
7.8	Hybrid	MEM	**Audio Atlas Project & Ways4Me**	Paris, France & Vienna, Austria	• AudioAtlas (Paris) is an app that helps disabled or those unfamiliar with the PT network, to guide them to a specific platform, exit or connection within one of the metro or RER stations • Ways4me (Vienna) supports people with special needs when they are using public transport. It is a barrier-free acoustically advanced smartphone application allows route planning and full indoor and outdoor navigation for blind people, it includes traffic information systems, communication with public transport and facilitates the ticket purchase.
7.9	In-depth	RUPPRECHT	**Route4U**	Worldwide	Global app that facilitates crowd-sourcing info on accessibility of different locations, not particularly pertaining to transport. Especially useful to show temporary obstructions such as constructions.

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Section	Case study type	Author	Name	Location	Essential idea
7.10	Overview	EMTA	**SafetiPin (score) - My SafetiPin, SafetiPin Track, SafetiPin Nite**	India (nationwide)	A suite of complimentary apps: 1. My SafetiPin - collecting safety related information in different cities; 2. SafetiPinTrack - helping women stay safe through alerting their friends and family to their location and possible dangers; 3. SafetiPin Nite - collecting data using moving vehicles to capture photographs at night a. People with cognitive, sensorial and physical disabilities. Replacing Paratransit Services by Public Transport. b. Older adult with memory dysfunctions. Allowing to move safely by themselves. c. Children, immigrants and refugees. They have a contextual disability, because of a lack of knowledge and experience. Training them to use autonomously the Public Transport.
7.11	Overview	POLIS	**Showing the way in Toulouse using pictograms**	Toulouse, France	Signage at interchanges adapted to communication-impaired people, non-native and illiterate individuals. To comply with accessibility law. In 2009, Tisséo adopted the Schéma Directeur d'Accessibilité, which involves various activities to be implemented by 2015 aimed at achieving suitable mobility that is easy and convenient for everyone.
7.12	Overview	RUPPRECHT	**The Welcome Card**	Stockholm, Sweden	The Welcome Card is an adaptable app- and card-based solution that helps asylum seekers to navigate the asylum-seeking application process, while also giving them information and access to early-inclusion activities and existing public services, such as transportation, language and skill-based courses, cultural and networking events.
7.13	Overview	MEM	**Wher app**	Italy & UK (Turin - Milan - Rome - Bologna - Catania - Palermo - Naples - London)	Wher is the first app where a Community of women, based on their experience, reviews the streets of the city suggesting the best and safest route. Every woman reviews the streets of the city by colouring them according to where she feels safe and can leave comments and suggestions for other women who use the map.

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Section	Case study type	Author	Name	Location	Essential idea
8.1	Overview	POLIS	**Krakow - more accessible public transport stops**	Krakow, Poland	The City of Krakow developed a scheme to modify or rebuild public transport stops in the city to make access safer and more comfortable for all of its customers. The scheme, coordinated by the City of Krakow, the Road Transport Management Board and the local public transport operator, also speeds up vehicle loading times.
8.2	Overview	MOSAIC	**Reading's 'Claret Spritzer' student bus**	Reading, UK	Two-level buses designed to be fun, relaxing and productive. Runs on a regular route (University and Reading College)
8.3	Overview	EMTA	**Rennes wheelchair accessible public transport**	Rennes, France	Worked with local disability groups to provide the best possible transport services for people with disabilities.
9.1	In-depth	RUPPRECHT	**Gender mainstreaming in Vienna**	Vienna, Austria	Taking note of women's transport needs after a survey
9.2	In-depth	MEM	**KOLLA (Kollektivtrafik för alla) project**	Gothenburg, Sweden	In 2005 Göteborg embarked on a six-year project to improve public transport for people with reduced mobility. As part of this, the city's public transport authority identified and removed obstacles and barriers on streets and public areas, adapting in the process all tram and main bus stops. This, and its other work on improving accessibility, helped Göteborg win an award in 2014 for Europe's best accessibility project.
9.3	Overview	POLIS	**Wiener Linien Barrier free mobility**	Vienna, Austria	95% of tram and bus stops are level access, tactile guidance system at stations, bus and tram stops, text to speech facility on website, accessibility App to prompt next stop/destination

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3 Payment and ticketing

3.1 Public Private Partnership car and ride sharing

3.1.1 Essence of the concept

Basic idea:

A hybrid case of examples of partnerships between transportation authorities and ride-sourcing companies showing how actors operating at different levels can cooperate to provide innovative transport solutions for people living in peripheral areas or in conditions of impaired mobility. Examples, part of this case, include:

- The **First Mile Last Mile** partnership in Phoenix (AZ, U.S.) faces the first-last mile problem allowing people living in peripheral areas to use Lyft at reduced rates to reach the nearest bus stops.
- The Massachusetts Bay Transportation Authority (**MBTA**) which **subsidized rides on Uber and Lyft** to face the high costs and increasing demand of paratransit services in the area.

The case also includes a review of an on-demand ride-sharing system with pooling techniques and algorithms to combine trip requirements of different users resulting in an optimization of costs and vehicle occupancy. The product, called **CleverShuttle**, is an example of existing ICT platform supporting the establishment of ride-sharing services as complement to conventional public transport.

The fourth part of this case is a study (Jaffe, 2016) on ride-sharing services in cities with a few examples and considerations on the existing *binary* debate on having these transport options or not having them *at all*.

Figure 1 - The Ride van in Lexington Centre

Author: John Phelan - Source: https://en.wikipedia.org/wiki/The_Ride_(MBTA) - File licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license.

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Intended beneficiaries:

Different categories of users are involved including: people living in peripheral areas where transit opportunities are limited, customers of existing paratransit programs (aged population, persons with disabilities in "The RIDE", Massachusetts Bay area). CleverShuttle, instead, is potentially addressed to all user categories.

Techn(olog)ical aspects (hardware and software):

The technological aspect common to all initiatives is the use of mobile apps as mean to view, select and book the rides. From the point of view of the operators, ICT tools for monitoring and managing the services exists. Finally, the CleverShuttle product features ICT Algorithms to combine the requirements of the different users and provide the best drivers for their needs.

Funding (incl. fare structure):

Most of the sub-cases and examples have in common that ride-sharing fares for the complementary services are partially funded by the Public Transport organization itself. MBTA users, for example, pay the first $2 for the trip and anything over a maximum amount ('On-Demand Paratransit Pilot Program | The RIDE | MBTA'): MBTA cover up to the difference and anything over the maximum amount is automatically billed back to the rider's payment method. For certain situations and conditions, additional Uber and Lyft pricing policies applies ('Uber'), ('Lyft & MBTA's THE RIDE'). In Phoenix, instead, Lyft gave a 20 percent discount on up to 10 rides to and from the bus stops identified in downtown Phoenix, during the six-month pilot program.
Also in the experiences mentioned in Jaffe, 2016 the cities provide a monthly fund or subsidize a percentage of the fares for Lyft and Uber trips (up to a limit).

Business case:

In all sub-cases, it can be observed that the costs of transport services operated by public transport companies would be higher compared to those obtained with a Public-Private Partnership. A common case is where authorities subsidize fares for Lyft and Uber trips (up to a limit) but the partnership can also be established between two private actors (Cabanatuan, 2016). Combined lift-sharing and carpooling partnership and business agreements for the provision of ride-sharing solutions (e.g. by using CleverShuttle) can be established with public and private organizations, companies and authorities.

Main actors and their interests:

The main actors are the Public Transport Authorities, the private ride sharing companies (like Uber and Lyft in the examples considered) and possibly other operators or ICT providers like CleverShuttle. The interest is to reduce the costs of PT operations in peripheral or low-demand areas and to meet the requests with the ride-sharing schema, possibly in a multi-modal combination with the existing public transport services (e.g. reach the nearest bus stop from their home)

Intellectual property aspects (patents etc.):

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The partnership and cooperation between the public transport company and the private operators are achieved at financial level. Uber and Lyft keep operating according to their service model. Data details on ride sharing (e.g. how often mobility-impaired users can find a cab adapted for wheelchairs) is still owned by the private companies; sharing this data with public transport companies (for service improvement for instance) can be challenging. In some cases like for SEPTA and UBER a data exchange is achieve to a limited extent and in a confidential way (Smith, 2016). CleverShuttle is a proprietary product.

3.1.2 Geographical context

Location in Europe, within country and region:

The sub-cases come from various areas including the U.S. (Phoenix Area and Boston Bay) and Germany where real applications of CleverShuttle already exists.

Socio-economic context:

Increasing costs and growing demand of paratransit services.
Need for complementary transport service especially for sub-urban areas, specific timeframes in the day and special users (e.g. mobility impaired).

3.1.3 Context conditions

General context conditions before the start of a project:

Poor, not easily accessible or inefficient travel options for citizens living in peripheral areas alternatives to private car.
Travellers for example felt that the special transport services -like paratransit- could be improved in terms of time to wait for the ride. *The RIDE* services had to be booked at least 1 day in advance and the waiting time is in a 30-minute window.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

In the Phoenix sub-case the problem was that non-owners of a car didn't have the possibility to reach a near bus stop easily.
In Boston, instead existing users of the paratransit services perceived lack of quality of service (example: waiting times) and the duration of pre-booking. Escalating costs also an issue for the transport authority.

Opportunities that contributed to the initiation of the project:

consolidated and well-structured ride hailing services already operated in Phoenix and Boston that were capable of offering capillary transport services to meet the mobility demands in under-served areas. Subsidizing these services, offered by third parties was more convenient for public transport companies than establishing new lines or complementary services for the same purpose.

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All initiatives of this hybrid case have also been boosted by emerging technologies and supported by new regulations (although there are strong differences in that respect from one country to another).

Political context:

Phoenix and MBTA sub-cases show that regulatory frameworks and policies from city, regional or national authorities are very influential for the establishment of public-private partnerships: ride-sharing services like Uber and Lyft are considered illegal in many countries which makes a cooperation with public authorities unimaginable.
On the other hand, the debate in favour or against the introduction of ride-sourcing services can exist at public or at political level even in absence of normative obstacles. Sao Paolo (Reuters staff, 2016) is an example where discussions within the city's authorities on that matter have been resolved by overriding the party expressing negative opinions.
The political and legal constraints then affect the market perspectives of private ride-hailing companies but also those of ICT providers like CleverShuttle that would not be able to sell their products in such restricted markets. CleverShuttle in Germany is the first government-approved transport service of its kind ('CleverShuttle').

Financial context:

The costs of complementary services were high. For example, in MBTA the financial conditions were not favourable to sustain the growing demand for paratransit services. These conditions determined the choice for a different mobility pattern.
The partnership with local or regional transport authority almost always is operated at financial level with fares for travellers partially covered by the authority (e.g. the municipality). The development of city-tailored ride-sourcing solutions (also in terms of ICT products like CleverShuttle) can then benefit from this potential.

3.1.4 Case history

Initiation phase:

The Phoenix pilot started in October 2017 and was initially planned to last six months.
MBTA case was initiated as a one-year pilot program to reinvent paratransit services. Since autumn 2016, the Massachusetts Bay Transportation Authority has experimented in operating their paratransit service with Uber and Lyft.
CleverShuttle service has been operating under the CleverShuttle brand on Germany's streets since the beginning of 2016

Pilot phase:

The Phoenix pilot lasted six months. No documentation from desk research on the outcomes.
The MBTA pilot has been running since 2016 and extended to January 1, 2019 ('On-Demand Paratransit Pilot Program | The RIDE | MBTA').

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Roll-out phase:

In the MBTA case the rides are completely operated by Lyft and Uber. The booking operations are also done through the respective systems. The fares and financial aspects are set up in partnership.

Scaling-up and replication phase:

The Phoenix pilot has been deployed to a large scale thanks to the already consolidated availability of Uber and Lyft. The experiment is replicable in other big cities where ride-hailing services operates. The MBTA pilot has been deployed in Boston Bay Area, similarly to Phoenix case, thanks to the already consolidated availability of Uber and Lyft. The experiment is replicable in other big cities where ride-hailing services operates and in fact has been studied and observed by external transportation officials for example from SEPTA, Philadelphia area.

3.1.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability)?

Specific documentation has been found for the MBTA case: the pilot has been extended and important external observers have been involved which suggest that the project was considered as a success.
About the CleverShuttle system, it is successfully deployed and used in several cities in Germany.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

In Phoenix not very exhaustive documentation has been found on the outcomes but the sub-case history suggests that the project has been perceived as an effective measure.
The MBTA pilot can be perceived as an effective measure giving the reached extension and declaration of interest of Uber and Lyft to extend their participation (Laughlin, 2017)
Also, the growing popularity of CleverShuttle (in terms of cities where the service is available and consequently with an increasing number of users) is an indicator of its effectiveness.

3.1.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The partnership between public transport companies and ride-hailing services requires regulatory conditions at national level and appropriate, case-by-case studies on financial sustainability. (See also the section on Context conditions).

What are key conditions for the transfer of the key concept (or elements thereof)?

Clear, stable and favourable regulatory framework for ride-hailing services. Clear understanding and dimensioning of the demand, establishment of clear eligibility requirements for the travellers and analysis of economic sustainability. Key conditions are also the actual parameters of ride-hailing

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services in the area where the service has to be transferred: the geographical extension, amount and equipment of, availability of drivers and frequency of runs must clearly meet the demand. A requirement for a successful transfer is the presence of a minimum number of users, cars, drivers.

3.1.7 Further reading on similar cases

https://motherboard.vice.com/en_us/article/kzn5gx/uber-says-small-town-public-transit-partnerships-are-critical-to-its-success-innisfil-enderby - Article on partnership between Uber and Small Town Public Transit.

https://nytransit.org/resources/transit-tncs/205-transit-tncs - Article about how Uber and Lyft are working with public transportation authorities

https://las.depaul.edu/centers-and-institutes/chaddick-institute-for-metropolitan-development/research-and-publications/Documents/Partners%20in%20Transit_Live1.pdf - Study on 30 agencies that are partnering with transportation-network companies like Uber and Lyft

https://www.citylab.com/transportation/2017/11/what-public-transit-can-learn-from-uber-and-lyft/544637/ - Article on how public transit can be complemented with ride-sharing by offering more options on demand and fill some gaps.

https://www.citylab.com/transportation/2018/08/where-ride-hailing-and-transit-go-hand-in-hand/566651/ - Article with analysis and several additional links on partnerships between traditional public transportation agencies and Uber and Lyft.

https://www.uber.com/it/community/supporting-cities/transit/ - Page on UBER web site on cooperation activities with public transit in cities.

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3.2 Accessible ticket machines in Stockholm

3.2.1 Essence of the concept

Basic idea:

Accessible ticket machines for activating, changing and primarily validating public transport tickets were designed and tested in cooperation with organisations for disabled people. This does not include the purchasing of tickets. The machines, which offer information in English and Swedish, feature braille buttons, guided tactile paths to the ticket machine, touch screens with good contrast, audio information, and are lower to the ground to accommodate wheelchair users. The written information on the screen and the audio information are tailored to meet the needs of deaf, blind and visually impaired people so that they may comfortably use the ticket machines. The machines serve most modes of PT including the metro, light rail, tram and ferries. The machines do not cater for regional rail and bus services as these are still well managed by staff.

Image 1: The accessible ticket machines are placed at two different heights and used for activating, changing and validating tickets of trains, trams, and ferries throughout Stockholm, but not for purchasing tickets (Trafikförvaltningen Stockholms Låns Landsting).

Intended beneficiaries:

While the accessible ticket machines are designed to meet the needs of physically and sensory disabled people, they are also targeted for elderly people above the age of 65.

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Techn(olog)ical aspects (hardware and software)

Hardware considerations: Tactile buttons with embossed printing; machines placed at different height; guided paths to find the ticket machine.

Software considerations: Touch screen with good contrast colouring and lighting; spoken information; and language available in both Swedish and English.

Image 2: Close-up of an accessible ticket machine in Stockholm for activating, changing and validating tickets ***(Trafikförvaltningen Stockholms Låns Landsting, 2018)***.

Funding (incl. fare structure):

The project was financially sustained by the regional municipal's transport budget. I.e. Trafikverket Transport Administration (TTA) at Stockholm County Council.

Business case:

About 3.5% of Stockholm's population is eligible for free PT (though it is not allowed and not possible to monitor the percentage of this group that actually makes use of PT as it is facilitated by health care providers). There are also others, particularly those over the age of 65, that are eligible for reduced fares. Since these tickets are sold at reduced fares or are free, there is little financial motivation for transport operators and authority to implement the ticket machines. Financial benefits from accessing PT are rather indirect and are enjoyed by the users themselves, not the TTA.

On average 15% of PT users have some type of need to make mobility easier. While there is not any financial motivation for implementing the ticket machines, if 15% of users had to become reliant on their own modes of transport, this would have a significant impact on incoming revenue.

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Main actors and their interests:

Trafikverket Transport Administration at *Stockholm County Council* was responsible for planning and coordinating the design and implementation of the accessible ticket machines. Organisations for disabled people advised TTA on the design and were involved in testing prototypes. These organisations are also responsible for disseminating information from the TTA to their members and include: *Funktionsrätt,* a general organisation for all 44 small organisations for mostly unseen disabilities like Aphasia, Autism, Stroke etc.; *Förbundet för ett samhälle utan rörelsehinder* (DHR), an organisation that represents people with mobility impairments; and the *Stockholm and Gotland County Synskadades Riksförbund* (SRF), an association of the visually impaired.

Stockholm Public Transport Company (SL) was responsible for determining and monitoring the suitability of each machine's location on platforms etc. They also report faulty machines.

Intellectual property aspects (patents etc.):

It is unclear what the rights are but the developers *VIX Technologies* are not at liberty to give access to the ticketing machines plans to the public. It would have to be determined whether other state entities could purchase the machines from them, together with the approval from TTA.

3.2.2 Geographical context

Location in Europe, within country and region:

Stockholm is the capital of Sweden and is located in on the Baltic Sea on the central-eastern coast of the country.

3.2.3 Context conditions

General context conditions before the start of a project:

TTA was tasked with finding a solution for excessive congestion on PT that occurs when SL staff try to validate passengers' tickets on board.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

It was decided by TTA in 2016 that machines were going to be the answer. They had seven months to conduct a project would help alleviate congestion and allow the disabled to validate their tickets with ease.

Opportunities that contributed to the initiation of the project:

Aside from the congestion experienced on board PT vehicles, there was no catalyst for the project.

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Political context:

TTA views the project as being aligned with their general approach and guidelines on accessibility and would have conducted such a project at that time even if the experienced congestion were not part of the context.

Financial context:

TTA decided to conduct the project and to use their own budget.

3.2.4 Case history

Initiation phase:

TTA worked together with VIX Technologies on both the technical design and construction of machines, taking the lead on ensuring its usability by target groups. They worked with *Funktionsrätt* for text and understanding aspects of the software; DHR to determine adequate heights of the machine; and SRF regarding contrast, understanding of spoken information, tactile buttons and the structure of the information.

Pilot phase:

SRF was then used in the testing and evaluation processes. Once all the above mention organisations gave their approval of the machine design, 115 machines were manufactured and set up in the PT network.

Roll-out phase:

TTA aims to complete rolling out the machines across the region's PT network over the next few years. There are already hundreds of easy to find machines.

3.2.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability)?

TTA consider the project very successful. SL have reported widespread acceptability and usage of the machines. They no longer receive complaints regarding congestion inhibiting attaining and validating tickets for the disabled.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Disabled passengers with a physical and/or sensory disability are able to easily find, understand and use the ticket machines. They have self-reported their satisfaction and consequent inclusion to using the PT network. SL has conducted random on platform surveys, as well as collecting further feedback from people who still rely and use the Customer Call Centre to purchase their tickets.

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3.2.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

It is logistically easy for the accessible ticket machines to be implemented anywhere in the EU. However, it is unknown whether they would be available for production and sale.

What are key conditions for the transfer of the key concept (or elements thereof)?

If you involve organisations for disabled people from the beginning, the process is easier and cheaper and the outcome is much more effective for your target groups.

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

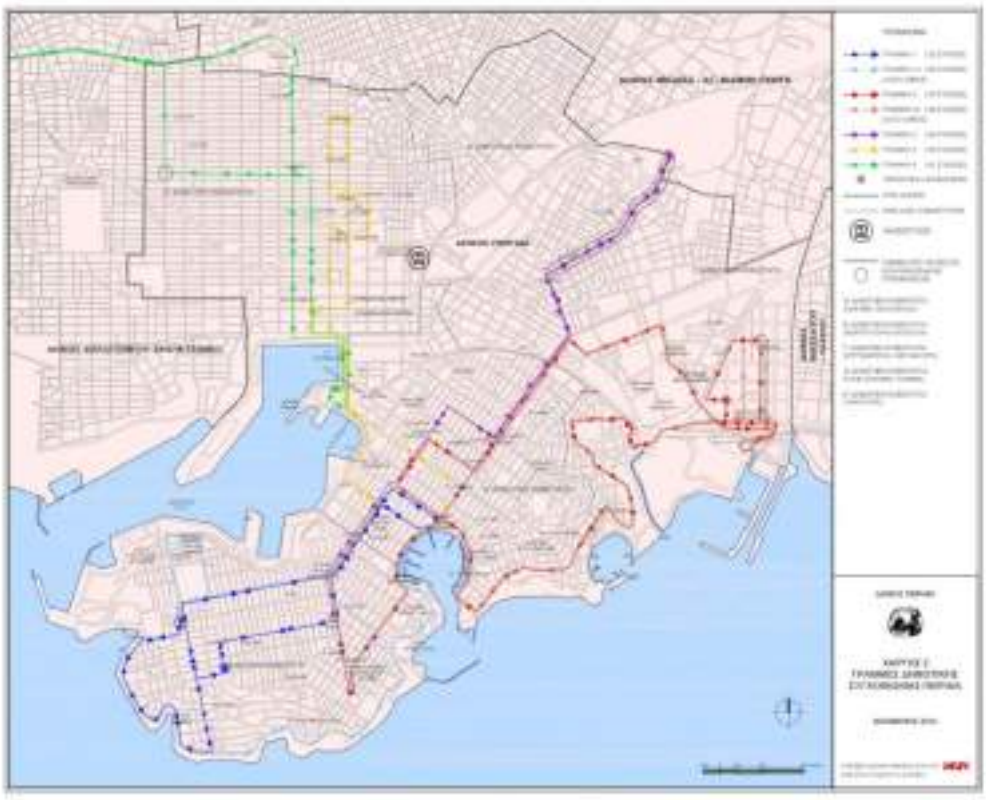

Figure 2: Piraeus Port City (Anagnostopoulos 2018)

3.3.1 Essence of the concept

Basic idea:

Piraeus is part of the metropolitan region of Athens and has about 200,000 inhabitants. In economic terms, it is one of the most significant regions of Greece. From Piraeus, passenger ferries link Attica with many islands. There is also significant commercial freight traffic to the port.

In 1995, the measure of offering free Municipal Public Transport in the Metropolitan Area of Piraeus port city was established. It aimed to increase the mobility of vulnerable groups that are living in hilly neighbourhoods, initially built in unofficial ways as refugee settlements. These areas do not encourage walking/cycling and cannot be reached by metropolitan transport. Car use is also discouraged by the lack of parking space and the high road gradient. The new scheme is consisting of 5 minibus lines, and it is the largest free transport scheme in Greece. It is funded every year through the municipal budget.

Intended beneficiaries:

The residents who live in hilly neighbourhoods, initially built in unofficial ways as refugee settlements. These areas cannot be reached by metropolitan transport and car use is also discouraged due to the lack of parking space in the area.

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Techn(olog)ical aspects (hardware and software):

Measures implemented: Barrier-free access, audio/visual/tactile improvements, etc.

Services provided: The new scheme consists of 5 minibus lines, and it is the largest free transport scheme in Greece.

Funding:

It is funded every year through the municipal budget.

Main actors and their interests:

- Authority of the Metropolitan Area of Piraeus Port City: To increase transport accessibility
- Authority of the Metropolitan region of Athens

Intellectual property aspects (patents etc.):

Non-applicable

3.3.2 Geographical context

Location in Europa, within country and region:

Metropolitan Area of Piraeus Port City (Greece)

Topographic situation:

Inaccessible hilly neighbourhoods

Socio-economic context:

Piraeus is the most important port of Greece, and one of the most important of the entire Eastern Mediterranean. The port is important as economic engine in its own right, but it also creates a lot of spin-off activity, such as trading, commerce and retail.

3.3.3 Context conditions

General context conditions before the start of a project:

Different vulnerable groups live in hilly neighbourhoods in the Metropolitan Area of Piraeus Port City. These neighbourhoods were initially built in unofficial ways as refugee settlements, and were transport isolated as they were not encouraged for walking and cycling, and couldn't be reached by metropolitan transport (as conventional buses cannot approach these hilly areas with narrow streets). Car use was also discouraged by the lack of parking space and the high road gradient.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

- Spatial exclusion of vulnerable social groups (students, elderly, people with disabilities, low-income households)

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- Exclusion of inaccessible hilly neighbourhoods, which are not served by walking-cycling infrastructure and metropolitan public transport

Opportunities that contributed to the initiation of the project:

- Affordability (e.g. reduced ticket prices, flexible payment schemes, etc.)
- Efficiency (e.g. decreasing travel times, improving connections at interchanges, etc.)
- Innovative non-IT technologies (e.g. engines, vehicles, infrastructure, street furniture, etc.)

3.3.4 Case history

Initiation phase:

Metropolitan Area of Piraeus Port City were considering these two options:

- Minibuses for permanent daily use
- On-demand mini vans for people with disabilities

Pilot phase:

The new scheme consists of 5 minibus lines (Figure below), and it's the largest free transport scheme in Greece. It is funded every year through the municipal budget:

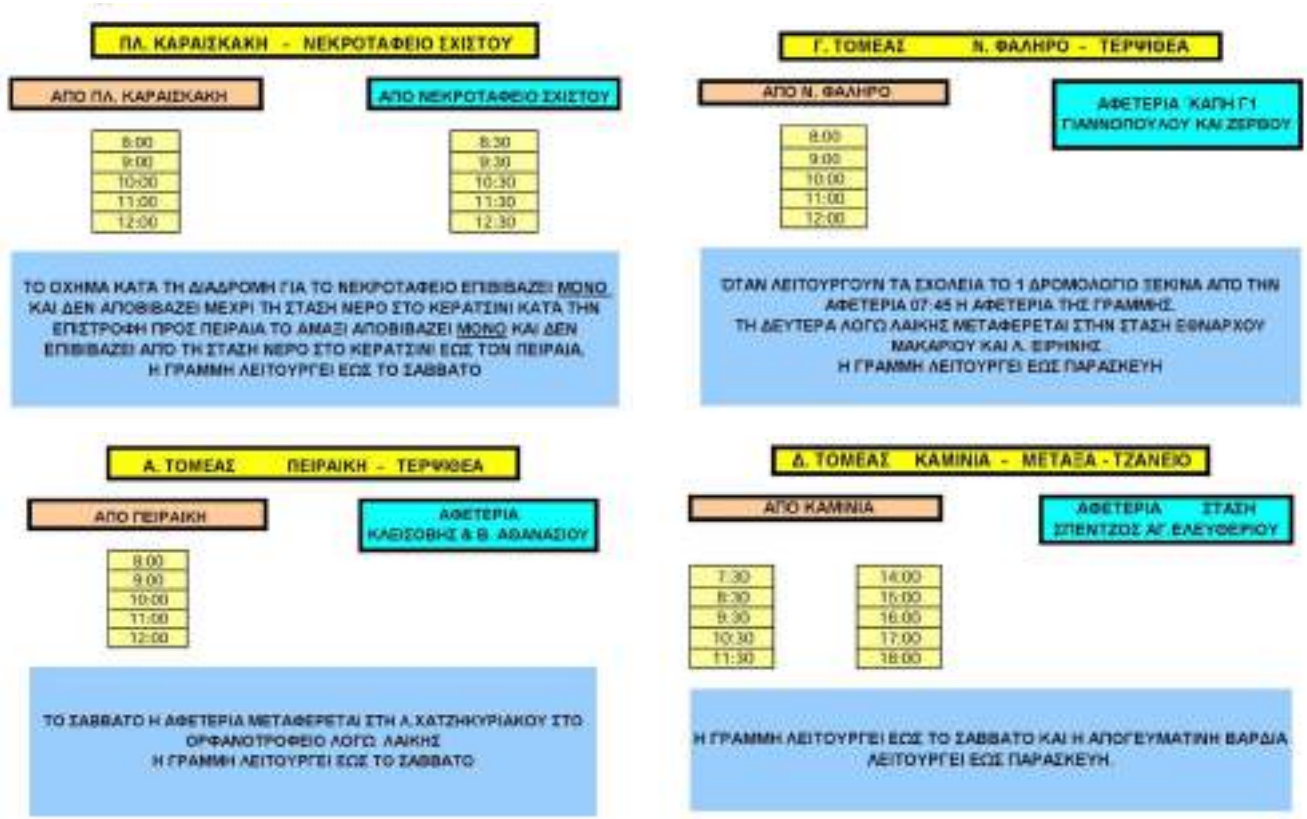

Figure 3: Timetables (Δήμος Πειραιά 2018)

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3.3.5 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

One barrier that might limit the transferability of this case could be the local political interests of each municipality and, consequently, the budget set aside for the funding of this initiative as, in this case, it's fully covered by the annual municipal budget of the Metropolitan Area of Piraeus Port City.

What are key conditions for the transfer of the key concept (or elements thereof)?

One of the drivers of this concept could be the urgency that the Municipality might have for acting in one specific neighbourhood with a serious problem of transport accessibility to avoid having marginal neighbourhoods. In this case, it's a completely isolated neighbourhood with a considerable number of transport isolated vulnerable users: They have no (easy) access to public transport (conventional buses cannot approach these hilly areas with narrow streets), and also, there is a lack of parking space and high road gradient that discourage cycling and walking.

3.3.6 Further reading on similar cases

- Free public transport in Deux-Sèvres (France) during fifteen months

https://www.sudouest.fr/2018/11/21/transport-en-commun-gratuit-ca-paye-la-preuve-a-niort-5646904-4755.php

- Niort (France) offers free buses

https://www.liberation.fr/france/2017/09/06/la-gratuite-des-transports-en-commun-un-modele-efficace_1594309

These buses serve free of charge 45 municipalities of the Communauté d'agglomération du Niortais (120,000hab)

- Luxembourg could become the first European country to introduce free public transport through its territory

https://www.sudouest.fr/2018/12/07/le-luxembourg-veut-devenir-le-premier-pays-a-rendre-tous-les-transports-gratuits-5635575-4803.php

The new government wants to eliminate tram, bus and train tickets in the first quarter of 2020.

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3.4 Disabled persons Freedom Pass

Figure 4: Freedom Pass Image source: London Councils. Website https://www.londoncouncils.gov.uk/services/freedom-pass/disabled-persons-freedom-pass

3.4.1 Essence of the concept

Basic idea:

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.

The Freedom Pass is valid on all Transport for London (TfL) buses (in the Greater London area) at all times and **is accepted all day, every day on London's trams, and** on the whole of the London Underground (the 'tube'), Overground and Docklands Light Railway (DLR) network.

The Freedom Pass allows travel in Standard Class on most local rail services in London, during the following times:

- Monday to Friday from 9.30am and until 4.30am the following morning
- at any time on weekends and public holidays

The Freedom Pass also allows travel on local bus services run by other bus companies which are outside TfL bus network across England during off-peak times - 9.30am to 11pm Monday to Friday and all day at other times (weekends and on public holidays).

The red rose symbol on the pass denotes this right - known as the English National Concessionary Travel Scheme (ENCTS). It does not allow use of trams, trains or any other modes of transport outside London. The Freedom Pass is not valid on most intercity coach services and is not valid in Wales, Scotland or Northern Ireland, or on tram or National Rail services outside London.

Intended beneficiaries:

To be eligible for the disabled persons Freedom Pass:

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- Have a sole or principal residence in London;

and

- Have any of the statutory disabilities listed in the Transport Act 2000.

The statutory disabilities which make someone eligible for a disabled person's Freedom Pass are:

1) People who are blind or partially sighted
2) People who are profoundly or severely deaf
3) People without speech
4) People who have a disability, or have suffered an injury, which has left them with a substantial and long-term adverse effect on their ability to walk
5) People who do not have arms or have a long-term loss of the use of both arms
6) People who have a learning disability that is defined as 'a state of arrested or incomplete development of mind which includes significant impairment of intelligence and social functioning'
7) People who, if they applied for the grant of a licence to drive a motor vehicle under Part III of the Road Traffic Act 1988, would have their application refused pursuant to section 92 of the Act (physical fitness) otherwise than on the ground of persistent misuse of drugs or alcohol.

Techn(olog)ical aspects:

Card-reader technology is installed on the gates at train and underground stations (and needs to be used on entry and exit to each station) and on individual buses, trams and Docklands Light Railway (with a card being read only upon boarding the bus/tram/DLR).

Funding:

Government funding to pay for the cost of travel for all individuals who are eligible to participate in the scheme.

Business case:

To increase opportunities for mobility and accessibility to essential services and facilities among persons with a disability by subsidising the provision of the cards and facilitating their utilisation on public transport

Main actors and their interests:

UK Government, Transport for London, and other bus companies outside Greater London.

3.4.2 Geographical context

Location in Europe, within country and region:

London, Greater London and bus services across England.

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Socio-economic context:

The scheme is applicable to all individuals who meet the eligibility criteria, irrespective of socio-economic context.

3.4.3 Context conditions

General context conditions before the start of a project:

Individuals would have been asked to pay for travel on public transport and could have had the effect of limiting their mobility and accessibility of services and facilities due to financial hardship.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Risk of exclusion for people with disabilities due to financial hardship resulting in limited mobility and associated reduction in accessing services and facilities.

Opportunities that contributed to the initiation of the project:

Government funding to pay for the cost of all eligible cardholders' travel. Card-reader technology made widely available and installed on all buses, trams, Docklands Light Railway and on the gates at train and underground stations.

Political context:

To improve mobility of target user groups, to increase accessibility for healthcare, social, education and employment opportunities. To meet national equality and diversity requirements regarding access and mobility.

Financial context:

Government funding pays for eligible cardholders' travel.

3.4.4 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Success can be measured on the number of people with disabilities increasing their mobility and accessing essential services and facilities. Success can be monitored in terms of health and social criteria (for example, a reduced number of individuals accessing healthcare for physical and mental issues due to their improved physical and mental wellbeing; Also through a reduction in missed healthcare appointments for those who need to access healthcare being able to travel to appointments; and additionally through reported wellbeing benefits in terms of social interactions and opportunities for socialising with others. Success could also be measured by extending the scheme by area or service, or also beyond London to other cities.

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Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, as it makes travel affordable for the target user groups, resulting in an increased ability to access essential services.

3.4.5 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

It is important to have a sufficiently large number of public transport vehicles, routes and service operators.

What are key conditions for the transfer of the key concept (or elements thereof)?

A very large funding contribution is required to pay for the travel of all eligible persons. Also needed is having a sufficient number of public transport vehicles, routes and service operators to enable people to travel. Finally, a willingness of operators to participate in the scheme is also essential.

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3.5 T2E - Transport to Employment

3.5.1 Essence of the concept

Basic idea:

T2E is a centrally co-ordinated shared taxi service that provides access to workplace, training and childcare where no alternative transport is available. It was developed to overcome transport barriers to work in remote rural environments in the far north of Scotland. The flexibility of using taxis enables the chaining of trips allowing access to child-care and then on to the workplace location.

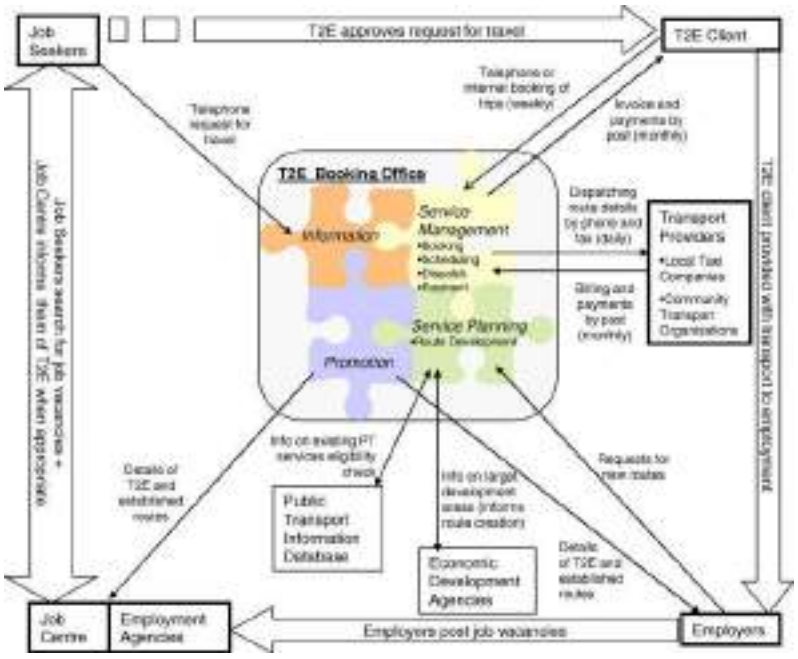

Figure 5: T2E business model Source: Cooper et al. (2010)

Intended beneficiaries: Job seekers and those requiring access to employment and access to childcare in remote rural areas. Mainly young people and women without private cars.

Techn(olog)ical aspects:

The T2E service is delivered through a centralised booking office that is tasked with planning routes and ordering travel services to reflect requests made to the service. Both telephone and on-line booking requests were possible.

Funding:

Users pay equivalent to bus fares (approx. 35p per mile). The service is fully sustainable with 3 passengers per journey. In reality around a third of costs were met through fares paid by passengers, although on the best performing routes this exceeded 50%. The remaining deficit was met through grant funding by a consortium of partners including the Scottish Executive, Highland Council, Working for Families, and the

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European Social Fund. By the end of the third year approximately £60,000 annual subsidy was required. The service ceased due to a lack of funds.

Business case:

To minimise costs of operation, T2E negotiated a reduced rate (45% below the publicly available tariff) with the taxi operators. Despite this, the fare revenue fell well short of the supplier costs.

However, Social Return on Investment analysis revealed that the measurable social benefits outweigh the investment (grant funding) by more than 3 to 1 for usage patterns experienced during the operational period.

Main actors and their interests:

Main actors are the local employers with job vacancies, local taxi companies that provide the transport services and child care providers. There has been partner involvement from Jobcentre Plus, Caithness and Sutherland Enterprise, the Shirley Project, LEAD Scotland and New Futures Sutherland, all of which have directed their clients to the service. Funders who gain direct benefit from the service include Working for Families, and Highland Council.

3.5.2 Geographical context

Location in Europe, within country and region: T2E operated in Easter Ross, Sutherland and southern Caithness areas of Highland Scotland (population 12,000 in operational area).

Figure 6: T2E operational area; Source: Cooper et al (2010)

Topographic situation:

Most of the population live in coastal villages – the inland Sutherland area is hilly and is one of the most sparsely populated areas in Europe with only 2.2 persons per km^2).

Socio-economic context:

The operating area is particularly remote from major centres of economic investment and industrial activity and the number and type of job opportunities available in the immediate area is severely limited, necessitating extensive travel in some cases.

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3.5.3 Context conditions

General context conditions before the start of the project:

Generally, the main employment opportunities are located in or near the coastal towns of Dornoch, Golspie and Tain, which are popular tourist destinations and main centres of activity. Within the T2E service area there are pockets of extremely high unemployment.

The low level of public transport provision outside the main towns was unsuitable for the commute to work from remote locations. Although a relatively high proportion of job seekers in Sutherland (61%) held a driving licence, private transport ownership amongst the long-term unemployed was very low (21%).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Both the tourist and industrial employers were rarely able to source all employees from the immediate vicinity, which in some cases threatens their survival. The resulting distances between individual and employer, while relatively small (10–25 km), represent a significant barrier to obtaining and maintaining employment where transport is not available.

The lack of traditional public transport increases the levels of personal isolation for unemployed in inland villages and contributes to community segregation, car dependence and reduced local economic sustainability.

Accessing childcare is particularly difficult for women from these inland villages who are seeking work and have no access to private car.

Opportunities that contributed to the initiation of the project:

The European Union funded EMIRES project (2002–2004) addressed the nature of the problem of accessing job opportunities from remote inland locations. T2E was then created as a spin-off from the EMIRES project with a member of the EMIRES team championing its benefits to local stakeholders and potential funders and creating and managing T2E as a social enterprise company.

Political context:

T2E was developed as a solution to overcome barriers to work in remote rural environments, an issue consistent with policy debate at the time (UK Government launched its Rural Strategy in 2004 and established the Commission of Rural Communities in 2005). As such it was able to secure funding from a variety of sources for a pilot project.

Financial context:

See Business Case section.

3.5.4 Case history

Initiation phase:

The EU funded EMIRES project (2002–2004) which included Highland Council, and worked with the local JobCentre Plus staff, developed software which linked job vacancies with public transport availability. This

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emphasised the fact that the low level of public transport provision outside the main towns was unsuitable for the commute to work from remote locations.

The T2E pilot was then created as a spin-off from the EMIRES project.

Pilot phase:

T2E was initiated in East Sutherland as a pilot project between April 2005 and April 2006 and funded by a consortium of partners including the Scottish Executive, Highland Council and Jobcentre Plus.

Roll-out phase:

The scheme was extended to cover the Easter Ross, Sutherland and southern Caithness areas with longer term funding from the European Social Fund from April 2006 until April 2008. The service was withdrawn in April 2008 due to a lack of on-going funds largely as a result of the constraints placed on local government spending resulting from the global economic crash.

Scaling-up and replication phase:

The T2E approach was adopted in services in Northern Ireland and in Dumfries and Galloway in South West Scotland.

3.5.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

In June 2006 there were 33 users accessing places of employment through T2E and by June 2007 the total number of clients had grown to 42. While around 75% of users leave the service each year, they are replaced by an equal number of new users. Surveys revealed that a third of users who stop using the T2E service continue in their employment positions and either move closer to their place of work to access on foot or purchase a car in order to access work independently. T2E has been the catalyst which has facilitated this social mobility and freedom, empowering individuals with the financial security and stability to escape isolation and poverty.

Detailed Social Return on Investment Analysis (SROI) revealed that:

- the combined benefit to individual user and the state is about £9000 per year (while the user is still in employment)
- the measurable social benefits outweigh the investment by more than 3–1 (i.e. for every £1 of investment, £3.07 worth of social benefit is generated; any SROI ratio above 1 is generally attractive from an investment viewpoint)
- On average, for each year of operation the number of clients who started new jobs and remained employed after twelve months as a result of T2E = 10

Note that on average the number of T2E users still in employment after a year was 20 but only half of these started 'new' jobs.

The analysis has not attempted to measure other less tangible benefits to the individual such as increased life stability, though these undoubtedly result in personal benefit. Nor does it measure benefit to the local businesses (employers, taxi operators, childcare providers and stores in the area) or to the State through reduction in workload for administration staff in the benefits system. All of these impacts are potentially

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significant and so the results calculated in the analysis will tend to understate the true social value created by the T2E project.

T2E was shortlisted for an award in the 'Travel to School and Work' category at the Scottish Transport Awards 2007.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

T2E has sought to operate on a low-cost basis for the user, reflecting the need to provide reliable services without imposing fare levels that would themselves become a barrier to use. This has been achieved from a user perspective as targets for the number of users have been reached and high levels of satisfaction and acceptability have been recorded by users of the service. The fact that a third of those who stop using T2E remain in employment demonstrates the effectiveness of T2E in removing the barriers that cause exclusion and isolation experienced by many unemployed people in remote rural communities.

3.5.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Operationally, few barriers to transferability of the T2E service exist as the model for delivery is not location specific. The lack of taxi providers in some of remote areas may pose a barrier. The presence of a strong local 'champion' and willingness of key partner engagement in the Sutherland region was viewed as an important ingredient that may not be evident elsewhere.

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3.5.7 Further reading on similar cases

Department of Infrastructure, Energy and Resources (2006) Review of the Taxi and Luxury Hire Car Industries Act 1995: Paper 3 – Rural Taxis. https://www.stategrowth.tas.gov.au/__data/assets/pdf_file/0006/88728/Paper_3_-_Rural_Taxis.pdf

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3.6 TaxiCard scheme

Figure 7: London TaxiCard; Source: https://www.londoncouncils.gov.uk/services/taxicard

3.6.1 Essence of the concept

Basic idea:

The service provides subsidised taxi travel for door to door transport for specific target groups (in particular, vulnerable users/ mobility-impaired persons) in urban areas in London. The scheme provides licensed taxis or private hire vehicles at discounted rates. It can be used 24 hours a day, 365 days a year, subject to vehicle availability. Taxis can be booked up to 3 months in advance by phone or online, or hailed in the street or from taxi ranks. The card enables members to get out and about who would normally face difficulties in using public transport. The scheme also addresses some of the challenges of affordability (by, for example, reduced ticket prices and flexible payment schemes) to assist those on lower incomes. Taxi fares can still be expensive so TaxiCard is more likely to be used to make essential journeys (Health-related trips make up around 40% of TaxiCard journeys) but can also be used for social purposes, for example, shopping, events and visiting friends.
Taxicard allows the user to make a set number (up to 144 per annum) of subsidised journeys in licensed taxis. The number of trips allocated differs depending in which London borough the person lives.

Intended beneficiaries:

London residents with serious mobility impairments or whom are severely sight-impaired. The card is mainly used by the elderly and disabled.

Techn(olog)ical aspects:

The scheme uses an online booking system (CityFleet Taxicard Online Booking Website) and a mobile App (CityFleet Taxicard Mobile App). A 'Track vehicle' feature also exists, so that individuals know when the vehicle that has been booked will arrive. A 'share my location' button allows sharing of an individual's location whilst in the vehicle with anyone via an email containing a link to the vehicle's location. There is also a Touch ID login for iPhone users.

Funding:

Subsidised by Transport for London (TfL). TaxiCard London entitles eligible users to receive a discount of up to £10 per taxi trip with the passenger paying the initial £2.50 per trip and anything above £12.50.

Business case:

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Transport for London (TfL) provides subsidies for supporting the TaxiCard scheme.

Main actors and their interests:

Transport for London - the integrated transport authority responsible for delivering the Mayor of London's strategy and commitments on transport. TfL is responsible for running the day-to-day operation of London's public transport network and managing London's main roads. It provides subsidies for supporting the TaxiCard scheme.

Private businesses – taxis and private hire vehicles of the contractors in the London Taxicard scheme.

Taxi providers agree to accept TaxiCard discounts for eligible passengers and then reclaim discounted subsidy from Local Authorities. Taxi companies now accept TaxiCard booking via booking Apps as well as through website and phone booking.

3.6.2 Geographical context

Location in Europe, within country and region:

The scheme operates in London and the journey must start or finish in one of the 33 boroughs.

Socio-economic context:

Not especially relevant, as the scheme operates in all areas within the 33 London boroughs and, therefore, includes wealthier and more deprived areas, as well as areas comprising a mixture of the two socio-economic conditions.

3.6.3 Context conditions

General context conditions before the start of a project:

Individuals experiencing mobility or sight impairments would either have had to pay a full fare to travel in a licensed taxi or, alternatively, attempt to travel by bus/tram/London Underground. The latter would not have been a possible option in most cases, unless the individual were to be accompanied by an able-bodied person (typically a friend or family member).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Provides door to door transport for vulnerable/mobility impaired persons in urban areas using taxis at subsidised (discounted) rates to reduce instances of social isolation and difficulties raised by affected individuals in accessing healthcare, work, education, and leisure opportunities.

Opportunities that contributed to the initiation of the project:

A financial subsidy is offered by TfL throughout the scheme. Also required individuals to be appointed into key governance positions who were keen to improve the mobility and accessibility provision for vulnerable target groups. Co-operation between TfL and taxi operators enabled the scheme to operate smoothly.

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Political context:

Transport is central to the vision of the Mayor, Sadiq Khan, to create a city for all Londoners. The Mayor's Transport Strategy sets out his plans to transform London's streets, improve public transport, and create opportunities for new homes and jobs. To achieve this, the Mayor wants to encourage more people to walk, cycle and use public transport. This strategy includes assisting those individuals who face mobility challenges.

Financial context:

Transport for London provides the financial subsidy for the scheme.

3.6.4 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Success criteria are to enable individuals who might typically struggle to access essential services and facilities to be able to do so, through making use of the taxi service. Success can be monitored in terms of health and social criteria (for example, an increased number of individuals accessing healthcare for physical and mental issues; Also through a reduction in missed healthcare appointments for those who need to access healthcare being able to travel to appointments; and additionally through reported wellbeing benefits in terms of social interactions and opportunities for socialising with others.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, as the card broadens opportunities by enabling those who would have found it too challenging to travel by public transport to be mobile and access essential services and facilities.

3.6.5 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The scheme is transferable to other urban areas, due to the abundant supply of operators and vehicles and because shorter journeys are typically being made. These schemes are not as effective in rural and suburban areas due to the limited availability of operators and the distances involved in travelling and therefore higher fares per journey. The funding scheme could also be transferable, if a local authority was willing to provide financial subsidies.

What are key conditions for the transfer of the key concept (or elements thereof)?

The scheme requires an abundant supply of licensed taxicabs and operators who are willing to participate.

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3.7 UK free public transport for the elderly

Image 1: UK Free PT for over 60's (Doughty 2012)

3.7.1 Essence of the concept

Basic idea:

UK government states that one way to improve the mental health and chronic illnesses of older people is by reducing loneliness and lack of social engagement. One of the possible solutions to be implemented is to eliminate the costs of public transport for elderly people in order to help them to interact with one another aiming to share good times and provide and receive mutual aid and assistance.

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Intended beneficiaries:

Beneficiaries of the initiative are people over 60 years old.

Techn(olog)ical aspects (hardware and software):

None

Funding:

The UK government, subsidising public transportation for older people.

Business case:

- Free older person's bus pass means that elderly people can travel free on local buses in England.
- The Senior Railcard is an annual savings card. Older people can buy it for a one-off cost and it will allow them to make big savings on most rail fares in the UK.
- London Freedom Pass giving free or discounted travel for London residents across London transport networks, including trams, national rail, the underground, river services and buses.
- Various transport concessions available to disabled older people.

(Gov. Uk n.d.) (Age UK n.d.) (Transport for London n.d.)

Main actors and their interests:

- UK Government and Local Authorities: To concede free public transport passes to elderly people
- Elderly people: Get free public transport

3.7.2 Geographical context

Location in Europe, within country and region:

In all the local municipalities around UK.

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Topographic situation:

Not relevant

Socio-economic context:

Depending on the average income in certain areas

3.7.3 Context conditions

General context conditions before the start of a project:

The probability of older people living alone increases as they age, and past research has shown that older adults who stay engaged in activities have better physical and mental health than those who are isolated and lonely. A lack of social engagement can trigger mental health problems and chronic illnesses, such as heart disease (Platzman Weinstock 2018).

Accordingly, one of the measures that UK government implemented in order to improve the mental health and chronic illnesses of older people was by giving free public transport passes in order to help them interact with one another.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

A lack of social engagement between elderly people can trigger mental health problems and chronic illnesses, such as heart disease.

Opportunities that contributed to the initiation of the project:

UK Government subsidies

3.7.4 Case history

Initiation phase:

Different analyses were done to figure out the sense of urgency, in different vulnerable user groups, to adopt concessionary fare schemes that encourage public transport use, increase social engagement and improve mental health of citizens.

Pilot phase:

During the Pilot phase UK government analysed different pilot areas and researchers found that increased eligibility for a free bus pass led to an 8% increase in the use of public transportation

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among older people, and a 12 % decline in depression symptoms among those who started taking the bus when they became eligible for the program (Platzman Weinstock 2018).

Among the depression symptoms that people took up bus travel reported as reduced were "not enjoying life", trouble sleeping, feeling unhappy, lonely, sad, not motivated or that everything was an effort.

Roll-out phase:

Local authorities have different subsidies from one another. However, basic subsidies from all around the UK are:

- Free older person's bus pass means that elderly people can travel free on local buses in England.
- The Senior Railcard is an annual savings card. They can buy it for a one-off cost and it will allow them to make big savings on most rail fares in the UK.
- London Freedom Pass giving free or discounted travel for London residents across London transport networks, including trams, national rail, the underground, river services and buses.
- Various transport concessions available to disabled older people.

Scaling-up and replication phase:

These schemes have been replicated throughout all UK and are easy to replicate in other countries.

3.7.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

As said in point 4.3.4, researchers found that the initiative has increased the use of public transportation among older people and contribute to reduce the depression symptoms of elderly people.

From the economical point of view, the scheme can save up to £2,288 a year for those who regularly travel into the centre of London (Papworth 2014).

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

Yes, they do. They think that this study should motivate policymakers from other countries to adopt similar concessionary fare schemes that encourage public transport use, increase social engagement and improve mental health.

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3.7.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?:

- High occupancy in the public transport in peak hours
- Lack of funding related to increase the fleet of public transport if required
- Necessity of private transport to arrive to destination from the origin because of lack of public transportation.

What are key conditions for the transfer of the key concept (or elements thereof)?:

- A public transportation that provides to their citizens a level of comfort enough for elderly people.
- City ad campaign to promote the mobility of elderly people.
- Active workshops with elderly people to explain the project, how is Public Transport structured, etc.

3.7.7 Further reading on similar cases

- Homeless and 'vulnerable' people are given FREE public transport so they don't get 'forced into fare evasion' (Tanno 2018)
- Free public transport in Tallinn (Shearlaw 2016)

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3.8 Wheels2Work (W2W) scheme

3.8.1 Essence of the concept

Basic idea:

W2W is a UK nationwide initiative aimed at unemployed people who have received a firm offer of a job or training placement but who do not have any way of travelling to their place of work. Schemes offer the loan or rental of mopeds or small motorcycles, and in some cases bicycles or subsidised bus travel. Schemes are run by local authorities, charities, social enterprises and community interest companies on a not-for-private-profit basis. These schemes are particularly important for young people living in isolated rural communities where public transport is inadequate, or in and around towns and cities where public transport is limited outside normal business hours or to out of town/edge of town employment sites.

'Kickstart' is a wheels-to-work scheme operating in the English counties of Norfolk, Suffolk & Cambridgeshire and is the largest and only sustainable wheels to work programme in the UK. Kickstart has a fleet of over 300 Honda Vision Mopeds and receives over 750 applications per year with over 400 of these approved as active members of the scheme. To be approved, applicants must be over 16 and be eligible to hold or currently hold an EU/UK driving licence and not be excluded from receiving insurance for any reason (e.g. some driving or criminal convictions). They are then assessed for need to receive a moped by checking there are no existing transport services which the applicant can utilise to access work / training locations. Prior to receiving a moped or scooter all members must undertake compulsory bike training (CBT) and possess safety equipment and clothing. In most cases Kickstart organise and pay for these requirements.

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Table 3: Application Process, Source: https://www.kickstartmopeds.org.uk/application-process

Intended beneficiaries:

W2W schemes are generally aimed at unemployed people who have received a firm offer of a job or training placement but who find that they do not have any way of travelling to their place of work.

Some schemes have extended eligibility further to include:

- People who are currently employed but require transport assistance in order to sustain their existing employment.
- People who require transport assistance in the search for work which could include the loan of power-assisted bikes.
- People wishing to access post-16 education opportunities.

In addition to the above, 'Kickstart' also accepts anyone from rural areas who may be experiencing social exclusion. They are also looking for additional funding to provide a service for young adult carers and ex-offenders.

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Figure 8: Motorcycles and guidance used in the Wheels2Work scheme (Source: https://www.kickstartmopeds.org.uk/)

Funding:

For the Kickstart scheme, members will pay up to £32 per week for a 50cc Honda Vision Moped or up to £42 per week for a Honda Vision 110cc Scooter. These prices cover the full costs of the scheme including fleet purchase, maintenance, insurance, staff, premises and training/equipment costs. External funding is sought to reduce the weekly costs for specific vulnerable users for an initial period. Examples of this include:

- The Kickstart Charity Apprenticeship Fund is available to any individual residing in Norfolk, Suffolk, Cambridgeshire and Rutland who is taking part in an Apprenticeship Scheme. This is funded by the County and District Council and pays for the compulsory bike training course, and safety equipment (a brand new: Motorcycle Helmet, Motorcycle Armoured Jacket, Waterproof Trousers, Pair of Motorcycle Gloves, High Visibility Vest and a lock and chain). It also provides a £7 per week reduction in the cost of hiring the moped for the member for up to 1 year.
- The Kickstart Building Better Opportunities Fund (BBO) is available to anyone residing in the Greater Cambridge and the Greater Peterborough (GCGP) areas who are economically inactive or unemployed. The BBO fund covers the cost of the compulsory bike training and safety equipment as well as providing free weekly hire of a 50cc moped for a period of 12 weeks. At the end of the 12-week period the moped will be collected by the Kickstart Charity unless the individual states they are happy to self-fund the weekly hire cost of the moped (£32 per week).
- The Get Britain Working Fund is only accessible to an individual with a transport need who is unemployed and working with a Jobcentre Plus Advisor to move towards employment. This is designed for young persons, undertaking a Work Trial, Work Experience or Traineeship to gain skills needed for them to move forward towards securing employment and where they are required to travel to various locations or work unsociable hours when public transport is severely limited or unavailable. The benefits for individuals are the same as for the BBO fund.
- The Rural Scheme receives support from the European Agricultural Fund for Rural Development as well as from Norfolk County Council. This pays for the CBT and safety equipment for all rural members as well as a £15 per week reduction in hire charges for up to 6 months.

Business case:

All schemes require their clients to make a contribution towards the cost of running the vehicle. This should be similar to the cost of public transport, where it is available. Most schemes charge between £30 and £45 per week. These payments from the clients are vital to the viability of the scheme. However, most schemes

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have received initial grant funding to set up and then rely on continuing external funding to remain viable. This has led to long term sustainability problems.

Kickstart has taken a different approach whereby their starting point is to charge users the full cost of providing the service including fleet purchase, operational, maintenance, insurance, staff, premises and training/equipment costs. They then seek to secure external funding to remove any initial costs (CBT and purchasing safety equipment) and to reduce the hire costs to specific vulnerable groups. This approach has allowed Kickstart to be fully sustainable and to grow in size with more than 300 mopeds in its fleet.

Two of the key elements of its success were the decision to be in control of everything in-house (e.g. external maintenance costs 3 to 4 times that of in-house maintenance) and to invest in higher quality mopeds. Although the higher quality mopeds have a higher up-front cost (3 to 4 times more than the previous moped used) they have a longer life and require far less maintenance, which reduces staff costs for both mechanics and for collecting broken down bikes. Workshop time reduced 5-fold and vans required for collecting broken down bikes reduced from 4 to 1.

Evaluation conducted in 2005 of several W2W schemes cited an average cost for the scheme of £1910 (£2800 in 2019 prices) per six-month moped loan (Steer Davies Gleave, 2005). Kickstart is operating at about a third of these costs at £900 per 6 month-period (plus extra one-off costs of £240 for safety equipment and training). This is partly to do with the economies of scale of a large scheme and being able to employ in-house mechanics, but this expansion is only possible due to the improved reliability of the mopeds used.

Main actors and their interests:

The success of any scheme depends on having the appropriate actors involved. A good network of partners will help to inform all of the planning and application stages of setting up a project, and to direct policy locally and regionally. They may also be able to help run the scheme by providing financial contributions, the premises for the scheme, officer time, or other in-kind support. The Wheels to Work Association (W2WA) formed in 2012 acts as the representative organisation for Wheels to Work programmes throughout the UK, providing guidance and support to local Wheels to Work schemes and helping to establish effective local networks.

An effective network could consist of:

- Careers services
- Local Authorities
- Borough Council
- Parish Councils
- Jobcentre Plus
- Motorcycle dealerships
- Training providers
- Rural Community Councils
- Rural Transport Partnership
- Police and road safety organisations
- Private sector organisations
- Local Support and Development Organisations

However, as already mentioned, one of the main elements for the success of the Kickstart scheme has been their ability to keep control of the operations themselves by using in-house mechanics (2 training mechanics and 2 apprentices) and who service on average 4 to 5 bikes per day (out of a fleet of 300 bikes). Other in-house staff are involved in the administration of applications, the day to day operations and the financial

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management. A partnership officer provides the key role of engaging with potential users and potential funders.

3.8.2 Geographical context

Location in Europe, within country and region:

W2W operates in mainly rural areas across the UK. It currently provides services in 34 locations, but it has been implemented at over 50 locations in every UK region in the past with the exception of the heavily urbanised Greater London region.

The Kickstart scheme provides services across the English counties of Norfolk, Suffolk & Cambridgeshire. These are largely rural counties with some main urban settlements.

Topographic situation:

Varies by location.

Socio-economic context:

Typically, the schemes operate in rural areas where employment and training opportunities may be sparse and some distance from where young people live. In general, these areas are less affluent with few local employment opportunities.

3.8.3 Context conditions

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Growth in youth unemployment. Continued decline in population of rural areas, especially amongst young adults. Rural businesses unable to find staff for new jobs.

- Many rural businesses are located in hard to reach areas, resulting in difficulties to be able to attract and retain the employees they need.
- (Young) People can't get to work because they don't have access to transport. Regular public transport is often not available due to the sparse and widely-dispersed population, and is especially a problem if needing to arrive at work early in the morning or travel home late at night. For longer distances, the alternative to public transport is a car or motorbike. But for many young people that can be too expensive.
- Job seekers can't travel to where the jobs are if they can't afford to run a car or motorbike. This is equally true for young people who need to get to school or college.

Although the schemes are predominantly designed for young adults to access training and employment, the Kickstart scheme is seeing an increasing number of older users. In 2018, 75% of users were aged 18-24. This is now 50%, with 48% of users aged 24-40. There is also an increasing proportion of users who are female;

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growing from 5% in 2011 to 18% in 2018. Around 75% of all users come from rural locations with 25% residing in urban or suburban locations.

Opportunities that contributed to the initiation of the project:

The main benefit of W2W schemes is in improving the accessibility of those who are socially excluded. As part of their Local Transport Plans (Sustainable Urban Mobility Plans) local authorities must prepare an accessibility strategy which will comprise a series of local action plans to address particular problems of poor access or difficulties faced by certain areas. For rural areas with problems of social exclusion amongst younger people, W2W schemes can form an important element of these local action plans.

Local Authority funding (which most W2W schemes relied on) became tightly constrained following the 2008 global financial crisis. This resulted in a reduction of W2W schemes between 2008 and 2012. Central Government provided new funding through the Local Sustainable Transport Fund (LSTF) between 2011 and 2015 which allowed local authorities to competitively bid for funding for initiatives that support the local economy by supporting access to new and existing employment, education and training. W2W met this criterion and so a growth in W2W schemes followed. Since 2016, the LSTF has been replaced, but the new Access Fund is also potentially a source of W2W funding.

Across all schemes, the real funding issue is securing revenue rather than capital funding. Schemes generally have relatively easy access to capital funding for moped purchase from a range of sources (see above). However, securing funding for on-going operating costs was more problematic and required significant time invested by scheme managers/coordinators at the expense of their day-to-day job of providing services to and engaging with clients.

The Kickstart scheme experienced a reduction in grant funding from 90% in 2003 to only 4% of its costs in 2011. This resulted in a radical overhaul of operations overseen by the newly appointed general manager. Within 2 years the scheme had become fully sustainable without external grant funding, due to: a slightly higher price structure for clients; streamlining of premises; investment in a high-quality moped fleet; reduction in demands for workshop staff/external servicing; and reductions in operational costs (vans and staff time for pickup of faulty bikes).

3.8.4 Case history

Initiation phase:

The first Wheels 2 Work scheme started in 1996 in the rural areas of South Shropshire and North Herefordshire in the West Midlands, UK.

The Kickstart scheme (although not branded as Kickstart at this time) also commenced in 1996 with 2 mopeds available to access college from a rural village in Breckland District, a rural district within the County of Norfolk.

Pilot phase:

Following the success of the initial scheme in South Shropshire and North Herefordshire, W2W was extended to 7 areas in the West Midlands (North Shropshire, Herefordshire, Staffordshire, Telford and Wrekin, Worcestershire, Warwickshire and the urban scheme in Coventry). Although Wheels 2 Work is primarily targeted at those who are rurally isolated, the Coventry scheme is an urban scheme recognising that even within a city, accessing regular public transport can be difficult, especially for those working shifts or living

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within certain areas. These operated independently until 2006 (except Staffordshire, which had to finish due to a lack of funding).

Roll-out phase:

In 2006, the West Midlands Regional Wheels 2 Work Partnership was formed, which consolidated the seven schemes in the West Midlands regional area. With the formation of the partnership, the individual schemes standardised their operation, adopting the same logo, charging the same amount to beneficiaries, standardising the loan period and collectively purchasing the bikes and equipment; Thus generating cost savings through economies of scale. Meanwhile numerous other W2W schemes were being implemented across the country.

The Kickstart scheme expanded to 40 mopeds by 2003 with 90% of funding received as a grant from Breckland District Council. All maintenance was conducted externally at this time.

Scaling-up and replication phase:

Since the first schemes, the Wheels 2 Work concept has been implemented in every UK region with the exception of the heavily urbanised Greater London region.

In 2008 there were over 54 schemes operating in the UK including one each in Scotland and Wales. However, the numbers declined as funding from local authorities was reduced following the 2008 financial crisis. Funding shortages led to a decline in the number of schemes between 2008 and 2012.

The Wheels to Work Association (W2WA) was formed in 2012 to act as the representative organisation for Wheels to Work programmes throughout the UK, providing guidance and support to local Wheels to Work schemes. The W2WA assists W2W programmes in developing sustainable business plans which will attract support and funding from both public and private sectors. The number of schemes grew 35% between 2012 and 2015.

By 2011 the Kickstart scheme had grown significantly with 450 mopeds in the fleet, but often only a third of these were utilised at any time due to poor reliability. Maintenance costs had spiralled and operational costs recovering mopeds with mechanical issues were very high. This, combined with a dramatic reduction in grant funding resulted in the situation where only 4% of costs were covered by funding received. As a result, a complete overhaul of operations was implemented in 2013. This included registering the company as a charity with its own board of directors, and resulted in a reduction of almost 30% in the costs incurred. Secondly the unreliable fleet of mopeds in use was completely replaced with a lower quantity of higher quality Honda Vision bikes. This enabled a streamlining of premises, reduction in demands for workshop staff, bringing all servicing and maintenance in-house, and reducing operational costs (vans and staff time for pickup of faulty bikes). Finally, a new pricing structure for the hire of the mopeds was introduced which removed any reliance on external funding. This re-organisation delivered a fleet of 50 mopeds in 2013, which has grown to 330 mopeds by the end of 2018, with almost 95% of these in use at any time. There are plans to continue to increase this by around 30 bikes per year. Numerous external funding grants are received (see funding section) but the service does not rely on these to remain financially sustainable. When they are received, these funds are used to reduce costs for specific target users.

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3.8.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

W2W helps young people to look for opportunities outside of their immediate area, which can lead to increased aspirations and broader horizons. It provides the means of accessing employment, education and training opportunities; opportunities that an individual may not otherwise have. In some cases, they can also help young people to retain their employment/ training places. There is an over-riding consensus, however, that W2W is about much more than just providing the means to access work, education and training opportunities. The scheme also helps clients to maintain an active social life, which helps to improve opportunities and to enhance life chances. It also provides clients with: Greater independence and improved social skills; Increased confidence and self-esteem; Responsibility; Improved road awareness and road skills; and Greater opportunities.

The level of independence W2W offers young people can be much greater than that offered by other initiatives which aim to increase mobility e.g. taxi vouchers, community transport etc. For many young people, access to a moped provides the first real means of accessing opportunities without reliance on parents, or without needing to walk or cycle excessively long distances. This increased independence can also benefit parents considerably by removing the need for them to transport their children around.

Surveys with members of 11 schemes in North West England revealed the average length of time young people are involved with the scheme is 6-9 months. 97% of those on the scheme had successfully obtained a long-term transport solution on leaving the scheme: either their own moped or car, or shared transport with another colleague.

Evaluation conducted in 2005 of several W2W schemes found that where the scheme is used to get an unemployed young person into work the savings in benefits outweigh the costs by 2 to 1 (Steer Davies Gleave, 2005). If the Kickstart costs are applied, then the savings in benefits outweigh the costs by a factor of around 5 to 1.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Interviews with 52 members of the Wheels 2 Work North West Programme (Lane et al, 2008) revealed that 76% were 'extremely satisfied' with the support received and all but one would recommend it to their friends. None of those interviewed who have completed their time with the project are unemployed and 97% have been able to obtain their own sustainable transport option.

When asked to describe the ways in which involvement with the Wheels to Work scheme had helped them, the most frequent answers given by beneficiaries were: support in gaining employment, education or training (66%); and improvements in road safety awareness (76%). This is clearly a very positive finding, as 63% also identified assistance in overcoming barriers to inclusion such as the ability to meet friends and family and levels of confidence as a key outcome. Importantly, 39% stated that Wheels to Work had increased their motivation, with a further 37% stating that it had improved their aspirations. This is a significant finding as it suggests that despite being a short-term intervention, Wheels to Work can have significant long-term effects.

Other beneficiaries are employers who benefit from access to a larger labour pool and from being able to find people to fill posts more quickly. Colleges benefit from more individuals being able to access their

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courses. Local moped dealers, moped training providers, and businesses can benefit by supplying vehicles and services to provide training and, in some cases, maintenance.

3.8.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The Kickstart model is based on operating everything, including all maintenance, in-house. To be able to provide this in a fully sustainable manner requires a minimum number of mopeds in the fleet. For any scheme with fewer than 30 mopeds, it will probably be necessary to use external mechanics/garages for bike maintenance and servicing. This not only requires that there is a suitable garage nearby, but also adds to the costs of operation (Kickstart estimate that external maintenance was 3 to 4 times that of in-house maintenance).

The use of mopeds is not suited all-year to areas which have severe winters with significant ice and snow on the roads.

What are key conditions for the transfer of the key concept (or elements thereof)?

W2W is transferable to areas where there is a lack of transport access between job opportunities and job seekers (or training opportunities and those seeking training). This typically happens in rural areas some distance from the main towns where jobs or training exist. Public transport is either not available at all or does not fit with the working hours of main employers e.g. tourist industry. A known supplier of mopeds and an ability to maintain these is required. Also, a funding source for initial moped purchase is necessary; However, the Kickstart example shows that with the correct set-up and pricing model an active scheme can be fully sustainable and can grow year on year.

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4 New collective transport routes

4.1 Bürgerbuses in NRW

4.1.1 Essence of the concept

Basic idea:

Bürgerbuses are 8-passenger voluntarily driven vans that operate in the same way as traditional bus services. They run on a fixed route in rural and semi-rural areas of North Rhine-Westphalia with a set timetable and designated stops. Fares are payable in cash on each journey to the driver and prior-booking is not necessary. The service was developed in close consultation with local residents and bus associations with the aim of helping fill gaps in the PT network. In this case that means providing the first and/or last mile connection to larger cities. Application is limited to areas and times in which a regular bus service would not be economically viable thus limiting competition with PT operators. The buses are driven by community volunteers and passenger capacity is limited to 8 seats because volunteer drivers do not have bus driver licenses required by law to transport more than 8 people. There are currently over 130 active Bürgerbuses in NRW, with several currently in preparation (see image REF). Although the venture is not yet a travel norm, the idea was adopted from the Netherlands over 30 years ago.

Figure 9: *The Neuenkirchen Bürgerbus at the bus stop Hecking-Center/Rathaus (Photo: Stefan Klausing)*

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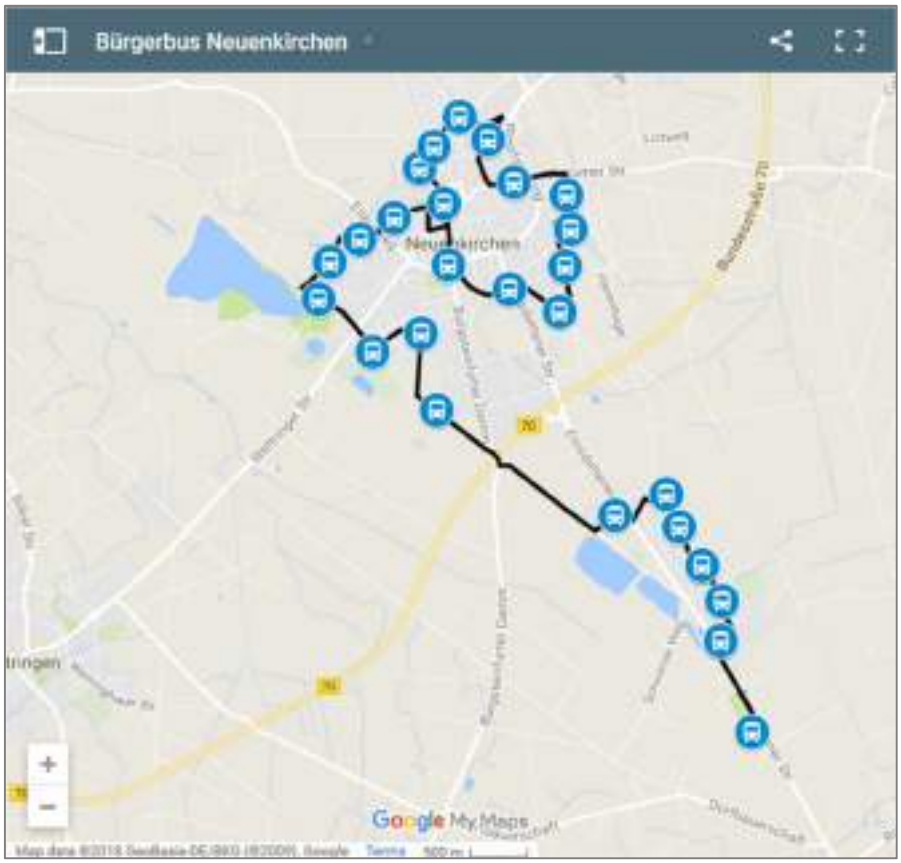

Figure 10: *Route plan for the Bürgerbus Neuenkirchen (Source: Bürgerbus Neuenkirchen e.V.)*

Intended beneficiaries:

The Bürgerbus benefits everyone living in areas underserved by public transport, usually in rural or semi-rural areas. Although the service is frequently used in particular by elderly and disabled people.

Techn(olog)ical aspects (hardware and software):

Some buses are equipped with low-floor entries for easier access for disabled people, but the Bürgerbus is a low-tech solution which does not make use of specialised software. The effectiveness and success of Bürgerbus lies in their simple and low-tech approach, making it easy for new volunteers without speciality skills to create their own Bürgerbus. Thus, future developments such as cashless payments or on-demand opportunities are not planned.

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Figure 11: **A handicapped accessible Bürgerbus in Herdecke (Bürgerbusverein Herdecke e.V, 2012)**

Funding (incl. fare structure):

Bürgerbuses are financially sustained by a combination of state and private funding as well as membership fees. The transport company (created by volunteers who organise a local Bürgerbus) owns the vehicles and may receive the following funding from the NRW's Ministry of Transport :

Table 4: NRW's Ministry of Transport Bürgerbus Subsidy amounts for a Bürgerbus 2017 (ProBürgerbus NRW, n.d.-b)

Bürgerbus-Förder NRW		Once-off Payment tariff		with Verbund / NRW tariff	
		conventional vehicle	alternative vehicle **	conventional vehicle	alternative vehicle **
organization fee	per year	6,500 €		7,500 €	
not wheelchair accessible citizens bus *	initial purchase	41,000 €	47,000 €	42,000 €	49,000 €
	subsequent acquisition	35,000 €	41,000 €	35,000 €	42,000 €
wheelchair accessible citizens bus	initial purchase	56,000 €	62,000 €	62,000 €	69,000 €
	subsequent acquisition	50,000 €	56,000 €	55,000 €	62,000 €
	initial purchase	66,000 €	72,000 €	77,000 €	84,000 €

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wheelchair accessible low floor citizen bus	subsequent acquisition	60,000 €	66,000 €	70,000 €	77,000 €

* only with the written consent of the local disabled representative
** for electric vehicles supplementary funding is granted according to § 13 section 1 No. 6 ÖPNVG
Alternative vehicles include natural gas or autogas engines, hybrid and electric drives.
In order to receive state funding, the local municipality must declare that they will cover deficit costs to ensure a Bürgerbus's continued operation.

Residents' membership fees supplement the Bürgerbus association's operational costs. Passive membership involves a donation of around 20 EUR per year, while active membership involves volunteering as a driver. To help attract more members, Bürgerbus associations host barbecues and joint excursions with their members. This is well advertised and often attracts elderly people. Drivers are often men aged between 60-70 years old.

The bus fare is usually between 2-3 EUR per person for single trip irrespective of length of the ride. This is about the same price as conventional PT in the province. Fares are payable to the driver in cash at the time of the journey. Monthly PT passes for the main PT network are not accepted on the Bürgerbus. Some Bürgerbus associations offer free rides for children and discounted multi-ride tickets that bring down a single trip price to approx. 1.20 EUR per trip.

Business case:

Bürgerbuses are a relatively low-cost solution for serving areas where regular public transport service does not exist, usually because it would not be economically viable. It does not (and legally cannot) compete with existing public transport offers, but instead complements it, offering first/ last-mile connectivity with larger cities.

On average, it takes one year to set up, from founding the Bürgerbus association, teaming with the local PT authority, and launching its service. The aim is to break even financially, although some Bürgerbuses do make a profit. Some busses, such as the *Kettwig Bürgerbus* offer external advertising space on their busses in exchange for private sponsorships. The partnership is often to enhance the corporate social responsibility portfolios of private donors, although the longevity of a partnership is not guaranteed.

Main actors and their interests:

For each of the 135 Bürgerbus services, the following actors were involved in the start-up: the local Bürgerbus association, the local authority, the local public transport authority, the Ministry of Transport for the state of North Rhine-Westphalia, and various volunteers.

ProBürgerbus NRW e.V. acts as an umbrella organisation for all Bürgerbuses in NRW which strengthens the cohesion among Bürgerbus associations by facilitating the exchange of information between them and supporting the establishment and promotion of new Bürgerbus projects. Hence, it is the interest of all parties to attain a more complete transport network that provides for their communities.

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4.1.2 Geographical context

Location in Europe, within country and region:

Bürgerbuses exist throughout the state of North Rhine-Westphalia, located in western Germany and bordering the Netherlands, Luxembourg and Belgium.

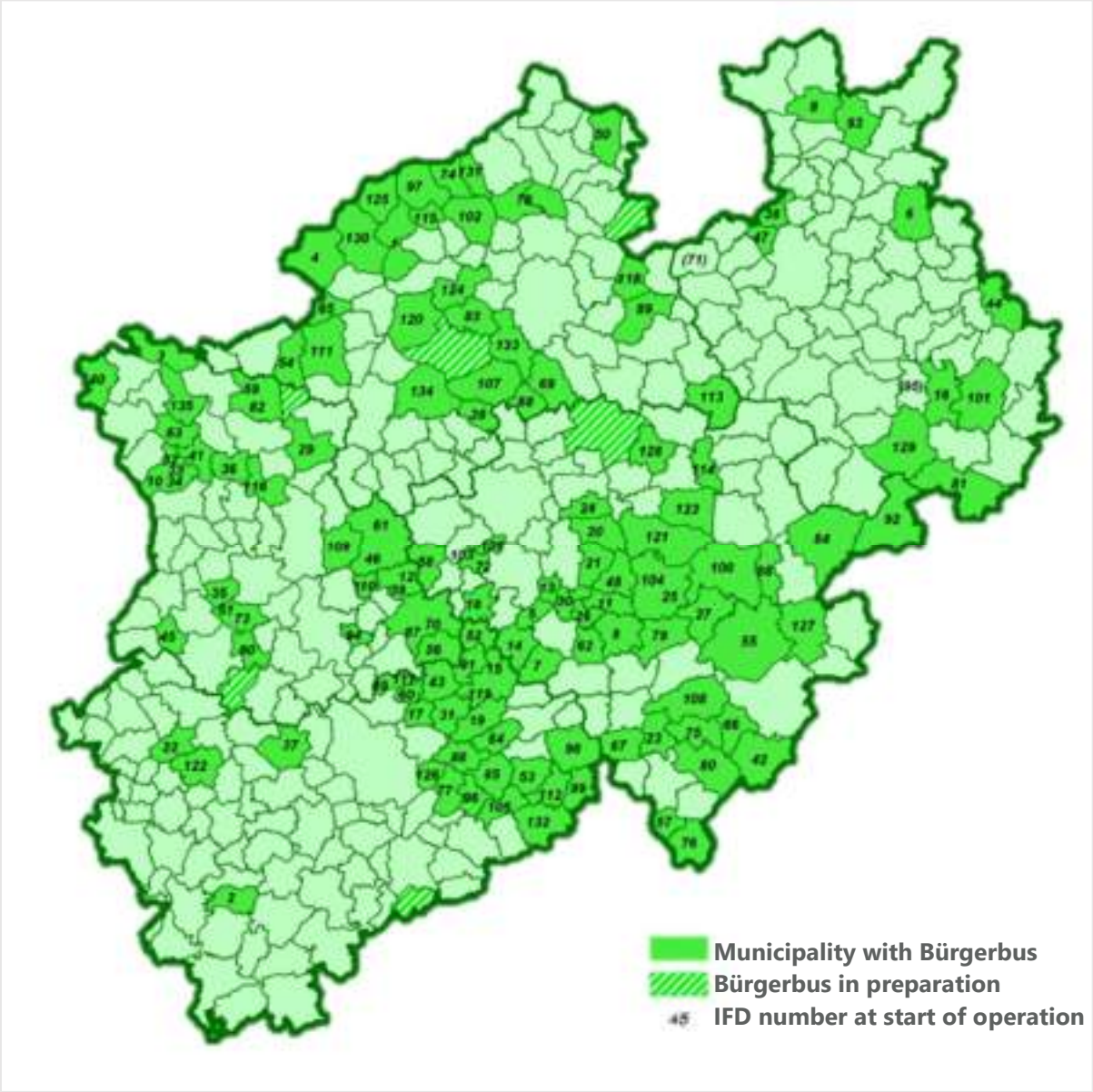

Figure 12: **Map of the Bürgerbuses in North Rhine-Westphalia** ***(ProBürgerbus NRW, n.d.-a)*****.**

Topographic situation:

Climate is mild and does not influence mobility options. Nor does the geology since most of the state lies in the Westphalian lowlands and Lower Rhine lowlands, despite there being some isolated mountain ranges in the South.

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4.1.3 Context conditions

General context conditions before the start of a project:

Bürgerbuses are started in rural and semi-rural areas with infrequent or no public transport service linking residents to local services and nearby cities. Oftentimes, road conditions in these areas prevent large buses from serving the area. In all cases, local governments and the public create their own mobility solutions.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

ProBürgerbus NRW e.V was founded in 1999 in Kettwig, Essen; but did not run its first route until 2002. It took three years to delineate the needs of the Essen community and how to best achieve it. Separation from services for those without a car was the motivating factor for its development. All Bürgerbuses are initiated, planned, and are self-run by residents who experience a lack of connectivity within the surrounding area (although there are no specific criteria to become a volunteer). In these areas, individuals who can get around by car do so, while others, such as the elderly and physically disabled, often become socially isolated due to mobility exclusion.

Opportunities that contributed to the initiation of the project:

After expressing their unmet PT needs and isolation from services to the city council and local operators Ruhbahn and EVAG, citizens took matters into their own hands. Residents of Kettwig conducted door-to-door questionnaires and interviews to find what solution would benefit as many residents as possible. The greatest edge that the then young coalition had, was their willingness to work with the city authority and PT operators. This gave them the opportunity to be heard because they were attempting to help solve an element of the other parties' service delivery problem.

Political and Financial context:

The state, regional and local governments supported the formation of Bürgerbus association and provided funding to cover their operational costs. They are in general, started as non-partisan bottom-up initiatives. The financial support for Bürgerbuses is laid down in public transport law of the state of North Rhine-Westphalia in parts of the following legal framework (ProBürgerbus NRW, n.d.-c):

- Federal Ministry of Justice: almost all current federal law (federal laws and regulations)
- Passenger Transportation Act: The legal basis for carrying passengers. Citizen bus traffic falls under the §§ 42 and 43.
- Public transport law NRW: The citizen bus promotion results from § 14.
- Driving License Ordinance (FeV): Various regulations are relevant for Bürgerbusfahere. The FeV was revised to 18.12.2010, but content changes were not made.
- § 11 Driving License Ordinance: Driving license for passenger transport. Here, in connection with Appendix 4 (see below), criteria for the suitability or unsuitability for a driving license are mentioned.
- § 48 Driving License Regulation: Here are the conditions, after which the driving license for civil bus driver is granted. Exceptions have been regulated in various decrees.
- Annex 4 to the Driving License Ordinance: List of typical clinical pictures and the resulting restrictions and requirements.

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- Annex 5 to the Driving License Ordinance: This specifies which examinations are required for the issuance of the driving license if the "Bürgerbus Exemption" is not used.
- Annex 6 to the Driving License Ordinance: No 2 specifies the minimum requirements for the right to drive. This does not apply if the examination is carried out according to the Bürgerbuserlass.
- § 21 StVO : Passenger transport, how many people in the vehicle may be transported.
- § 21a StVO : Seat belt regulations
- BOKraft : Regulation on the operation of passenger transport companies
- § 2 SGB VII : Accident Insurance
- § 145 SGB IX : severely disabled persons reimbursement
- Decrees to the citizen bus

4.1.4 Case history

Initiation phase:

Pro Bürgerbus NRW lists the following steps for initiating a successful Bürgerbus:

- Dedicated citizens want to take their public transport under their own governance which otherwise cannot be operated without further economic justification.
- The city or community recognizes the opportunity that constitutes a citizen's bus for the community, and assumes the relatively low residual costs.
- A local transport company includes the citizen bus in its offer and covers the traffic law side of the project.
- The Ministry of Transport NRW supports the institution and provides a fixed amount for the purchase of the vehicle and an organization fee for internal purposes.

During the initiation phase, Bürgerbus services are planned by considering the additional needs of older and disabled passengers. Indeed, the proportion of severely disabled passengers on the citizens' bus is often higher than in other local public transport.

Pilot phase:

Many Bürgerbuses offer a free trial trip as part of the initial driver training so that residents can convince themselves of their Bürgerbus.

Bürgerbus associations welcome feedback from residents and regularly reassess mobility needs so they can adapt the service, in terms of the timetable and/or route planning, to better serve their region.

Roll-out phase:

The first Bürgerbus was launched in Heek-Legden in western Münsterland and has been in successful operation since 1985.

Another notable first is the Bürgerbus in Burscheid, which has operated since 2005 and was the first public bus in Germany to be powered by natural gas.

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Scaling-up and replication phase:

The number of successful Bürgerbuses in NRW continued to grow during the 1980s and 1990s, emboldening more rural areas to start one of their own. State regulations regarding Bürgerbuses have been effective at creating a somewhat standardised process for starting up a Bürgerbus association and service, bringing together the actors and funding needed to ensure its operation.

Since its founding in 1999, *Pro Bürgerbus NRW e.V.* has operated as an umbrella organisation for the Bürgerbus associations in the state, facilitating the exchange of information between them and supporting the establishment and promotion of new Bürgerbus projects.

4.1.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Bürgerbuses are considered successful if they see stable or continued growth in ridership; if they maintain a sufficient pool of volunteer drivers; and if they foster a greater sense of community by providing a personable service. With so many successful examples in NRW, other German federal states have implemented Bürgerbus associations too.

Do the intended beneficiaries perceive the project as an effective measure to tackle their risk of exclusion?

The Bürgerbus is perceived as an effective measure to tackle exclusion, as it not only fills public transport gaps effectively, but it is also a sociable mode of transport. The atmosphere is much more personable than a ride on an anonymous public bus. Passengers can chat with each other, and this adds value for the local residents. The Bürgerbus is perceived by users as "our" bus. Pro Bürgerbus NRW says that it's not uncommon for otherwise socially isolated people to take a round-trip ride on the Bürgerbus to enjoy a pleasant hour among people.

4.1.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The Bürgerbuses in NRW rely heavily on public funds (state and local) to remain operational. In areas where public subsidy is not foreseen for this type of service, it may be challenging to sustain sufficient funding. In this case, it may be necessary to rely more heavily on private investors.

What are key conditions for the transfer of the key concept (or elements thereof)?

1. A few enthusiastic residents who propose setting up a Bürgerbus association and bus service as a non-partisan initiative (or involve all parties equally);
2. Willingness of the local municipality to cover the Bürgerbus's budget deficits up to an agreed amount;
3. A thorough needs assessment should be conducted to ensure that there will be enough passengers – not just to ensure enough revenue from fares but also to ensure good morale and retention of the volunteer drivers;
4. Fostering a personable atmosphere, where the Bürgerbus is perceived by users as "our" bus.

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5. Evaluation to determine an initiative sustainability.

4.1.7 Further reading on similar cases

Bürgerbus has been disseminated to parts of Austria, Switzerland, and widely in Germany.

MOOSDORF MACHT MOBIL

The community-run *Moosdorf Macht Mobil* association operates a "Dorfmobil" (village vehicle), which provides a ridesharing service for the Austrian town of Moosdorf using an electric car. The mayor of Moosdorf, Manfred Emersberger, invited the community to an informational event in March 2011 and presented the idea of starting a project to improve the mobility situation of the community. A working group was established and a project outlined. A community survey was conducted in order to specify the demands for a Dorfmobil. The registered association MOOSDORF MACHT MOBIL (Moosdorf mobilises) was founded at the end of 2012 and an electric vehicle was purchased. The association has now 315 members, representing approx. 20% of the total population of the community.

GMOA Bus

GMOA Bus is a community bus in a rural part of eastern Austria that picks up passengers from home and takes them to anywhere in the town. It serves some 100 users per day. The bus service is displayed on e-platforms, based in a Mobility Service Centre.

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4.2 De Bij Bus

Figure 13: De Bij Bus logo and image of Wassenaar, NL (De Bij Bus, n.d.)

4.2.1 Essence of the concept

Basic idea:

De Bij Bus is a demand-responsive, door-to-door bus service that fills transport gaps for elderly and lightly handicapped people who cannot use public transport. It helps to prevent the target groups from social exclusion due to transport isolation, but also acts as a space to interact with each other.

This membership-based service runs within the Wassenaar village of the Netherlands on Monday to Saturday, 9am-12pm and 1pm-5pm, using buses that seat between 4 and 8 people. Members must request a ride at least one day in advance by phone. The bus will also make stops at hospitals and nursing homes up to 5 km beyond the village boundaries with more advanced notice (48hrs). An evening service is also offered on Tuesdays and Thursdays.

De Bij Bus can be used for visits to family, dentist, physiotherapist, health centre, hospital, hairdresser, shops, library, market, etc. De Bij Bus offers its service to the Open Dining Table five times per week. This is a voluntary initiative by a local welfare foundation for the provision of a three-course lunch at special low rate with the aim to feed people and offer an opportunity to stay in touch with elderly residents. Transport to and from two day-care locations is also available, arranged on a daily basis during the two windows mentioned above or by appointment. Apart from weekend nights transport is also available for swimming lessons for children with light physical or mental impairments. There is always one spare bus available to bring people to the day care centres before 09h00, and pick them up again to bring customers home after 16h30.

Almost every Friday afternoon an excursion is organised for which interested parties can register to take part in.

All buses are designed for easier access, with low steps and convenient handles, and one bus is wheelchair accessible. The drivers, most of whom are volunteers, are ready to help any passenger to get in and out of the vehicle and help them from door to door.

Intended beneficiaries:

Lightly handicapped and elderly people with reduced mobility who cannot independently use public transport.

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Techn(olog)ical aspects (hardware and software):

Hardware: The buses feature low steps and convenient handles for easier entry and exit. One vehicle in the fleet is wheelchair accessible.

Software: None. Travel information and booking is done using the central reservation post.

Funding (incl. fare structure):

The operating costs for De Bij Bus are covered through a combination of public funds, private sponsors and donations, and membership fees. Costs are also kept low due to reliance on over 30 volunteer drivers.

The welfare foundation Stichting Maatschappelijke Ondersteuning Wassenaar (SMOW), which is responsible for managing De Bij Bus and Open Dining Table, receives a subsidy from the municipality, part of which is made available to the Bij Bus Foundation. Members' quarterly contributions of €35 per person or €45 per couple, also contribute to covering the costs. As of July 2018, De Bij Bus also receives funding from twenty-three sponsors, representing local businesses, hospitals, the local newspaper, the philanthropic foundation Van Ommeren - de Voogt Stichting and the St. Willibrordus social housing association. Registered members who pay the quarterly fee may make unlimited use of the bus by reserving it at least one day in advance by phone.

Business case:

De Bij Bus's business model involves a mix of public and private funds, with heavy reliance on private sponsors (47% of funding; see fig. 2) and a steady stream of volunteer drivers. In this way De Bij Bus more or less breaks even. According to the latest available annual financial report (2015), De Bij Bus operated at a slight loss (-€941). The total operating costs in 2015 for the system consisting of four buses and approximately thirty-five volunteer drivers and one subsidized semi-public contract driver, amounted to €105,808.

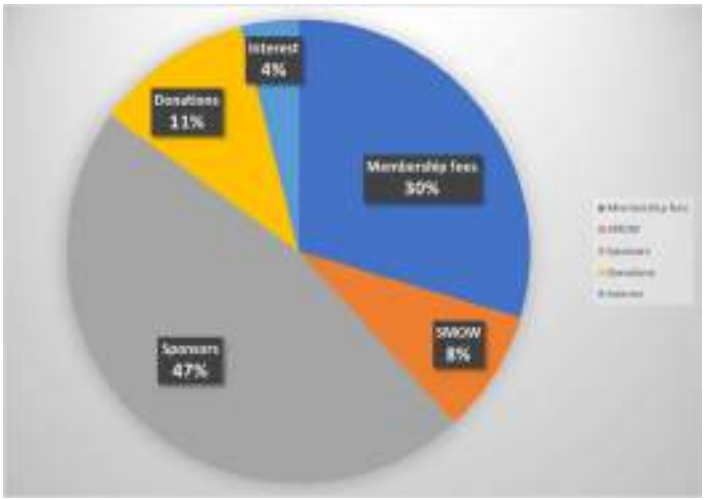

Figure 14: *Funding sources in 2015* ***(Cornelis Trommel, 2016)***

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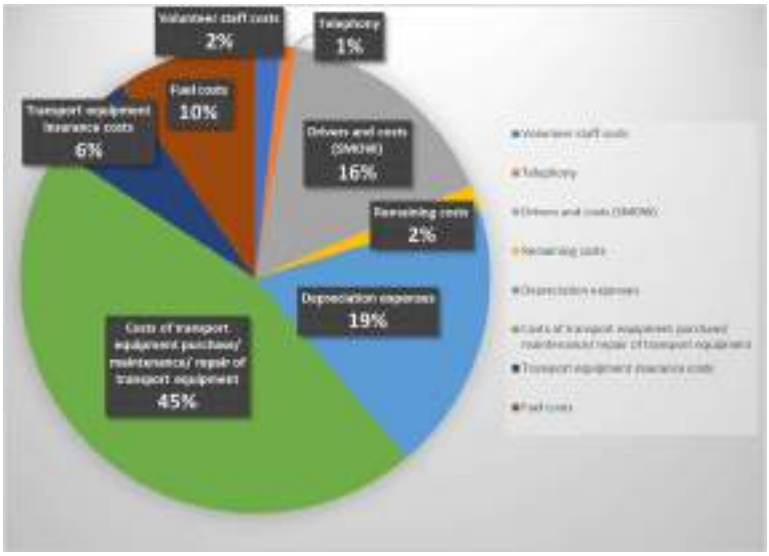

Figure 15: *Operating costs in 2015* ***(Cornelis Trommel, 2016)***

To attract private sponsors, De Bij Bus displays its sponsors' logos on the buses, ensuring continuous visibility throughout town and towards the passengers. This contributes towards the corporate social responsibility portfolios of their sponsors.

Main actors and their interests:

De Bij Bus is run by the welfare foundation *Stiching Maatschappelijke Ondersteuning Wassenaar (SMOW)*. SMOW and the *De Bij Bus Foundation* signed a covenant for additional transport in Wassenaar together with the *Municipality of Wassenaar*. Both foundations use a joint Central Post, staffed by a fixed force who, together with a volunteer, record all incoming journey requests from members in a list of journeys by bus. De Bij Bus has over thirty recruited *voluntary drivers*.

De Bij Bus's *twenty-three local sponsors* also have an influence on the bus scheme. They represent local businesses, hospitals, the local newspaper, the philanthropic foundation *Van Ommeren - de Voogt Stichting* and the *St. Willibrordus social housing association*. Their logos appear on the buses.

4.2.2 Geographical context

Location in Europe, within country and region:

De Bij Bus operates in Wassenaar, a municipality of 26 000 people located on the western coast of the Netherlands, in the province of South Holland, 13 km north-east of The Hague.

Socio-economic context:

Wassenaar is an affluent suburb of The Hague and is one of the most prosperous municipalities in the Netherlands.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 770115

4.2.3 Context conditions

General context conditions before the start of the project:

The elderly and disabled in Wassenaar who cannot use public transport (either due to physical inaccessibility of the PT system or a lack of it) were at risk of social exclusion due to transport isolation.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Despite the risk of social exclusion due to transport and social isolation, the project was not initiated out of urgency but rather an observable opportunity.

Opportunities that contributed to the initiation of the project:

De Bij Bus was spontaneously created by local enthusiast female residents of the "Golf and Country club Wassenaar to help elderly people stay mobile in their local community.

Political context:

This was a civic initiative with support of private partners and sponsors. The municipality has contributed only once (some 3 years ago) when they required that De Bij Bus should also be able to carry wheelchairs. Consequently, a new bus was purchased for which the municipality contributed half of the cost.

Financial context:

The project is financially sustained primarily by local SME sponsorship.

4.2.4 Case history

Initiation phase:

Although De Bij Bus has been operating for nearly 35 years, its current operational configuration came to be in the mid-1990s. The De Bij Bus Foundation was founded in Wassenaar in1984. The municipality of Wassenaar, the De Bij Bus Foundation, and SMOW signed a covenant for additional transport in Wassenaar in 1996. The following year, SMOW and De Bij Bus began working together to transport the elderly and those with mild disabilities.

Pilot phase:

There was no pilot project, just a direct launch with the backing of private sponsors.

Roll-out phase:

Due to the gradual success of the scheme, the scope is extended by adding more buses according to demand. Although it is not yet known whether they will be wheelchair accessible, it is assumed since this is the target market. However, the demand for it will be the decider.

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4.2.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

De Bij Bus has promoted its achievements via social media, regularly announcing new sponsorships and statistics about annual kilometres driven and journeys taken. Based on this information, it appears that the service is considered successful by the local initiators. De Bij Bus has seen a steady increase in kilometres driven in recent years, and there was a marked increase in journeys taken in 2015 (the only year for which figures were available:

- 2014: 88,000 km driven
- 2015: 90,500 km driven (+3%) and 26,100 journeys (+10%)
- 2016: 92,000 km driven (+2%)

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

While there is no active means of measuring the busses' effectiveness against exclusion, drivers report wide satisfaction with the service. They are able to get to know each user personally and what travel needs they have. Customer satisfaction lies between this close contact.

4.2.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Wassenaar is an affluent suburb. This may have been a factor for the generous donations from private individuals and the willingness of local businesses to become a sponsor, without which, the project would not have begun or continue to be sustained.

What are key conditions for the transfer of the key concept (or elements thereof)?

Willingness of the local authority to officially support and subsidise the scheme; attract a variety of local businesses and foundations to become sponsors. The most likely candidates are the businesses and service providers that the target group(s) use regularly; and recruiting and maintaining a reliable group of local volunteer drivers

4.2.7 Further reading on similar cases

On-demand micro transit shuttles (Arlington, TX, USA)

The City of Arlington and Via have partnered to launch a new, on-demand micro transit service in Arlington, Texas. Trips on six-passenger vans can be booked by phone or using the Via app for a flat rate of $3 per ride. A number of wheelchair accessible vans are available as well. Through this program, Via's vans currently serve downtown Arlington and several other heavily trafficked areas, from 7am to 9pm on weekdays and from 9am to 9pm on Saturdays. The service area will also further expand later this year. This renewable, one-year partnership is supported by funding from both the

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Federal Transit Administration and the City of Arlington, with the goal of providing local transportation that is affordable and convenient.

More information:

- http://policies.sharedusemobilitycenter.org/#/policies/973
- https://www.citylab.com/transportation/2017/11/a-bus-shunning-texas-towns-big-leap-to-microtransit/546134/?utm_source=nl__link6_112417&silverid=MzEwMTkyMjYwNjQ3S0

SmaRT Ride micro transit on-demand bus (Citrus Heights, CA, USA)

Sacramento's Regional Transit agency started testing a micro transit scheme called SmaRT Ride using shuttle buses that rider request via smartphone in a suburban town (Citrus Heights) in February 2018.

More information:

- https://www.sacbee.com/news/local/transportation/article194515734.html
- http://www.metro-magazine.com/management-operations/news/729457/sacrt-transloc-to-expand-microtransit-pilot-project

Flextrafik demand-responsive buses for wheelchair users

Danish demand responsive buses for wheelchair users. Street level entry and stair climber available.

More information: http://www.uitp.org/sites/default/files/UITP%202018%20-%20Travel%20for%20all%20%282%29.pdf?utm_source=flexmail&utm_medium=e-mail&utm_campaign=euexpress5379537920180207t141453880z&utm_content=+discover+the+full+report

Drinbus (Genoa)

On-call, flexible, economical bus service, active in some areas of the city. Book a ride by calling the call centre and choosing the origin and destination. Many possible set stops, on which itineraries are planned during the day.

More information: https://www.amt.genova.it/amt/trasporto-multimodale/drinbus/

AmicoBus

The service is dedicated to those who, due to disability problems, cannot use the public transport service and foresees the presence on board of the assistance staff. The AmicoBus is dedicated to the transport of wheelchair users, and users with other disabilities

More information: http://www.ctmcagliari.it/bus_a_chiamata.php

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PlusBus

The PlusBus provides door-to-door transportation and also takes riders to the Heerenveen and Drachten stations. One may also use PlusBus for visiting residents of nursing homes and patients in hospitals. One of the PlusBus vehicles is adapted with a lift for easier wheelchair accessibility. The foundation currently consists of 3 buses, 6 coordinators and about 50 volunteer drivers. In order to use the service, passengers must first become members of the foundation.

More information: http://www.plusbus.info

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 770115

4.3 De Witte Raaf (The white raven)

Figure 16: 1 of the 5 De Witte Raaf's rideshare vehicle fleet.

4.3.1 Essence of the concept

Basic idea:

De Witte Raaf (DWR) is a volunteer-run door-to-door ridesharing service for elderly, disabled people and their accompanying caregivers within the city of Eindhoven (NL). Two of the buses are accessible and are fitted with a wheelchair lift. All vehicles in the fleet are operated by a volunteer driver and a co-driver whose main role is to assist passengers from their door and into the vehicle if they require it. In order to make use of the De Witte Raaf's services, one must become a participating member of its association. Only then may one book and ride. Booking trips are conducted by telephone. Although there is no minimum advance notice required to book, early bookings can be made up to 7 days in advance. De Witte Raaf operates Monday through Friday, from 9:00am-9:00pm.
It has been operational for over 30 years and covers all locations within the municipality of Eindhoven's limits, including its service to the local medical centre, hospital and IKEA. The association is a strong part of community. They additionally volunteer their services to other community projects, and routinely take requests from the community. In 2017 they assisted with the annual marathon by transporting cleaning materials for the event. At Christmas time, they transported homeless people to a Christmas gathering. DWR also provided services to the *Vier het Leven Foundation*. This is a foundation that performs cultural activities for the elderly who do not like to go out on their own. Together they visit concerts, the cinema and other theatre performances. In 2017, DWR also assisted *WijEindhoven Foundation*. A supportive organisation to the Municipality of Eindhoven who help citizens with primary legal duties in the broad social domain of facilities, income, participation, the Youth Act and the Social Support Act 2015.

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De Witte Raaf also routinely assists the *Stichting Platform Gehandicaptenbeleid Eindhoven*. This foundation collectively represents the interests of residents of Eindhoven with a physical and / or chronic illness. A gathering consultation occurs every 6 weeks to which DWR transports attendees. Finally, DWR organises social events for its members to further aid the reduction of their social exclusion. This includes shopping trips to larger shopping centre, other nearby municipalities, the Light Route Parade and Celebration, etc.

Intended beneficiaries: De Witte Raaf serves anyone aged 55 years and above, as well as disabled people of all ages, for whom it is particularly difficult or impossible to make use of the regular public transport system. It is also a very affordable means of transport, thereby allowing greater mobility for low-income residents within the groups of the elderly and the disabled. There are currently 1200 members.

Techn(olog)ical aspects:

Hardware: 2 buses equipped with a wheelchair lift, and 3 VW Caddy vans
Software: De Witte Raaf uses a route planning software.

Funding (incl. fare structure):

The Foundation's equity amounted to EUR 17,976 on 31 December 2017. In 2017 the Foundation received donations totalling 375 EUR.

Cost per ride: flat rate of 1.80 EUR, payable in cash to the driver at the time of the journey.

Membership: € 15 per year, plus a one-time registration fee of € 2.50. Those who become members during the last 6 months of the year will only pay € 7.50 for that year. 1200 members.

Business case:

The foundation organises activities for its members throughout the year.

Main actors and their interests:

- Stichting Welzijn Ouderen Eindhoven (Eindhoven Foundation for the Welfare of the Elderly) were the original founders, but have not played a role in the organisation for almost twenty years and are no longer in existence.
- Stichting Vervoersdienst Eindhoven de Witte Raaf
- **Stichting Vrienden van de Witte Raaf (Friends of De Witte Raaf):** a non-profit voluntary organisation with the goal of obtaining funds to promote the mobility of older people and other groups in Eindhoven.
- **Volunteers:** More than 90 volunteers fulfil the roles of bus crew, journey coordinators, financial administration, technical maintenance, publicists, IT department. They volunteer their time about twice per week.
- **Part-time employees**, there are usually between 2 -4 paid employees including a coordinator that has been seconded by the Municipality of Eindhoven

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Figure 17: Every Witte Raaf bus is staffed with a volunteer driver and a co-driver (Source: © fotopersburo Bert Jansen)

4.3.2 Geographical context

Location in Europe, within country and region: Eindhoven is a city located in the southern province of North Brabant in the Netherlands.

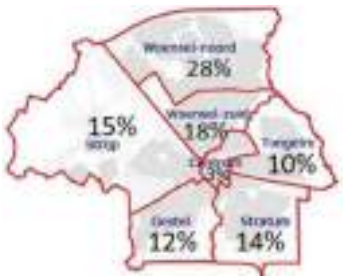

Figure 18: Proportion of members from each Eindhoven neighbourhood.

Topographic situation: Eindhoven experiences temperate cool climates with steady monthly rain throughout the year. The city centre experiences occasional flooding as its development has taken place on a river basin of sandy geology.

Socio-economic context: Eindhoven is university city with a large student population. It produces a quarter of the country's GDP. It has a low birth rate and aging population.

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4.3.3 Context conditions

General context conditions before the start of a project:

The initiative for De Witte Raaf started in 1984 and came from the elderly themselves out of dissatisfaction with their transport options. The welfare work in Eindhoven (in particular the Stichting Welzijn Ouderen and the Stichting Opbouwwerk Eindhoven) supported this initiative, which resulted in its foundation in 1987.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Opportunities that contributed to the initiation of the project:

This allows older people to remain active independently for longer and maintain social contacts.

Volunteers are recruited through media advertisement

Financial context:

De Witte Raaf has been subsidized by the municipality of Eindhoven since it started over 30 years ago. During this period, it wasn't common for municipalities to focus on the mobility of elderly people. However, its value has been proven in the past three decades, as it is a well-used service.

No profit is made. The money left over each year is reserved for the purchase of new vehicles. De Witte Raaf also has agreements with various companies about sponsorship in kind, e.g. by carrying out repairs up to a certain total amount per year free of charge.

4.3.4 Case history

Initiation phase:

Set up in 1987 by Stichting Welzijn Ouderen Eindhoven (Eindhoven Foundation for the Welfare of the Elderly)

Pilot phase, roll-out, and scaling up:

Although there was no formal pilot phase, the project was deemed a success after it sustained itself for 1 year by the end of 1987. By 1992 it was decided to add another 3 busses into its operation due to the continued success of the first bus.

The growing elderly population creates the expectation of scaling up, and DWR intends on adding an additional vehicle to its fleet if it can secure funding, raising its fleet number from 5 to 6 vehicles. The Route planning system was also upgraded in 2018 to incorporate the growing number of users and complexity of users.

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4.3.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

The project derives its success from the continued use of the service, given that the service is focused on their users. Since the users decide for themselves when they want to use the transport opportunity. The organisers keep the services cheap so that it does remain a viable mobility option. In line with this, success is also derived from the continued commitment of volunteers. Since the initiative is entirely voluntarily based, longstanding committed and reliable volunteers is imperative contributor to the success of De Witte Raaf's operation. The organisation monitors and rewards its volunteers routinely with social events, newsletter recognitions, and year end gifts. Anniversary awards are also handed out annually when volunteers reach 5, 12.5, and 25 year marks.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Every year, a survey is conducted amongst users which has shown their satisfaction. Effectiveness is monitored in practice and improved where possible with the aims of attaining more users with the same means of resources. This does not necessarily mean driving shorter distances, but making sure that routing is optimized. Acquiring users is This is usually done by word of mouth, i.e. by the request of interested users who may not be included in a route.

4.3.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

What are key conditions for the transfer of the key concept (or elements thereof)?

- Transferability: Can be copied, if the business case is clear. Transport is not viable, so subsidy and sponsorship are needed. Avoid competition with regular PT.
- Focused on the service to users. Users decide for themselves when they use the transport.
- Affordability

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4.4 Formentera Taxibus

4.4.1 Essence of the concept

Basic idea:

Taxis utilised in the non-tourist season on the Island of Formentera (Spain) to provide a flexible taxi-bus service for local people, replacing the circular bus line number 1 that operates in the summer months. The main objective was to reduce cost, maximise the use of existing resources (taxis with limited demand in winter) and also improve the level of service for residents. The flexibility of the service allows it to fit with health care services timetables and extended operating hours fit with shopping facilities opening times. Although popular with users, the service was discontinued after 1 year due to contractual issues with the taxi operators.

Figure 19: Bus stop network Taxibus; Source: Segura Duran Assessors (2009)

Techn(olog)ical aspects (hardware and software):

5 sustainable (solar powered) intercom devices were installed at the bus stops on circular Line 1. During winter, passengers use the intercom to notify local taxi operators they are at the bus stop and an available taxi will pick them up and drive the bus route. If no other passengers have requested the 'bus' then they return to normal taxi duties. Therefore, they only operate the route when there is demand and there is no standing charge.

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Funding:

Travel for elderly users over 65 is free (37% of users). Fares for other users are equivalent to the Line 1 bus fare (during summer season) for the distance travelled. Trip distances tend to be relatively long (85% are > 4km), while ticket prices are relatively low for trips of such a distance (almost 85% < 2 Euros).

Business case:

The taxi only operates on the route if it is called on demand by passengers through intercom devices installed at the bus stops. It never runs empty. As a result, there is no standing charge paid to the taxi operators. Due to the low demand for taxis during the winter months there is always at least one taxi available.

The costs of operation are much lower than the operating costs of the fixed route bus service it replaces. The hours or operation are much longer and the waiting time for passengers is reduced significantly due to the previous low frequency of service in winter months.

Main actors and their interests:

The Insular Council of Formentera – responsible for public transport and mobility needs of citizens and tourists on the Island. Local taxi operators receive increased business during the winter season.

4.4.2 Geographical context

Location in Europa, within country and region:

Formentera is the smallest inhabited island of the Balearics (Spain). The island is 19 km long, with a low average density of 120 inhabitants per km^2. The major villages are Sant Francesc Xavier, Sant Ferran de ses Roques, El Pilar de la Mola and La Savina. There is a resident population of 9000 persons with 40,000 visitors in summer months.

Topographic situation:

Socio-economic context:

Island community reliant on summer tourism. Winter season (October to March) resident population of 9000 with large proportion of elderly residents. The sparse winter population cannot sustain the summer bus service.

4.4.3 Context conditions

General context conditions before the start of the project:

The Island has 24 taxi licenses and just 1 bus operator. Public transport services are operated in the Island throughout the year but these are strengthened during the summer when the population almost quadruples compared to the winter season. Bus line number 1 operated all year crossing the principal points of the island from the Port (La Savina) to the capital (San Francesco). Total length is 15km.

Elderly residents are entitled to 15 free taxi trips per month to go from home to the Local Hospital and also to the Elderly Centres.

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Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Bus service costs on Line 1 were too high to sustain service in winter months. Withdrawal of service risked leaving non car owners excluded from essential services and isolated. Although a limited concessionary scheme for elderly passengers to use taxis to access health care and day care services did exist, it did not provide access to social and shopping needs for the elderly. Younger residents without car access would be left isolated with no affordable alternative to using full price taxis.

Opportunities that contributed to the initiation of the project:

The project was initiated and part funded through a feasibility study conducted within the FLIPPER project, an EU Interreg IVC project. FLIPPER objective was to achieve capability-building, environmental, sustainable and innovative solutions in the Public Transport domain through feasibility studies and by evaluating the viability and real impacts of pilot site implementations.

Political context:

The Insular Council of Formentera has the responsibility to provide adequate public transport to meet the needs of the island, for local citizens and for tourists that visit the island in summer season. The Council of Formentera had a need to reduce expenditure on transport services while maintaining adequate level of service for citizens. The taxibus service formed part of the new public transport plan launched by the Council of Formentera in 2008.

Financial context:

The service funding comes from replacing the heavily subsidised bus service during the winter months when patronage is very low. Insular Council of Formentera budgets are therefore diverted from subsidising the bus service to supporting the lower cost taxi-bus service.

4.4.4 Case history

Initiation phase:

In 2008 Formentera Island Council launched a new public transport plan in order to improve the services offered to both to residents and tourists. The new plan combines the classic regular transport with new flexible transport and transport by demand services in the winter months.

Pilot phase:

A feasibility study for the proposed new taxibus service was conducted in 2009/2010 and the project pilot was launched in October 2010 with "voice intercoms" at five bus stops to maximize the flexibility of the scheduled transport services.

During the pilot phase a 71% increase in the use of service was attained in low season (compared to the conventional bus line) and the cost of the concessions paid for free taxi trips for the elderly from home to the Local Hospital and also to the Elderly Day Centres decreased by 40%.

Roll-out phase:

In April 2011, contractual difficulties between the Administration in Formentera and the taxi association led to the service operating for only one winter season. Since then an on-demand single micro-bus has operated.

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Although more expensive and with more restricted operating hours, this does have the advantage of serving disabled passengers.

4.4.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

The Formentera taxibus service replaced a former fixed route bus service resulting in cost savings of over 40%. Over half the taxibus users formerly used the fixed route bus. A further 44% travelled by car previously while almost 5% of users were unable to make the trip previously by any means. The high level of mode shift from car and fixed route bus provides environmental benefits (estimated reduction in CO2 emissions of over 70%), however the really encouraging result relates to the social inclusion benefits to the 5% of users who could not make the trip at all before the taxi service existed.

By most measures, the initiators deemed the service a success. However, some contractual difficulties between the Administration in Formentera and the taxi association led to the discontinuation of the service after only one winter season.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The largest cohort of users were in the 35-59 years group (34%). 36% of users are retired while a further 30% are employed and 14% are scholars. There is a relatively high proportion of trips for work purposes, facilitated by the long operating hours and on-demand response fitting better with work schedules compared to an infrequent fixed schedule bus timetable.

Almost 60% of surveyed users have no access to a car at any time while almost 40% always have access to a car (but still choose to use the taxibus service). This suggests that the service is freeing up friends or relatives from giving lifts and maintaining independence for both young and old non-car owners.

Amongst users, overall satisfaction rated excellent with 22% of users and good with a further 37%, adequate for 35% and poor for 4%. Features of the service which could be improved were cost of tickets, reliability and hours the service was available, although in all cases the majority of users still rated these as good or excellent. The biggest issue identified with the service was that it was not suitable for use by disabled persons.

4.4.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Could be transferable to other tourist locations with low density resident population but a good level of taxi supply due to summer tourist trade and low taxi demands in winter. However, most other low- density rural areas would involve much longer distances and so an on-demand taxi service could not be so spontaneous and would have much higher operating costs. Use of accessible taxis would be a big advantage if available in other locations.

4.4.7 Further reading on similar cases

Westerlund, Y., and O. Cazemier. 2007. The Use of Taxis for Special and Integrated Public Transport in Sweden and the Netherlands. Available from: http://www.ville-en-mouvement.com/taxi/telechargements/Westerlund.pdf

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Mott MacDonald, 2008. The Role of Taxis in Rural Public Transport, APPENDIX C - Case Study Reports. A New Approach to Rural Public Transport. London: The Commission for Integrated Transport.

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4.5 France le Busway

4.5.1 Essence of the concept

Basic idea:

The BUSWAY is a dedicated bus line operated in Nantes based on the concept of "Buses with a High Level of Service (BHLS)". It aims to increase the quality of public transport in terms of frequency, capacity, regularity, comfort, accessibility to be compared with the quality of tram service.

Figure 20: Busway in Nantes, France (Source: https://www.thetransportpolitic.com)

Intended beneficiaries:

The Public Transport different group users are the main beneficiaries. At second level, beneficiary is represented by the transport operator and city in terms of decrease of operation cost and increase of environment quality.

Techn(olog)ical aspects:

For passengers: at station, real-time information displays, clear maps, vending ticket machines on board, real-time information displays: next stop/terminus, disturbances, waiting time of the next connected services of the network

For drivers and Authority: Fleet control, right of way, CCTV cameras in buses and in some stations and P+R

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Funding:

BUSWAY line is funded by a Public Transport service contract signed by SEMITAN (transport operator) and Nantes Metropole Authority (owner of all the transport system). The cost of service for the user is based on the same tariff scheme adopted for Nantes PT services (tramway, bus, chrono bus, busway, navibus).

Business case:

The business case is the same as the bus service both for the organization and operation and for the costs and revenues.

Main actors and their interests:

SEMITAN, the Public Transport operator responsible of the BUSWAY organization and operation.

Nantes Metropole Authority is responsible for the contract services and for verifying and evaluating the compliance of the operated services and key performance indicators defined in the contract.

4.5.2 Geographical context

Location in Europe, within country and region:

Nantes Métropole is a conurbation in western France, with nearly 600,000 inhabitants.

Topographic situation:

The BUSWAY connects the city centre (Place Maréchal-Foch), and the suburban area of Nantes (Porte de Vertou) crossing the east part of de l'île de Nantes.

Socio-economic context:

The BUSWAY, as all the dedicated PT services, aims also to increase equity among and social cohesion of the different areas and citizen groups.

4.5.3 Context conditions

General context conditions before the start of the project:

In Nantes Métropole, 3 tramway lines have been reintroduced since the 1980s to improve public transport services and the quality of public spaces. The BUSWAY was built exactly as the other tram lines, as line 4 of the PT network, and has been in operation since November 2006. It connects the ring road to the centre of Nantes in less than 20 minutes, with a frequency of 3 minutes at peak times.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The implementation of the BUSWAY Line 4 project came out from the city's aspiration to extend its public transport network between the centre of Nantes and a suburban residential area located in

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eastern Nantes that was not reached by the tramway lines. Originally, a tram link was proposed for the route. However, this was subsequently discounted due to high investment costs.

Figure 21: Nantes Busway: ramps (Source: https://tc-infos.fr/dossiers/bhns.php)

Opportunities that contributed to the initiation of the project:

In order to improve sustainable and affordable mobility in urban areas, France launched in 2005 its own concept "Buses with a high level of service" (BHLS), taking into account the "Bus Rapid Transit" concept developed in the USA; this national program, as well as the local political will, influenced positively the development of the BUSWAY Project.

Political context:

Strong political support at the local and metropolitan levels drove forward the decision to implement the BUSWAY and integrate it with the main tram axes. This also made it possible to allocate a central dedicated lane on more than 87% of the route, where the bus can act as a Bus Rapid Transit line (BRT) where it does not share the road with any other modes.

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Figure 22: France Le Busway, Station overview (Source: https://commons.wikimedia.org/w/index.php?curid=22010918)

Financial context:

The BUSWAY infrastructure (including lane/road, stops, vehicles and technology) was funded by Nantes Metropole Authority, while the operating costs are covered by the PT services contract.

4.5.4 Case history

Initiation phase:

The BUSWAY started operation in November 2006 with 20 Compressed-Natural-Gas (CNG) 18mt buses.

Pilot phase:

The pilot phase was carried out mainly for testing the 18mt buses and the ITS tools (real-time information displays and vending ticketing machines at the bus stations, information displays on board, priority signals control at intersections, etc.) before starting full operation of the BUSWAY.

Roll-out phase:

The BUSWAY is still in operation. In 2019 the current CNG buses will started to be replaced with bi-articulated vehicles (24,5m) fully-electric buses.

Scaling-up and replication phase:

The BUSWAY is a service and concept with a high level of scaling up in terms of implementation, working at different on the main components (vehicle, road infrastructure, stops, technology, marketing, etc). The replication of BUSWAY was relevant, making the BUSWAY the standard reference for the implementation of this type services (BHLS) in many cities in Europe and beyond.

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4.5.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

The success of BUSWAY is demonstrated by the 40,000 passengers transported each work day at the limit of the overall service capacity. The other criteria are related to the quality and operation performances index (like regularity and comfort) achieved that are comparable with the results of a tram line. In fact, the BUSWAY is so successful that the system is now overcrowded at peak hours. This is the main reason why they want to upgrade the vehicle fleet to bi-articulated vehicles (24,5m) electric buses, which carry more passengers.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, as stated above. The BUSWAY is the main tool for demonstrating that a full accessible and regular transport services could positively impacts on the equity and increasing the social cohesion.

4.5.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The main "condition" is the political willingness to prioritize the improvements to the PT services. Another important context consideration is the structure of the city: the BUSWAY could be implemented in small and medium size towns scaling the different component elements.

What are key conditions for the transfer of the key concept (or elements thereof)?

The key condition is related to the comprehension that the quality offered by the tram could be achieved also by the BHLS Service in terms of reliability, comfort, accessibility and regularity.

4.5.7 Further reading on similar cases

The Trans Val de Marne – Paris (RATP)

The TVM or "Trans Val de Marne" is the dedicated line of the BHLS Service operated in Paris by RATP. The length is 20 Km, 95% dedicated, mostly central and kerb protected. The service is operating with a high frequency (3,5 min) and quite high quality (regularity). At the moment, there are 66.000 trips a day, due also to the fact that TMV network provides the connection with 4 RER and 1 subway.

https://www.ratp.fr/en/groupe-ratp/bus/tvm-trans-val-de-marne-dedicated-bus-lane-creteil-noisy-le-grand-mont-dest

https://fr.wikipedia.org/wiki/Trans-Val-de-Marne

https://www.evous.fr/Bus-Tvm-Antony-La-Croix-de-Berny-RER-Saint-Maur-Creteil-RER-horaires-plan-adresses-1190331.html

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Figure 23: Trans Val de Marne, Paris, France (Source: Google Maps)

Zuidtangent– Amsterdam

Zuidtangent is the former name of the BHLS Service operating between Haarlem, Nieuw-Vennep, and Amsterdam in the Netherlands. The service runs on 41 Km line, with dedicated infrastructure around 70% / 80% with several viaducts and underpasses and a tunnel under an airport runway, 5km on the A9 motorway (use of emergency lane permitted in case of congestion).

https://www.engineersireland.ie/EngineersIreland/media/SiteMedia/cpd/training/Seminars%20temp/BRT%20Seminar/3-David-van-der-Spek.pdf

https://en.wikipedia.org/wiki/Zuidtangent

https://www.connexxion.nl/

Figure 24: Zuidtangent bus at a bus stop, Netherlands (Source: https://commons.wikimedia.org/w/index.php?curid=878178)

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Reference and websites

https://participation.bordeaux-metropole.fr/sites/default/files/saint-aubin_de_medoc/voyages_etudes_nimes_2016_bhns_nantes.pdf

FINN, B., et al. Buses with high level of service: fundamental characteristics and recommendations for decision making and research. Cost action TU0603, Final Report, 2011., available at http://www.uitp.org/sites/default/files/cck-focus-papers-files/BHLS_COST_final_report_October2011.pdf

Wellington Public Transport Spine Study, International Review of Public Transport Systems, Base Report, Appendix C1, Case Study Data Sheets, available at http://www.gw.govt.nz/assets/Transport/Regional-transport/PT-Spine-Study/3AppendixC1InternationalReviewofPTSystemsReportFinal.pdf

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4.6 GO MOBIL

4.6.1 Essence of the concept

Basic idea:

Go-Mobil is a door-to-door flexible transport service operating in some rural areas of Carinthia Region (Austria) where public transport and taxi service is insufficient or non-existent. Go-Mobil offers meaningful employment (as drivers) to the inhabitants of the villages while helping vulnerable population groups (especially physically impaired people) to escape social isolation. Today, across 36 rural communities, there are 20 Go-Mobil private non-profit associations, belonging to the holding company "GO-Mobil" certification GmbH (GMZ), which supports the municipalities in the operational development of the service.

Figure 25: Go-Mobil Drivers in the small Municipality of Magdalensberg (Source: http://www.magdalensberg.gv.at/infrastrukturundsicherheit/gomobil.html)

Intended beneficiaries:

Go-Mobil services are offered to those people living in rural communities where the conventional public transport offer is inadequate or insufficient. It especially benefits mobility impaired people.

Techn(olog)ical aspects:

Go-Mobil is available for booking via phone: passengers can dial the local Go-Mobil organisation to book a ride. Each local community has its own call centre with a dedicated phone number.

Funding:

Go-Mobil is funded mostly through ticket revenues and annual membership fees from national and local companies and organisations, e.g. the Austrian Federal Railways (ÖBB), the Transport Association of Carinthia, Kärntner Linien. Consequently, a cheaper fare price is offered (3.80€ per trip rather than 5.20€) for trips to/from public transport stations operated by the members. The remaining operating costs are covered by the municipalities. The annual financial resources provided

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by the municipalities for the Go-Mobil service are between 3,500 € and 7,500 € depending on the number of vehicles and the area covered. The drivers are volunteers but they are reimbursed for sustained expenses.

Business case:

The GMZ company assures to municipalities all know-how from concept and project development. It provides the protected brand, trains and assists the interested and suitable rural communities, support the association founders, the association board and the Go-Mobil drivers. For the purpose of maximizing operational and economic advantages in purchasing, GMZ concludes framework agreements with various suppliers in favour of the local Go-Mobil associations.

The business case relies on the involvement of local rural communities; in particular, retired people or elderly with license for driving are asked to be the drivers of the service and are reimbursed with a small amount. At the same time, there is an overall organisation that coordinates and manages the development of the service.

Main actors and their interests:

The main actors involved are:

- GO-MOBIL® ZERTIFIZIERUNG GmbH: the holding company which supports the organisation of the Go-Mobil services in rural communities
- The Carinthian state government (Die Kärntner Landesregierung): supports and co-finances the initiative
- Member companies (regional and national authorities, Federal Policy and at the local level transport operators, doctors, restaurants, etc.) in each local Go-Mobil scheme: pay an annual fee to GMZ to offset the costs for offering discounted fares to their stations, offices, etc.
- The local municipalities organize and operate the services

Intellectual property aspects (patents etc.):

Rules, responsibilities, advantages and obligations between GMZ company and the associated local municipalities are regulated in the agreement for association (use of brand).

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4.6.2 Geographical context

Location in Europe, within country and region:

As of 2018, Go-Mobil associations are operating in 36 small municipalities in the Carinthia Region (Austria), as shown in the table below.

Name of the Municipality	Inhabitants	Area [Km^2]	Density
Afritz am See	1432	28,06	51,03
Albeck	1026	99,48	10,31
Bad Bleiberg	2333	44,74	52,15
Bleiburg	4030	69,75	57,78
Deutsch-Griffen	927	71,5	12,97
Feistritz a.d. Gail	615	19,32	31,83
Feistritz i. R.	2483	71,84	34,56
Feistritz o.B	2141	54,19	39,51
Feld am See	1124	33,65	33,40
Ferndorf	2187	31,41	69,63
Fresach	1250	38,78	32,23
Gallizien	1775	46,72	37,99
Glödnitz	815	74,7	10,91
Grafenstein	2886	50,19	57,50
Gurk	1273	39,64	32,11
Hohenthurn	842	27,23	30,92
Keutschach am See	2438	28,37	85,94
Köttmannsdorf	2909	28,19	103,19
Lavamünd	2983	93,7	31,84
Ludmannsdorf	1806	26,36	68,51
Magdalensberg	3321	42,88	77,45
Maria Rain	2500	25,52	97,96
Maria Wörth	1545	17,41	88,74
Metnitz	2043	223,26	9,15
Moosburg	4529	36,76	123,20
Neuhaus	1025	36,36	28,19
Nötsch im Gailtal	2224	42,72	52,06
Radenthein	5925	89,3	66,35
Rosegg	1803	19,15	94,15

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Name of the Municipality	Inhabitants	Area [Km^2]	Density
Schiefling am Wörthersee	2612	28,61	91,30
Sankt Jakob im Rosental	4249	78,62	54,04
Sankt Stefan im Gailtal	1588	66,2	23,99
Stockenboi	1619	100,07	16,18
Straßburg	2133	97,44	21,89
Treffen am Ossiacher See	4360	71,04	61,37
Weitensfeld im Gurktal	2155	95,8	22,49

Table 5: 36 locations where Go-Mobil associations are operating in the Carinthia Region of Austria

Topographic situation:

Most of the 36 small municipalities are situated within the Klagenfurt Basin (in the South Eastern part of Carinthia), an inner Alpine sedimentary basin.

Socio-economic context:

Carinthia is one of the most popular tourist destinations in Austria. Major sights include the cities of Klagenfurt and Villach and medieval towns like Friesach or Gmünd. Carinthia features numerous monasteries and churches such as the Romanesque Gurk Cathedral or Maria Saal in the Zollfeld plain, the abbeys of St. Paul's, Ossiach, Millstatt, and Viktring as well as castles and palaces like large-scale Hochosterwitz, Griffen, or Porcia. In winter Carinthia offers ski resorts, alpine sports and mountaineering. The economy of the region is also based on a strong industrial development and goods exchange with the nearest regions/countries (Slovenia, Friuli Venezia Giulia). Carinthia is ranked at the top of European regions for economic development, average income, employment rate and eco-friendly attitude of the inhabitants. Due to the territory context, accessibility to public transport can be a barrier in small communities isolated from major cities.

4.6.3 Context conditions

General context conditions before the start of the project:

Due to the rural characteristics of the Carinthia Region, operating public transport or taxi services is not cost-effective due to low demand. The only way to access any kind of service in such areas (such as hospitals, schools, offices, etc.) is by private car.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

In the rural areas of Carinthia, where conventional transport services were insufficient or inadequate, residents have no option but to be highly car-dependent. Those without cars – often elderly, mobility impaired or low-income families with only one car – are dependent on others for lifts, often meaning they or have reduced possibilities to participate in society.

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Opportunities that contributed to the initiation of the project:

At the beginning of the 2000s, Go-Mobil was started as a pilot project in Moosburg thanks to the support of the Municipality.

Financial context:

Go-MOBIL is not a community business, but is supported by local member companies, sponsors and the municipalities.

4.6.4 Case history

Initiation phase:

The idea, the concept and the Go-Mobil brand was originated in 1999 by Goritschnig Maximilian, a local manager of an energy company supplier.

Pilot phase:

At the beginning of the 2000s, in the small municipality of Moosburg the first Go-Mobil was started as a pilot project, thanks to the good collaboration with the local administration and community. The other surrounding municipalities soon becomes aware about the success of the initiative and started to be interested in the initiative.

Roll-out phase:

At the beginning of the 2000, the Go-Mobil initiative came to the attention of Albert Kreiner of the Carinthian government which supported the scale up of the project. In the first decade of 2000, the Go-Mobil model and concept had been transferred rapidly to other rural areas of Carinthia Region. In 2009, Go-Mobil was extended up to 27 small municipalities. In 2017, there were Go-Mobil associations, serving 36 rural areas. The public-private partnership had been consolidated over the years; in particular, the Go-Mobil Zertifizierung GMBH company developed a certification process for the development of the local associations and for setting up the organisational and monitoring procedures.

Scaling-up and replication phase:

Go-Mobil aims to be extended in rural communities in Carinthia where public transport is no longer available or where its maintenance is becoming problematic. In particular, the Government of Carinthia would like to make the Carinthia Region a "model region" for sustainable mobility. In this vision, Go-Mobil is recognised as one of the main important transport suppliers that can answer the needs of rural populations in social, economic and environmental terms.

4.6.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

The number of passengers transported by Go-Mobil services has grown rapidly over the last ten years. Currently, every year between 8,000 and 14,000 passengers are transported per "Go-Mobil"

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unit (i.e. for each of the local Go-Mobil associations), amounting to some 160,000 trips made yearly, with a growing trend. In addition, opportunities of social involvement are offered to the drivers (more than 120 in 2018). GMZ is therefore recognised as a successful public-private partnership, of which the model functionalities have been impressively proven over the years.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The mayors of the small municipalities in Carinthia recognised the Go-Mobil model as a successful institution for rural communities, while the users (mostly young people or elderly who do not own a car) are now able to get to whatever service they need (e.g. doctor, pharmacy, municipal office, shopping, kindergarten, etc.).

4.6.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The regulatory framework of the Carinthia Region could be a specific condition which might limit the transferability of the Go-Mobil model. In particular, in those regions where there is no freedom of entry to the market for mobility services relevant to rural areas, tender procedures can be an obstacle.

What are key conditions for the transfer of the key concept (or elements thereof)?

The private-public partnership schemes between private companies and municipalities (where the first provides know-how and assistance to the second) is a replicable model in a deregulated transport market.

4.6.7 Further reading on similar cases

Bürgerbus Baden-Württemberg, Germany

A Bürgerbus is a public transport service which uses unpaid volunteers for most or all tasks, in particular for driving the vehicles. A Bürgerbus makes use of local resources and knowledge and close collaboration with other local stakeholders. The vehicles used are minibuses or large passenger cars. Today, there are more than 250 Bürgerbus services operating in Germany.

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Figure 26: Biberger Bürgerbus in Baden-Württemberg, Germany (Source: https://www.bund-bawue.de/themen/mensch-umwelt/mobilitaet/nachhaltig-mobil-im-laendlichen-raum/buergergetragene-projekte/biberger-buergerbus-ev/)

CMM – Central Moins Mobiles, Belgium

CMM – Central Moins Mobiles – are private transport services organized by Belgian Municipalities or CPAS (local centres which guarantee the provision of social services to low income residents). The user has to be registered as a member of CMM paying an annual fee of Euro 10,00 (Euro 5,00 for 6 months). As reimbursement for the expenses sustained by the driver, the user is invited to pay an amount of 0,34 Euro/km for each trip. The CMMs are operated under the umbrella of Taxistop which provides the interested/engaged Municipalities or CPAS with know-how for service management, operation and dissemination, training of operators, promotional material, help desk services and insurances covering incidents both for drivers or passengers. In order to join the Taxistop umbrella the organization (Municipality/CPAS) which wants to operate a CMM pays a fee of 80 Euro/year. Organization and operation of the service, engagement of users are in charge of the local Municipality/CPAS.he services are operated by volunteers with their private car. The services are targeted to disadvantaged people who can suffer barriers for independent travelling due to the inability to drive/own a car and difficulties to get a lift (i.e. by relatives or friends).

Figure 27: Central Moins Mobiles in Belgium (Source: https://www.mindermobielencentrale.be/fr)

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4.7 Mobuur neighbourhood service

4.7.1 Essence of the concept

Basic idea:

Mobuur is an "on-demand" door-to-door transport services operated in the districts of De Naald and Kerschoten of Apeldoorn municipality (NL). The target users are elderly and (temporarily) impaired people but the service is accessible to all the residents. The trip can be booked by calling a phone number from Monday to Friday (from 8:30 to 17:00) and must be limited within the boundaries of the two districts. The fare for a ride is €1,50; if the user has to do a return trip within one hour there is no extra-cost. Drivers are volunteers and they also take turns managing the call centre. The service is managed by a local association of residents, supported financially and operationally by the municipality of Apeldoorn and supported by Woonmensen, an estate company offering low-price residential buildings.

Figure 28: Mobuur drivers with a service car in Apeldoorn (source: https://www.degroenehoven.nl/)

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Intended beneficiaries:

The service has been specifically designed for residents in the districts of de Naald and Kerschoten who experience difficulties to move on their own, or to drive a car, and who depend on relatives or friends for their daily trips. In particular the elderly and (temporary) impaired people with mobility impairment However, the service is accessible to all residents who need to move within the districts' boundaries.

Techn(olog)ical aspects:

The service is operated with 2 electrical cars in order to make it fully eco-friendly.

Figure 29: Switching on a Mobuur service electrical car (Source: YouTube, https://www.youtube.com/watch?v=Bspjn1M1_X4)

Mobuur is available for booking via phone: an office for the collection of bookings and the management of the service is operated in the De Groene Hoven residential building owned by Woonmensen (see the "Main actors" section). Software for managing the bookings, collection, service scheduling and vehicle monitoring is provided by MyTripper IT company.

Figure 30: Mobuur service operation centre located in the De Groene Hoven (source: https://www.youtube.com/watch?v=Bspjn1M1_X4).

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Figure 31: Mobuur operator at call centre (source: YouTube, https://www.youtube.com/watch?v=Bspjn1M1_X4)

Funding:

The Municipality of Apeldoorn and the District Authorities of de Naald and Kerschoten rent the cars and give small contributions for daily operation (i.e. for car maintenance). The Municipality of Apeldoorn has also provided operational advice and practical support for the daily management of the service (i.e. support in training drivers as they are volunteers).

Woonmensen has provided free parking areas in its residential building, including recharge facilities for the cars as well as the operations office (i.e. booking centre).

Business case:

Social and financial value is created for the business much by the actions of the community in solidarity with the targeted users. The service is sustained by public funds that is provided by local authorities, and by volunteer drivers who are not compensated for their contributions. Woonmensen also freely provides most of the facilities that allow the success of the service: the operations room where the service is coordinated and managed including use of associated consumables (e.g. phone, light, water, etc.); parking areas, security, cleaning, and vehicle recharging.

Main actors and their interests:

The main actors involved are:

- Local Association of the residents (Wijkbewoners) in de Naald and Kerschoten which promoted the idea of the service towards the local Authorities, designed the service model and now operate it.
- Municipality of Apeldoorn who rent the cars and provide practical support to the Local Association of the residents in daily work for service management.
- The Local District Authorities (Wijkraad) of de Naald and Kerschoten who provide additional funds for service operation (i.e. maintenance costs).

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- Woonmensen, an estate company who acknowledged the service and provide parking areas and recharge facilities for the cars and the location to run the service centre.
- Stimenz, a social innovation association acting at regional (Veluwe) level providing services for job access (i.e. orientation, training recruitment, etc.) which supports the promotion of the service and the drivers' engagement through the use of their network.

Intellectual property aspects (patents etc.):

The intellectual property is owned by the IT provider.

4.7.2 Geographical context

Location in Europe, within country and region:

Apeldoorn is a municipality located in the central area of the Netherlands in the region of Veluwe. The inhabitants in the Municipality's boundaries are about 150.000 of which 120.000 are located in the central urban area.

Topographic situation:

The districts where Mobuur service is operated are quite compact. The areas are mostly residential and streets are in good condition. Apeldoorn is one of the rainiest cities in the country which can result in poorer conditions for driving, but the service is more valued during the winter.

Socio-economic context:

Being a highly liveable area, elderly people have been relocated from the inner part of the city after the retirement. The districts are well served by social services such as shops, pharmacies, healthcare services then the users of Mobuur service are not required to travel far to access the primary needs.

4.7.3 Context conditions

General context conditions before the start of the project:

Elderly people with different levels of mobility impairment (i.e. using a walker or just requiring a shopping cart) and not able to drive were seriously limited in their life independency as they depend mainly on relatives or friends for the daily trips for shopping, healthcare and access to social services and relationship (hair dresser, leisure, visits, etc.). When the possibility to travel as passengers become poorer and poorer the risk of social exclusion is a reality.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Marjolein Tillema is the coordinator of the Local Association of the residents who designed the service concept. She understood the need for a "on-demand" door-to-door transport service going around in its neighbourhood talking with associates and citizens. Furthermore, she personally saw some elderly people walking on the street with difficulties to use the walker or the shopping cart.

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Opportunities that contributed to the initiation of the project:

The driving force for the initiative was an identified need for short distance door-to-door trips which were poorly serviced by taxi's and additive transport. The good cooperation of the community actors involved presented a strong team in the initiation phase. Each of them (Citizens Association, Local Authorities, and supporting partners Woonmensen and Stimenz) contributed funds, facilities or know-how and expertise.

Political context:

The subsidies guaranteed by the Municipality and the Local Districts Authorities demonstrate their participation in the project and compliance with policies for improving accessibility to Public Transport services even through the involvement of voluntary economic activity.

Financial context:

The service is based on the engagement of volunteers. Costs for renting the cars have been sustained by the Local Municipality and other Local Authorities (Districts) while community sponsors sustain operational costs.

4.7.4 Case history

Initiation phase:

Marjolein Tillema, the current President of the Mobuur service, was an activist of the Residents Association. She understood the need for a new "on-demand" door-to-door services during its activity for the association. Talking with associates and citizens and walking around, she thought about the service model and the possibility for her association to manage and operate it. She then looked for experiences of similar services operated by voluntary associations and discovered that a comparable service was operated in Holland city: Schiedam, which she visited to learn more about.

Pilot phase:

The service was launched in April 2018 for a six-month pilot with a wide dissemination campaign. The campaign consisted of advertisement on local media and the distribution of brochures.

Figure 32: Mobuur brochures that were produced for service launch (source: YouTube, https://www.youtube.com/watch?v=Bspjn1M1_X4).

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Scaling-up and replication phase:

The Mobuur service is a replication of a similar service operated in Schiedam service. After the first pilot experience in Apeldoorn, the service has been considered successfully demonstrated and it is still on-going.

4.7.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

After a slow start, the number of requested trips increased as each week passed, in particular at the end of the pilot phase when bad weather conditions discouraged on street walking. The service is used most frequently on Thursdays and Fridays, probably as users must go for shopping for the weekends.

The number of drivers has increased from the initial number of 12 to 35. Success is measured by customer satisfaction. Here are some of the answers to the customer satisfaction analysis: "I can't drive due to the pain in my leg. Mobuur is a real advantage for me", "Mobuus helps me to feel more independent in travelling in the area".

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The success of the initiative is demonstrated in the interview held by Mobuur coordinator Ruud Blom on local Radio Gelderland: https://www.omroepgelderland.nl/nieuws/2325114/Bijzonder-buurtinitiatief-viert-feest-Mobuur-is-echt-een-uitkomst. In the interview Ruud explains that residents appreciated the service very much; in particular, the target group of elderly people with impairments felt more independent when travelling and are facilitated to participate in social activities.

***Figure 33: A parked Bürgerbus (source* https://www.bund-bawue.de/themen/mensch-umwelt/mobilitaet/nachhaltig-mobil-im-laendlichen-raum/buergergetragene-projekte/biberger-buergerbus-ev/).**

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The trends of the requested trips, the frequency used during the weekdays and the user feedback has showed the pilot's success in tackling social exclusion of target users by offering wider accessibility to social services and activities and increasing individual's independence by way of travelling. Mobuur service has allowed the target users to do shopping, to access to healthcare and personal care services, to visit relatives and friends in the covered districts. Mobuur has also allowed target users to travel outside the urban area of Appeldorn more easily by connecting them with interchange stops of the regional bus service. The drivers help users with their walkers, bags, and medical documents. Since users and drivers are both apart of the same small community, friendly relations are easily developed between them. This occurred most strongly at the beginning of the initiative when the number of drivers was reduced. This encourages a greater sense of community and feeling of being cared for, for the targeted users.

4.7.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

No. Transport services operated by volunteer organizations are widely present both in countries with a deregulated transport market as well as in countries with regulated markets.

What are key conditions for the transfer of the key concept (or elements thereof)?

Two conditions can be highlighted: the first is the cooperation between Local Public Administrations/Authorities, citizens associations, non-profit organizations and private support. The second is the leading role of the citizens association which identified the need, designed the services and promoted the idea towards the other stakeholders. This is a case of "bottom-up" solution creation where local unanswered needs are tackled.

4.7.7 Further reading on similar cases

Bürgerbus Baden-Württemberg, Germany

A Bürgerbus is a public transport service which uses unpaid volunteers for most or all tasks, in particular for driving the vehicles. A Bürgerbus makes use of local resources and knowledge and close collaboration with other local stakeholders. The vehicles used are minibuses or large passenger cars. Today, there are more than 250 Bürgerbus services operating in Germany.

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***Figure 34: A parked Bürgerbus (source* https://www.bund-bawue.de/themen/mensch-umwelt/mobilitaet/nachhaltig-mobil-im-laendlichen-raum/buergergetragene-projekte/biberger-buergerbus-ev/).**

CMM – Central Moins Mobiles, Belgium

CMM – Central Moins Mobiles – are private transport services organized by Belgian Municipalities or CPAS (local centres which guarantee the provision of social services to low income residents). The user has to be registered as a member of CMM paying an annual fee of €10,00 (or €5,00 for 6 months). The user is invited to pay an amount of 0,34 Euro/km per trip as reimbursement for the expenses incurred to the driver. The CMMs are operated under the umbrella of Taxistop which provides the interested and engaged Municipalities or CPAS with know-how for service management, operation and dissemination, training of operators, promotional material, help desk services and insurance (covering incidents both for drivers and passengers). In order to join the Taxistop umbrella to operate a CMM, an organization such as a municipality or CPAS must pay a fee of 80 Euro/year to Taxistop. Organization and operation of the service, engagement of users are in charge of the local Municipality/CPAS.he services are operated by volunteers with their private car. The services are targeted to disadvantaged people who can suffer barriers for independent travelling due to the inability to drive/own a car and difficulties to get a lift (i.e. by relatives or friends).

Figure 35: A successful CMM experience (source: https://www.mindermobielencentrale.be/fr).

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4.8 Wensbus ("Wish bus") Limburg

4.8.1 Essence of the concept

Basic idea:

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. It operates in 21 small core regions (small towns, neighbourhoods, and districts) in Limburg that are underserved or not served at all by public transport (usually the Arriva bus service) due to public transport budget cuts. Thus, the programme seeks to supplement available PT options, particularly for rural areas which may be excluded from the PT that operate in main towns only. Each of the mentioned core regions has a separate Wensbus program organised by either a private group of volunteers, or by a volunteer-based non-profit organisation (NPO). Each initiative is not linked with any other Wensbus project. How a Wensbus program is organised and run is entirely up to the group of individuals who create it. This includes the way that bookings can be made, but most programmes make use of email and telephone services and request that a space be reserved at least 24 hours in advance of the trip.

Intended beneficiaries:

Older people living in the countryside of Limburg are at risk of being socially excluded, particularly those who can no longer walk or drive on their own. Unintended beneficiaries include the volunteers that make Wensbus a success. They report feeling more connected to their communities and fulfilled by the help that they provide. Finally, the province of Limburg municipality who have their need to provide public transport in less densely populated areas alleviated by the many Wensbus initiatives. They benefit primarily by not running unprofitable bus routes that generate financial losses. The citizens of the region are not unhappy by the reduced service provision since the supplementary projects are a success. Any citizen of the 21 core regions are eligible to make use of a Wenbus.

Techn(olog)ical aspects:

Vehicles used to transport users either belong to individual volunteers, or can be owned by the volunteer-based Non-Profit Organisation (NPO) which is funded by the province. Each Wensbus project has its own times of service and does not run 24/7.

Funding:

A Wensbus project that runs for a minimum of 5 years can be subsidized using the Wensbus Grant provided by the Limburg provincial government if it meets the following conditions (Provincie Limburg, 2018b). The project must: be run by a volunteer non-profit; be supplementary to public transport and transport targets; make offers that are accessible and cost effective; cover journeys made within a radius of up to 15 minutes from start location; and be supported by the local community.

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If an NPO owns the vehicle/s, then access up to 75,000 euros per year may be applied for. If ownership of the vehicle/s is to a private citizen (volunteer), then only 30 000 euros may be given. The grant finances only the basic running costs of a Wensbus project.

If an NPO owns the vehicle/s, then the grant can cover the following costs: lease or buy a car; insurances; maintenance; parking fees; motor vehicle tax; fuel; data storage services; medical inspection for drivers; driving instruction and driving license checks; declaration of conduct (VOG) of drivers; notary fees; vehicle modification (lettering, handles / loops, etc.); track & trace. If however the vehicle/s are owned by a volunteer, then only the following costs are covered: fuel; medical inspection of drivers; driving instruction and driving license checks; statement of conduct (VOG) of drivers; and notary fees (Provincie Limburg, 2019).

Any other unforeseen expenses or organisational costs, traffic fines, damage and deductible VAT cannot be paid from Wensbus Grant funds.

Business case:

The fares make up only part of the costs of providing the service. The remaining costs are met through the Wensbus Grant which has been made available by the province as a result of savings in subsidy from removing fixed route services and replacing them with on-demand volunteer provided Wensbus services.

Travellers pay a standard price of 1.50 euros per trip. This single trip fee is kept affordable since other Wensbus costs are subsidized. Although the grant is reserved particularly for Wensbus projects, it is a fixed amount, and once the grant is used up funds are no longer available. In consequence, careful planning is required to ensure that annual grant applications are made in due time.

Main actors and their interests:

Limburg Province are primarily interested in making their transport expenditure more efficient. Reducing unnecessary services and supplementing them with other. Additionally, the province is interested in keeping the country side connected with the rest of the region. So they are also motivated to create social cohesion and inclusivity for the aging population who are particularly vulnerable to social exclusion in rural areas.

The interests of *volunteers* who are involved with the direct organisational activities are primarily driven by solidarity since financial compensation is unusual and if received capped according to the taxation authorities at five euros per hour at with a maximum of thirty hours per month (Belastingdienst, 2019; Provincie Limburg, 2018d).

The interests of *volunteer intermediaries* between Wensbus and the community (i.e. individuals who organise rides on behalf of users who may be too afraid or physically unable to engage) are purely solidarity based as they receive no compensation from those who organise a Wensbus project.

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4.8.2 Geographical context

Location in Europe, within country and region:

Limburg is the most southeast of the 12 provinces of Netherlands. It extends longitudinally from the north (bordering the Gelderland province) to the south where it internationally borders northeast Belgium. It also borders the western boundary of Germany. Limburg governs the following cities: Gennep, Venray, Weert, Venlo, Roermond, Sittard, Geleen, Heerlen, Valkenburg, Kerkrade, Vaals, Maastricht.

Topographic situation:

The southern part of Limburg is less flat than the north (and much of the rest of the country). It instead gently undulates to the southernmost point of the province. The highest hill's elevation is 110m. Its climate is stable the entire year and experiences a consistent rainy season with an average of 20 days of precipitation each month. However, the amount of rainfall is relatively low, with no more than 100mm per month.

Socio-economic context:

Although Dutch is the official and most-used language, Limburg has its own dialect, called Limburgish which has been an official regional language since 1997, and is protected accordingly as an EU regional language.

The province has an aging population. At the current rate of aging (i.e. between 1970-2015), by 2040 there will be a decline of 50% of children aged between 2-4 years old, 30% of adults between 25-60, and a growth by 75% of people over 65 (Van Essen, 2016). Already the elderly live amongst their own with little daily support from their children. They do not necessarily want to rely on their children to get around but want to retain their sense of independence, and do so by using public transport (Provincie Limburg, 2017a).

General context conditions before the start of a project:

The Limburg countryside has always faced a number of common regional challenges, a primary one is accessibility. The province wishes to keep the countryside attractive and liveable and thus easily accessible for everyone. This is in terms of physical, mental, and digital accessibility. Spatial planning and monitoring have shown that the countryside has a slowly decreasing trend in its accessibility. Particularly so for the growing travelling distances required to reach vital services such as schools, community centres, medical care, and major cities. At the same time, agriculture is developing rapidly and the province does not want to limit this by focusing on developing more services that are closer to reach. The challenge then is to find appropriate mobility options for the independent and safe travel of residents (some of whom rely on mobility being a provided service) that does not affect the agricultural machines which share the rural roads with residents (Provincie Limburg, 2018a).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Arriva has had a longstanding relationship with the Netherlands since 1998 when it bought operator *Vancom Nederland*. It has been operating buses and trains in Limburg since 2016 when acquiring a

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contract that ends in December 2031. Arriva has thus worked closely with the local council to ensure that services provided are the most efficient and that public expenditure is minimized. Cancelling bus lines that were not profitable for Arriva and creating losses in turn for the Province of Limburg was the catalyst that gave rise to the Wensbus project.

Opportunities that contributed to the initiation of the project:

Using the finances saved from the cancelled bus lines, a grant was created that would aid on-demand Wensbusses being subsidized. The Wensbusses would fill the void created by the loss of bus lines that had previously connected church towns and the general countryside. However, they would do so in a more efficient manner than the previous fixed-route and fixed-time schedules of Arriva busses.

The province's choice to purchase and disseminate a private company's communications strategy (*Connect Communications)* to introduce the Wensbus, shows that there was a strong need to deliver and have Wensbus received as a positive alternative to the removal of some PT services.

Finally, the willingness of volunteers to take on a state role without financial compensation should not be underestimated. Without volunteers across the twenty-one regions that Wensbus operates in, the venture would fail immediately. It is the most important element that has allowed the province to become more efficient with their countryside transport expenditure. Volunteers are entirely self-organising. New Wensbus projects were started with a snow ball effect after the success of the first ones. Keen volunteers who wish to start a new Wensbus in other regions are encouraged to approach Limburg Province. They do not recruit volunteers or instigate Wensbus projects.

Political context:

The policy framework relevant to the region's mobility is the Provincial Traffic and Transport Programme (PVVp-2014) adopted in December 2014. The core of the framework is to maintain and improve the mobility, and thus economic, accessibility of Limburg by offering a targeted supply of efficiently used mobility facilities. The traffic and transport policy thus contribute to cross-border liveability. There are several projects being run under the PVVp-2014 (Provincie Limburg, 2016).

Financial context:

The Wensbus O.V. pilot project was one such project of the PVVp-2014 being used to research how bus transport could be organised in smaller centres in a more demand-oriented manner (Provincie Limburg, 2016). It was initiated as part of the interpretation of making provided mobility more efficient. This manifested in a reduction in the region's PT budget (Tait et al., 2017). Bus lines that were running at a loss were consequently identified and cancelled from Arriva's services. However, volunteers of the first Wensbus pilot projects did not need any financial motivation to help solve their communities' mobility problem.

The Province have been able to create the Wenbus Grant from these savings. The grant is capped annually, and thus Wensbus expenses cannot exceed the amount of savings that have been set aside in the form of the grant. However, it is unknown what the net savings are of the province.

4.8.3 Case history

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Initiation phase:

Connect communications firm was hired to develop a communications strategy that would encourage the Wensbus to be received positively. This was used to avoid negative reactions and feelings of abandonment from the public when the majority of countryside bus lines were discontinued.

Pilot phase:

Eleven Wensbus projects were piloted for a period of one year in 10 municipal areas of Limburg. In this year 220 volunteers helped 43 000 travellers (Derison, 2018).

Roll-out phase:

Before 2014, the on-demand service had had fixed routes, it began to offer door-to-door services during 2014, when driving between church villages was abandoned. The venture was then expanded to the rest of the Limburg province during 2015 once its winning recipe was established.

Scaling-up and replication phase:

In 2017 the technology of Wensbusses got an upgrade, new buses were designed with wider seating and updated features for the driver. Overall it was more comfortable for drivers to operate and for passengers moving in and out of the bus (Provincie Limburg, 2017b).

Figure 36: Smaller areas with less demand have a smaller bus or a car that is used as the "Wensbus".

Other regions that have higher demand have additional busses (Tait et al., 2017).

Do the local initiators consider the project a success? What are their success criteria?

The council considers the project an enormous success. It is not known what the financial savings are that the Wensbus creates in comparison to the discontinued PT transport, but the continual expansion of the idea to other villages is a testament to its success.

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Each region is encouraged to have a social media account, usually this is a Facebook group page where feedback is collected. There are additional options for customer feedback available directly through channels on the Province of Limburg's website.

Beyond self-reported commentary, projects who have been subsidized by the province have to submit financial reporting and analysis.

> *"Whether it's the people I get on the phone when I call, or the drivers, they are all extremely friendly, helpful and flexible. It's a bit of a familiar atmosphere; like riding with good friends…." Nelly Stoffels* ***(Provincie Limburg, 2018c)****.*

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

It is unknown what the extent of the impact of Wensbus is reaching. This would require monitoring of the number of elderlies who previously used the PT busses who have successfully transitioned to using the Wensbus. In general, the venture is considered a success at reducing their risk of exclusion as its service has been catered more for them (i.e. changing the initial fixed routes to a door-to-door routes to limit the amount of walking necessary).

4.8.4 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Every organisation with a non-profit legal form is eligible to create a Wensbus project. This may however limit transferability to other regions within Netherlands that may want to start the initiative in their community but lack an NPO who can register and legally co-ordinate the efforts. However, other volunteer groups have shown that it is not necessary if a community is willing to predominantly fund it themselves.

What are key conditions for the transfer of the key concept (or elements thereof)?

The legal form of the operation: an NPO is advised. Particularly a foundation with at least three directors, a treasury, secretary, and a chairperson.

Good functioning and operation of the organisation: This is arguably the most important condition of transfer. Without competent volunteers, the venture disappoints. The Province of Limburg emphasizes having strong internal regulations within an NPO, particularly with pre-determined protocols for dealing with emergencies, generally dealing with customers, dealing with vehicles and refuelling rules, and payments of rent.

Insurance: There are requirements for passenger transport imposed by the *Rijksdienst voor het Wegverkeer* (RDW is a vehicle and licensing registration organisation for Netherlands). Vehicles owned by an NPO must also be insured by particular insurers (*Casco* and *SVI*) and personal vehicles of volunteers must have at least basic third-party insurance with *SVI*. It is likely that any other European city would have similar approaches with regulations for transporting others.

Driver certification and licensing must be in line with national regulations too. This includes having had a drivers licence for at least two years; intermittent medical exams if the driver is above 60 years

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old; and a Verklaring Omtrent het Gedrag (VOG) (Provincie Limburg, 2018d). This is a declaration of behaviour that is issued from municipalities after a person has been screened for criminality (Ministerie van Justitie en Veiligheid, 2017).

4.8.5 Further reading on similar cases

Omnibuzz: Preventing social isolation for the elderly with on demand transport. Various transportation options exist, including: individual travelling; travelling with others in a bus or taxi car; room-to-room transportation.

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5 Sharing schemes

5.1 AVIRA wheelchair-accessible car sharing

5.1.1 Essence of the concept

Basic idea:

AVIRA is a Belgian acronym for "Autodelen Voor Iedereen met Rolstoelvriendelijke Autos" (car sharing for everybody with wheelchair-friendly cars). The project provides a method for introducing car sharing with wheelchair friendly vehicles (and an optional volunteer driver) into a neighbourhood or town in an easy and structured way. It facilitates the sharing of wheelchair accessible cars between those who have one (e.g. associations, health centres, hospitals, municipalities, individuals) and those who need one (e.g. other associations, neighbours and voluntary drivers) by providing a way for them to all get in contact with each other. AVIRA is a part of the *Taxistop* platform that facilitates twelve other projects encouraging shared goods and services.

Within Belgium there are eighteen groups that have started, and a further six organisations that are in the final stage before kick-off. On average, half of the car sharers offer their vehicles outside of office hours, and the other half make them available 24/7. Vehicle reservations are made online or by phone using the *Cozycar* carsharing platform. Drivers can pick up the keys at the reception of the organisation offering their vehicles or from a key box and then proceed to meet the user who made the reservation.

Figure 37: locations of organisations and individuals who offer a wheelchair-friendly car (green pins) or are looking for a wheelchair-friendly vehicle (yellow pins) (Autodelen.net, 2018)

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Intended beneficiaries:

Physically disabled people are the intended beneficiaries of AVIRA but volunteer also report greatly benefitting from the initiative.

Techn(olog)ical aspects:

Hardware: Wheelchair accessible cars, vans and buses, as well as wheelchair bikes and trailers.

Software: To support new and existing accessible car sharing groups *Autodelen.net* has developed several tools, including an online reservation tool and an online search engine to find candidates and car sharing users (Autodelen.net, 2018).

Funding (incl. fare structure):

The AVIRA project is co-financed by the EU, European Regional Development Fund (ERDF) within the Interreg NSR IV programme. For each car sharing group that has started with AVIRA, the organisations usually own the wheelchair-accessible cars that they are offering and users share some of the associated costs by paying a certain rate for using the vehicle. On average, there are two vehicles per group, which can be used at a cost of 1.50 EUR per hour plus 0.40 EUR per km, and a once off 75 EUR deposit when they register with the car share.

Business case:

The venture aims to create social value and there is no financial motivation for it. The associations, health centres, hospitals, municipalities and individuals that offer their wheelchair-accessible vehicles can offset their costs of ownership by making the vehicle available during times when they do not need it. The aim is to foster social inclusion and enhance independent mobility particularly (but not necessarily) for regions where PT is scarce.

Although AVIRA is co-financed by the EU, trips are not less expensive than other similar services, since the funds are used to set up the car share and do not usually cover costs of running it.

Main actors and their interests:

AVIRA is a cooperation between the following organisations. *Taxistop*, a non-profit association based in Belgium that develops new services which allow the optimisation of use of personal goods. They co-fund *Cozycar*, a service that facilitates car sharing between individuals, together with *Autodelen.net* (formerly *Autopia*) who are a non-profit umbrella organisation for car sharing in Belgium. They created a platform to introduce the sharing concept in an easy and structured way and are primarily responsible for the AVIRA project.

Pegode is a care centre for persons with a disability in Flanders who initially began sharing a wheelchair friendly vehicle with the neighbourhood. They assisted during AVIRA's initiation phase. Their interest is in building a network of volunteers who want to transport differently-abled people. This includes a pool of their staff and their residents who volunteer as drivers.

Flanders local government contribute their e-car fleet to the local car sharing pool. Although they are not wheelchair-accessible cars, it does aim to encourage private car owners to also contribute their

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vehicles. It is further incentivized by providing designated parking space in the public domain for people who use a sharable car.

Intellectual property aspects (patents etc.):

None. AVIRA aims to disseminate all their knowledge that would enable more car shares to be set up. In the past they would provide a basic online booking system and data manager for new car shares. They have more recently decided that it is effective to partner and integrate the wheelchair-friendly cars with existing car sharing platforms.

5.1.2 Geographical context

Location in Europe, within country and region:

Belgium is a coastal country of western Europe. It borders Germany, Luxembourg, France, and the Netherlands. Most of the car shares operate in the Flanders region of Belgium with an additional few in the Wallonia region. Flanders is the northern part of the country and Wallonia the south.

Topographic situation:

Not relevant.

Socio-economic context:

This initiative started in an area of low resources where families who required wheelchair-adapted vehicles could not afford them.

5.1.3 Context conditions

General context conditions before the start of a project:

It is more often that wheelchair-accessible car sharing groups are formed in areas where regular, accessible public transport is scarce. Most of the operational groups are in small towns and suburban areas. However, this is not exclusively the case, *Cambio* is a roundtrip car share that exists within the city of Brussels that also offers wheelchair-accessible car sharing services.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Wheelchair-accessible cars are often far underused, with only one or two people using one car. At the same time, many disabled people who use a wheelchair cannot afford to own their own accessible car and consequently have limited mobility options, which can result in social isolation. Supply and demand exist, but the platform to feed each other did not. Autodelen.net decided to facilitate a solution.

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Opportunities that contributed to the initiation of the project:

In 2013, Pegode, a care centre for persons with a disability in Flanders, started to share an adapted wheelchair-friendly car with the neighbourhood. They were able to create a viable car share together with Autodelen.net's expertise.

Political context:

Current Belgian and EU law has to be adapted to allow car sharing systems, with respect to insurance, taxes and administrative issues. It has shown to hinder some of the capability for private wheelchair friendly vehicle owners to participate in car sharing activities. At the EU level, owners are exempt from paying VAT when adapting their vehicles, however these cars may not be shared with others. Similarly, cars that are adapted using Belgian grants may also not be shared. However, governments, care centres, communities, and people with disabilities are very enthusiastic about the idea and making these changes.

Financial context:

The running costs of a car share are relatively low and are provided by its users. Some capital is required to start a car sharing project. AVIRA is financed by the EU as part of the Interreg NSR IV programme which is financially supported by the European Regional Development Fund (ERDF).

5.1.4 Case history

Initiation phase:

In 2013, Pegode, a care centre for persons with a disability in Flanders, started to share an adapted wheelchair-friendly car with the neighbourhood. Autodelen.net, the Belgian umbrella organisation for carsharing, created an online platform to introduce this concept to the public in an easy and structured way. They took responsibility to facilitate a car sharing service for those with physical disabilities. However, Pegode played an important role to help establish AVIRA as viable venture. They helped with information dissemination to their residents and families of their residents. They also organised local information sessions and were present with an info desk at local markets. They additionally created a promotion video when AVIRA was first introduced to Flanders. Their interest is in building a network of volunteers who want to transport differently-abled people. This includes a pool of their own staff and residents. Furthermore, they meet every six months to discuss practical matters about the carsharing scheme (for example: price derivations and the rotation for car washing). All group members have taken a shared responsibility in the AVIRA project of their region.

Pilot phase:

Autodelen.net worked with the Flanders region municipalities to organise municipal car shares and supported the preparation of communication and promotion campaigns. They discussed the municipalities' needs, contacted potential car providers and formulated initial prices on behalf of municipals. Although they continually refine the design of the car sharing service, it is ultimately a municipality's responsibility for the car share.

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Roll-out phase:

Municipalities negotiate personally with car providers. They build support among policymakers and the administration, and stay in contact with car providers.

5.1.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

For each car sharing group, an evaluation meeting is organised with the municipality and Autodelen.net at six-month intervals where operational logistics and promotion of the service is communicated. Organisers have concluded from this that the growing number of projects are greatly successful. In the two years that have elapsed since the first project was kicked off, AVIRA in Belgium has had contact with over a hundred organisations and successfully facilitated eighteen car shares, with another six in an incubation phase. However, this is behind the goal that was originally set by Autopia who had aimed to have thirty in operation with at least three being piloted in other European countries. The main set back is the limitations that Belgian and EU law has on the ability for private vehicle owners to share their cars. Consequently, most of the cars shared belong to organisations.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Feedback is generally collected from the different neighbourhoods in which a car share operates, particularly at the initiation of a project. After running the pilot car share for a year and a half, it had acquired thirty-five people (of whom 17 were neighbours) who shared two adapted cars. 70% of users reported having more positive contact with their immediate community because of the project's introduction. Participants felt more mobile and included to their communities.

5.1.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

No case-specific context conditions.

What are key conditions for the transfer of the key concept (or elements thereof)?

The main elements that are required for successful operation include: collaborating with disability organisations; acquiring organisations and private vehicles that are legally allowed to be shared; disseminating information and availability to potential users; and finally, finding and pairing volunteer drivers with cars being shared to the users who require them both.

5.1.7 Further reading on similar cases

Wheeliz is a peer-to-peer rental website specialising in disability-adapted cars for wheelchair users. The organisation is not a traditional rental enterprise since vehicle owners can chose whether they want to profit from the rental or not. Prices are decided by each owner according to their costs of the vehicle and the type of adaptions that have been made on a car. Wheeliz does not include drivers.

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5.2 CarSharing Pfaffenwinkel

5.2.1 Essence of the concept

Figure 38: Banner from the CarSharing Pfaffenwinkel website. It says "Always a car and completely independent" (Source: https://www.carsharing-pfaffenwinkel.de/)

Basic idea:

CarSharing is typically seen as a viable solution for cities. Residents in rural areas, however, rarely benefit from this flexible and affordable mode of transport. The initiative "CarSharing Pfaffenwinkel" proves that this does not have to be the case. Since its establishment as a non-profit car club in the year 2000 it has expanded to 17 locations in 8 different communities, serving a total of over 300 registered users in a relatively rural area called "Pfaffenwinkel", between Munich and the Alps in Southern Germany.

CarSharing Pfaffenwinkel owns 22 vehicles of different types and sizes and rents them from as short as one hour to its members at almost marginal costs. Also two pedelecs are available. Users only pay per hour of car usage and per kilometre driven in addition to a modest monthly fee. This then includes all costs like depreciation, petrol, comprehensive insurance cover, vehicle taxes, VAT, administration, maintenance, annual inspection, breakdown cover, tyre change and cleaning.

Figure 39: The CarSharing Pfaffenwinkel vehicle fleet includes a variety of sedans, vans and pedelecs (Source: https://www.carsharing-pfaffenwinkel.de/fahrzeuge/)

Intended beneficiaries:

CarSharing Pfaffenwinkel serves the residents in a relatively rural area of 8 towns, ranging from 2,100 to 21,000 inhabitants.

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Techn(olog)ical aspects (hardware and software):

This initiative provides an online platform to reserve vehicles (www.carsharing-pfaffenwinkel.de) – in addition to a telephone hotline; the latter is used regularly by people who do not own or do not want to use a computer or smartphone. The vehicle keys are stored in and need to be returned to a key-safe near the parking area. It can be opened with a conventional key. Compared to the smart key-safes or on-board computers that are being used by many larger CarSharing providers, the system in operation in Pfaffenwinkel is comparatively low-tech. To save costs, users record their trip duration and distance by hand in a paper booklet.

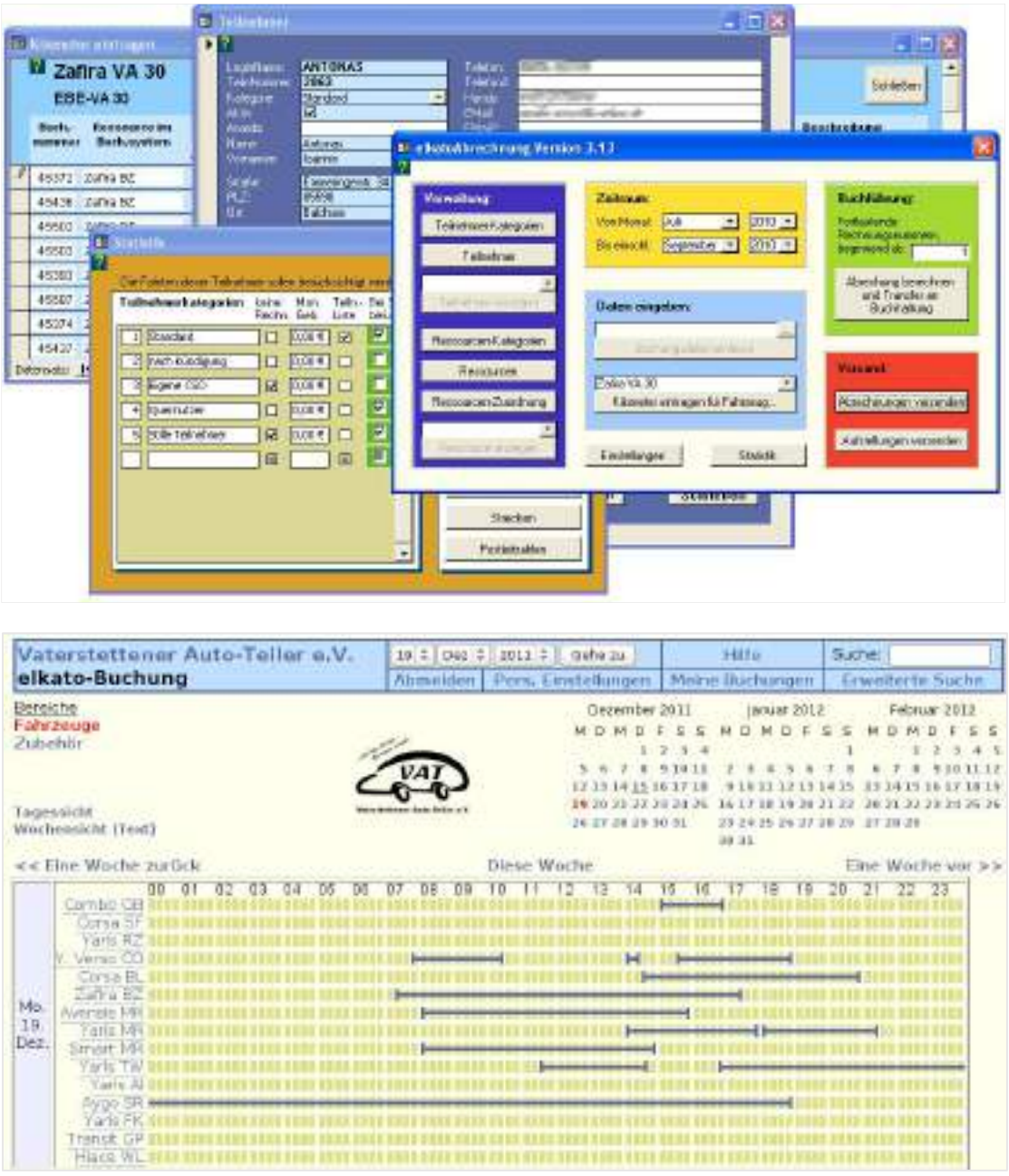

Figure 40: Accounting and booking windows respectively of the Elkato system widely used by small carsharing organisations in Germany.

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Funding (incl. fare structure):

Pfaffenwinkel is financially sustained only by membership fees. CarSharing Pfaffenwinkel has never received any external funding, grants or donations. However, the original founder of the system and some supporters made massive contributions in terms of personal time for many years.

Depending on the tariff, the membership requires a refundable deposit of €350 - €500 and a monthly fee of €12 plus a one-time registration fee of € 51. Members sign a framework agreement with the organisation and can then book all vehicles at any time at www.carsharing-pfaffenwinkel.de or via telephone. Depending on the time of the day, on the type of vehicle and on the hire duration, the rental cost per hour varies between €0.50 (at night) and €2.70. On top of this, between €0.28 and €0.33 are charged per car-kilometre driven.

Business case:

Because CarSharing Pfaffenwinkel has no external financial support or base funding, all its operational costs need to be recovered through the fees and charges paid by its members. It operates on a cost-based pricing principle, has no shareholders and does not aim to make profit. For the first 16 years, all operations were managed by volunteers; in 2016, a professional manager had to be hired, whose salary has to also be generated through the participants' car usage. This is feasible but sometimes challenging because cars are often used for short periods only – thus generating little turnover – by many of the relatively old client base.

Main actors and their interests:

ÖkoMobil Pfaffenwinkel e.V. CarSharing advocates for a socially and environmentally sustainable transport system while aiming to reduce the environmental impact of traffic.

Bundesverband CarSharing eV (BCS): the umbrella organisation of the German CarSharing organisations. Advocates at the regional and national level and provides practical support for car sharing organisations' work.

One particular person was the driving force behind the initiative for over a decade. Since its inception, CarSharing Pfaffenwinkel managed to gain the support of the administration of most towns and the county it operates in, with the parish in one community and with a number of smaller companies. Many parking places can thus be rented from such partners at very favourable conditions. One of the most intensive users is a charitable organisation serving disabled and other disadvantaged people. Other companies tend to make relatively little use of the scheme. The cars are leased from a few car dealerships, which offer relatively attractive rebates; the same companies also take care of any necessary repairs at conventional costs. The vehicles are cleaned on a regular basis by students, retirees, refugees etc. with a mini-job arrangement.

Intellectual property aspects (patents etc.):

CarSharing Pfaffenwinkel is based on a relatively low-tech system and has not developed any intellectual property, trademark etc. The online booking platform is based on a system, which is provided at very little cost by a similar CarSharing organisation based in Vaterstetten, east of Munich (see www.elkato.de).

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5.2.2 Geographical context

Location in Europe, within country and region:

The area known as "Pfaffenwinkel" is a relatively rural area in southern Germany, southwest of Munich and close to the Alps.

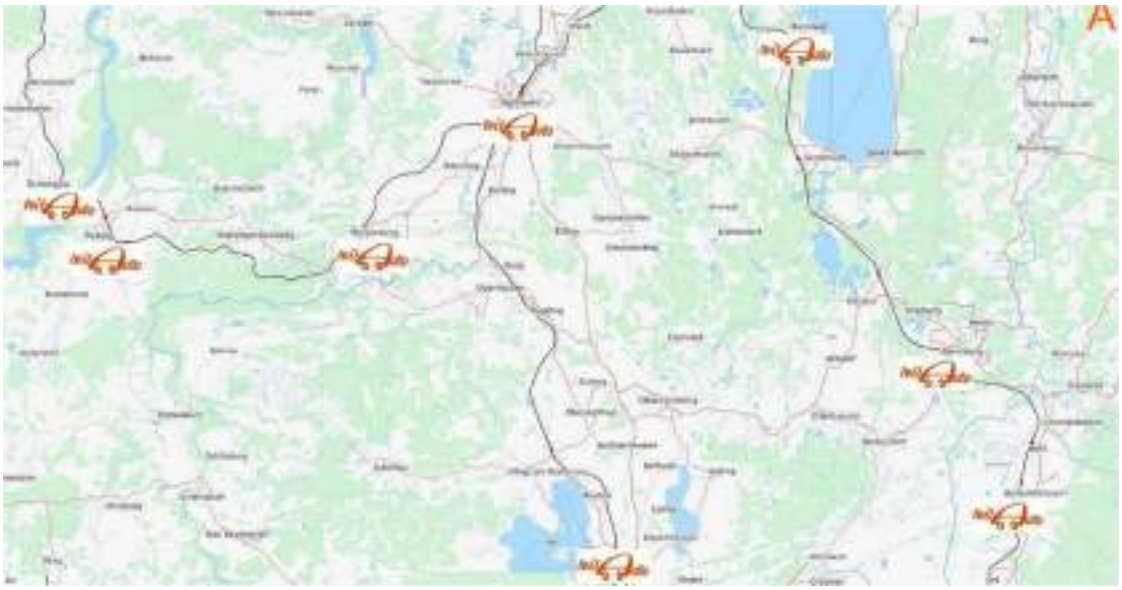

Figure 41: CarSharing Pfaffenwinkel has 300 users with 24 vehicles and 8 location in the region (Source: https://www.carsharing-pfaffenwinkel.de/about/)

Topographic situation:

The Pfaffenwinkel comprises a mixed terrain and includes relatively hilly areas, which can be challenging to muster with heavy loads, for longer distances, etc.; especially for older people.

Socio-economic context:

The socio-economic situation of the average resident in the area is unproblematic. Economically disadvantaged people are not the primary target group of CarSharing Pfaffenwinkel, although they can of course benefit from it.

5.2.3 Context conditions

Among the impulses for the growth of the initiative were local discussions about a bypass road to be built around the city of Weilheim, where the main initiator lived. A related analysis of travel patterns revealed that the origin and destination of the vast majority of traffic is within the city, thus supporting the argument that people who do not own a car can still satisfy their mobility needs as long as they have convenient access to cars at some times for certain purposes.

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5.2.4 Case history

CarSharing Pfaffenwinkel grew out of a circle of friends, starting to share one car on a completely private basis in the year 2000. This was soon formalised as a "eingetragener Verein" (German non-profit association) who could then offer a second car and later expand to neighbouring small town. The participation of a large charitable organisation in another town marked an important next expansion step. Slowly, the scheme grew to other locations in an organic manner – one of these locations also had to be closed again due to some main users moving away. The latest expansion was to the town of Peißenberg in 2017. The scheme has no intention of covering an even larger area; it might consider additional locations within its current service area though.

Figure 42: CarSharing Pfaffenwinkel began in 2000 with a group of three families and one green Passat (Source: https://www.carsharing-pfaffenwinkel.de/about/)

5.2.5 Impact assessment

The expansion of CarSharing Pfaffenwinkel from one car to 22 vehicles is clearly a success, considering the fact that CarSharing in rural areas is often deemed impossible. The retirement of the main initiator(s) who used to work on a voluntary basis for many years made the employment of a professional manager inevitable and the economic viability of the scheme more challenging. CarSharing Paffenwinkel certainly facilitates the mobility of many people in the area; many of them might otherwise have had to purchase a (second) car. The majority of users would probably have been able to do, which increases the relative weight of environmental benefits versus any social benefits in terms of tackling mobility exclusion.

5.2.6 Transferability considerations

CarSharing Pfaffenwinkel, similar initiatives in Vaterstetten or South Baden (see further reading on similar cases below) and in other more rural areas indicate that such schemes do not depend on uniquely supportive context conditions, thus pointing at a certain degree of transferability. They all respond to their own context in different ways and find locally specific solutions. In addition, efforts

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are currently underway to improve the hardware and software that would make such independent CarSharing initiatives easier and more economical to manage. What seems key in all these cases is the existence of a core group of dedicated individuals working at no or very low costs for a significant period while slowly moving towards more professional structures.

5.2.7 Further reading on similar cases

CarSharing Südbaden is a service of the Stadtmobil Südbaden AG and serves residents throughout Southwestern Germany with over 180 vehicles at ca. 130 locations in over 40 communities – some of them in quite rural areas. www.stadtmobil-suedbaden.de

CarSharing Vaterstetten operates 19 vehicles in a medium-size town of 21,000 inhabitants, thus achieving a remarkably high density of vehicles for this type of community. www.carsharing-vaterstetten.de

CarSharing Ansbach offers 14 vehicles across three towns in Franconia, Germany. The provider is a traditional car rental company operating in collaboration with an active citizens group and several significant institutional users. www.carsharing-ansbach.de

Stadtteilauto (http://www.stadtteilauto.de/) was also founded in Munich in 1992, making it one of the first environmental initiatives of its kind. Today, Stadtteilauto München has several hundred members and has vehicles at six locations within the city. A car sharing club was also introduced to Bad Tölz in April 2004 called Stattauto Isarwinkel eV (http://www.stattauto-isarwinkel.de/).

Mobilsamakning is a ridesharing scheme for the countryside, that began as an EU project in 2011 and became a successful business and was expanded to the Netherlands (https://www.empowering-project.eu/wp-content/uploads/2018/06/Web4_1_GreenMobility.pdf).

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5.3 Die Mitfahrerbank (The Passenger Bench)

5.3.1 Essence of the concept

Basic idea:

The Mitfahrerbank is a self-organising ride sharing in the rural town of Speicher, Germany. Turquoise benches are placed on roadsides that lead into town from the surrounding communities. They have signs posted at the benches that waiting travellers can select to indicate in which direction they would like to travel (or none if they'd just like to sit). The idea is akin to semi-organised hitchhiking or spontaneous carpooling, and relies on the close social network of rural areas... If you don't want to drive with a stranger, you can wait until a familiar face stops. The initiative functions since there is sufficient traffic that passes in both directions to and from town (a car passes by at least every 1 – 2 minutes). The benches have been placed to connect the eight surrounding local communities to each other and to the central town (see geographic context for more).

Figure 43: *The turquoise benches and manually changeable signs of the Mitfahrerbank to let passing cars know where you would like to go. Image by Ursula Berrens* ***(Nebenan.de Stiftung GmbH, 2019)***

Intended beneficiaries:

Young people, seniors, low-income individuals or families without cars.

Any technological aspects (hardware and software):

The Mitfahrerbank is purposely low-tech. The initiative's website acknowledges that "*if there was an app where you could look up who goes where and when - that would be great*", but says that "*people*

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in the village value their privacy" and do not want to give out such information on a public platform. Thus, an app is inappropriate and a more analogue mechanism (i.e. the benches are used instead (Benjamin Kreis & Ursula Berrens, n.d.).

Funding (incl. fare structure):

The project is low cost with minimal maintenance required, as such there is no ongoing procurement of funds.

Business case:

The introduction of Mitfahrerbank is to reduce social isolation in the town and surrounding villages and it seeks to address the logistical challenges of residents who need to accomplish their daily tasks. Without the coordination of Mitfahrerbank, people are usually dependent on their network of friends, relatives and neighbours, or on the infrequent public transport. The initiative is not financially motivated. It encourages an ethos of compassion, cooperation, and communication. It is known that when one offers a lift that one is doing it purely with generosity and that there will not be any financial compensation required.

Main actors and their interests:

The *Verbandsgemeinde Speicher* has formed a *Mobility Working Group* together with committed citizens and *Caritasverband Westeifel*. Regular meetings are held to consider how mobility can be maintained and promoted in the region. Mitfahrerbank was introduced as part of the working group. *Netzwerk Mobilität in der Verbandsgemeinde Speicher* is also responsible for the initiation and the continued operation of the project which was made possible by collaborating with the local municipality administration including the mayor. The following organisations were involved either financially or in an organisational capacity to help kick off the project: *Caritas Association for the Diocese of Trier eV*; *German relief Organization*; *Volunteer Visiting Service of VG-Speicher*; and the *Speicher Kunstgießerei Plein*.

Intellectual property aspects (patents etc.):

None.

5.3.2 Geographical context

Location in Europe, within country and region:

Speicher is a town in the county of Bitburg-Prüm in the western state of Rhineland-Palatinate, Germany. The county boarders Belgium and Luxembourg. It is located in the natural and cultural landscape of the southern Eifel. Speicher has approx. 3500 residents and consists of the town and eight surrounding "Ortsgemeinden" or local municipalities that together form the "Verbandsgemeinde" or collective municipality.

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Figure 44: Map showing the distance of surrounding *Ortsgemeinden* with respect to Speicher town (Source: Google Maps, 2019).

Topographic situation:

Speicher lies on a hill, their train station is located 300m below the town's elevation. This can be laborious for people who quickly need to walk to train platforms or to get back to town up the hill with their belongings.

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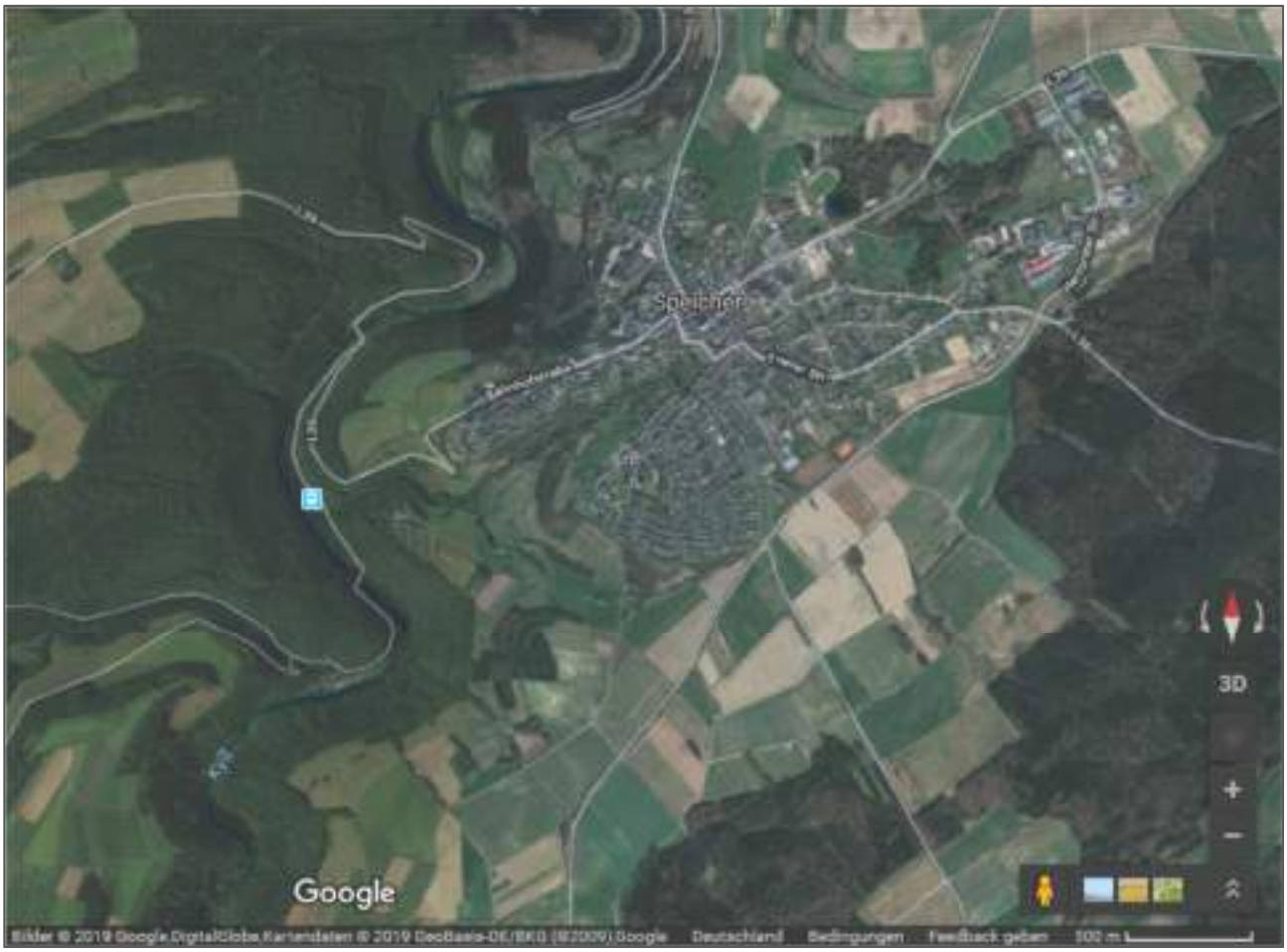

Figure 45: Map showing position and elevation of train station in relation to the rest of Speicher *(Source: Google Maps, 2019)*

5.3.3 Context conditions

General context conditions before the start of a project:

Speicher residents have long enjoyed their walkability for doing their daily errands. In recent years the town's benches began disappearing one by one as complaints of noise often arose around the social activities associated with benches. Soon, most of the benches were gone and the walkability of the town was not as comfortable without having the opportunity to rest and chat with someone that you knew who passed by. This particularly affects elderly people who are more reliant on being able to take short breaks between their errands. Furthermore, residents without cars were also dependent on their social network to get around since the PT is rather infrequent. For example, one can wait between two to three hours to catch a bus, and the last one usually ends in the early evening.

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Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The Mitfahrerbank idea came to the mind of a *Mobility Working Group* member while working on another project, but there were no other particular external pressures that required its inception.

Opportunities that contributed to the initiation of the project:

Instead of some catalyst or external pressure that highlighted its necessity, the *Mobility Working Group* member who had the idea, teamed up with their partner to test it out. A single bench was purchased and painted its iconic colour with the support of the *Speicher Kunstgießerei Plein*, and placed outside the city hall with signs that could indicate if ride was needed to the railway station or to Bitburg (a 20min drive NE of Speicher).

Financial context:

The benches of Speicher were installed using prize money that was attained from winning the *Orange Social Design Award* presented by *Kultur SPIEGEL* in 2014.

5.3.4 Case history

Initiation phase:

Mitfahrerbank was initiated with a demonstration trial bench outside the city hall.

Pilot phase:

Thirteen benches were later installed in and around Speicher.

5.3.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

Mitfahrerbank greatly considers their initiative a success not only at improving resident's mobility but also enhancing their social interaction and thus inclusion too. They have additionally won awards and received much recognition such that they have been in contact with many other organisations that have duplicated the idea (see similar cases for more).

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Although the organisation does not actively monitor the ongoing use of the benches or actively collect any feedback from its users, it is known that there is a broad positive appreciation for the benches from feedback that is received spontaneously, as one caller has said,

„... von Bank zu Bank ins ganze Land".

It is also easy to observe that the benches are being frequented since people are sitting on them and regularly changing the destination signs.

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5.3.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

None.

What are key conditions for the transfer of the key concept (or elements thereof)?

The benches work well in more rural areas where there are social connections and trusted networks between people. However, many strangers interact with the bench system, so there is no reason to believe that they could not work in a larger more urban context too.

5.3.7 Further reading on similar cases

Mitfahrerbanks have been sprung up in multiple small towns of Germany, Austria, east Belgium and France. Below is a list just to name very few:

Baesweiler and Simmerrath (near Aachen)

- https://www.baesweiler.de/mitfahrerbaenke.html
- https://www.simmerath.de/unsere-gemeinde/aktuelles/detail/Mehr-Mobilitaet-Mitfahrerbaenke-in-Erkensruhr-und-Rollesbroich-aufgestellt-455K/

Sickte (near Braunschweig and Hannover)

- https://regionalgoslar.de/mitfahrerbank-so-trampt-man-heute/

Lindenfels (near Darmstadt)

- https://gruene-lindenfels.de/mitfahrerbank/

Buxtehude (near Hamburg)

- https://www.focus.de/regional/niedersachsen/hansestadt-buxtehude-von-der-ortschaft-in-die-stadt-bequem-von-der-mitfahrerbank-aus_id_9127875.html

Zapfendorf (near Bamberg)

- https://nachrichtenamort.de/zapfendorf/mitfahrbaenke-zapfendorf-2018/

Nordhackstedt (Flensburg)

- http://www.schafflund.de/news/1/439427/nachrichten/nordhackstedt-macht-mit-mitfahrerbank-e-mobilit%C3%A4t.html

Irschenberg (near Munich)

- https://www.merkur.de/lokales/bad-toelz/benediktbeuern-ort28358/projekt-soll-in-benediktbeuern-realisiert-werden-mitfahrerbank-suche-nach-standorten-8791813.html

Kürten (Leverkusen)

- https://www.rundschau-online.de/region/rhein-berg/kuerten/fahrtwunsch-schnoede-ignoriert-mitfahrerbaenke-projekt-laeuft-in-kuerten-schleppend-an-31822154

5.4 Go Go Grandparent

5.4.1 Essence of the concept

Basic idea:

GoGoGrandparent is a private company located in Mountain View, CA providing a simplified booking system for ride-sourcing companies like Lyft. The system operates without using a smartphone and is usable by owners of older cell phones or cable phones: after a registration, the user can simply book a ride from home by pressing 1 on the phone keyboard or by requesting a ride from the place where he or she stands in a certain moment by pressing 2. Other options are available by using the keyboard and it's always possible to talk with an operator. The service also provides friends or relatives with facilities to monitor rides and coordinate with drivers to check that everything goes okay.

Figure 46 – GoGoGrandparent app with family updates
Source: https://gogograndparent.com/#howitworks-section

Intended beneficiaries:

Aged people who do not own a smartphone or computer and/or who are unwilling or incapable of using it.
Potential beneficiaries are also under-resourced populations, who may not be able to afford to buy a smartphone.

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Techn(olog)ical aspects (hardware and software):

The technology relies on a phone responder suitable for cell phones or cable phones having a keyboard that generates tones. The keyboard acts as interface instead of the UBER smart app.

Funding (incl. fare structure):

The system reserves and monitors Lyft rides.
The total ride fare is calculated based on a *concierge fee* plus the tariff applied by Lyft. The Concierge Fee covers the operator's arrangement and oversight from the moment the service starts to the moment it stops ('GoGoGrandparent').

Business case:

According to the fare structure (see previous point), a fee for the user is calculated and applied based on the duration of the call to the GoGoGrandparent service ("concierge fee"). It is interesting to note that this business model does not conflict with the interests of ride-hailing companies as they seem to be uninterested in developing their own similar system (Tepper). On the other hand, GoGoGrandparent represents an opportunity for expansion of their business.

Main actors and their interests:

Private companies (GoGoGrandparent and ride sourcing companies) can establish agreements with municipalities, caregiving agencies, hospitals, churches and other private businesses or organizations to provide a tailored transportation service for older adults.

Intellectual property aspects (patents etc.):

The booking interface is a proprietary product developed by GoGoGrandparent.

5.4.2 Geographical context

Location in Europe, within country and region:

Available in US and Canada.

Socio-economic context:

Elderly people who don't have a smartphone are estimated to be more than 75 million in the U.S. (Anderson, 2015) this created the conditions for an attempt of penetrating the market.

5.4.3 Context conditions

General context conditions before the start of a project:

The socio-economic context described above had to be combined with the acceptance to pay an additional fee for a simplified booking procedure.

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Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The U.S. Census Bureau 2014 National Projections on 65 and older age group (Colby & Ortman, 2015) shows that in the next decades there will be a very relevant increase in the number of seniors in the U.S. GoGoGrandparent has been created from the perception that emerging ride-sourcing services could be more frequently accessed by elderly people thanks to a booking procedure and system that doesn't make heavy use of technology (smartphone apps, notifications etc.)

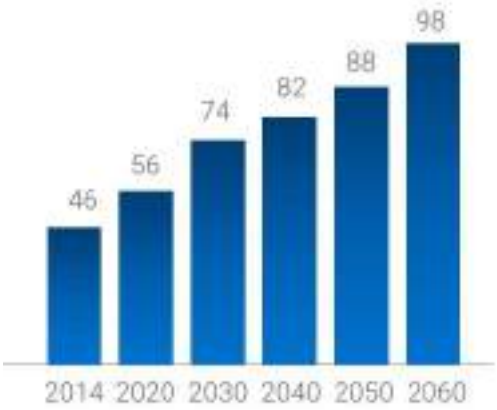

Figure 47 – 65 and older population 2014 to 2060
Source: own elaboration from (Colby & Ortman, 2015)

Opportunities that contributed to the initiation of the project:

Two key elements/opportunities made the initiative realizable:

1. New ICT platform for voice and SMS management (like Twilio[1]) allows creating interfaces between ICT systems in an easy and affordable way.
2. New ride sourcing companies providing services in the interested areas.

The project was self-funded with about $20,000 earned by the founders with previous businesses (CNBC.com, 2016)

Political context:

The political context in the U.S. which generally does not impose bans or restrictions to ridesharing services is a key condition for the success of the initiative.

Financial context:

The project was self-funded with about $20.000 earned by the founders with previous businesses (CNBC.com, 2016). From the point of view of drivers, the most interesting financial opportunities seem to be associated with off-peak hour trips and rural areas ('GoGoGrandparent Driver FAQ').

[1] *https://www.twilio.com/*

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5.4.4 Case history

Initiation phase:

The company was founded in 2016 by two young entrepreneurs: Justin Boogaard and David Lung from suggestions and ideas coming from their relatives (grandmothers).

Pilot phase:

In the first piloting phases the initiative was created as a human-based hotline (Tepper, 2016).

Scaling-up and replication phase:

Scaling up the solution required switching from a hotline to an automated responder.

5.4.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

GoGo Grandparent has callers from 47 states, Puerto Rico and three provinces in Canada and then reached a good success level in states and cities where ride-sourcing services are permitted.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, based on testimonials.

5.4.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

From the point of view of product technology, no constraint appears to exist for the transferability of the service.
Transportation Network services on the other hand are not available everywhere and, in some countries, (including EU ones) are unauthorized or considered illegal.

What are key conditions for the transfer of the key concept?

Licensed and authorized Transportation Network Companies providing ride-sourcing services in the area where the concept must be transferred.

5.4.7 Further reading on similar cases

- https://blog.lyft.com/posts/2018/1/16/remotely-request-rides-for-anyone-with-lyft-concierge - Lyft Blog article on Concierge service
- Arrive.com - http://arriverides.com/ - Easy to use service for on-demand rides for elderly
- https://blog.lyft.com/posts/nationalmedtrans-concierge - Lyft Partners to Give Patient Rides. Article on Lyft Blog.

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5.5 GoKid Carpool app

5.5.1 Essence of the concept

Basic idea:

GoKid Connect is a software platform and web-site (behind the GoKid mobile app) that simplifies the planning of school carpools where buses and public transportation aren't available. This *schoolpool* program is available for schools to help parents connect, organize carpools, and get kids to school whenever transportation is difficult.

The GoKid mobile app helps organise carpooling for kids' journeys. It can be integrated with the GoKid Connect platform for home to school trips, or can be used independently between groups of parents for kids' sport and leisure trips. It has special features (regarding safety for example) that make it suitable for transporting children e.g. from/to school, events, sport etc.
Only parents (with kids) who know each other or have children at the same school are allowed to drive (no external drivers). The best combination of pickups is calculated by the service. Besides the free basic version, the "pro" GoKid is available on a subscription basis of US$5/month for additional features such as live tracking, additional notifications, calendar sync.

Figure 48 – working principles of GoKid

Source: own elaboration from https://www.gokid.mobi/ and https://play.google.com/store/apps/details?id=mobi.gokid

Intended beneficiaries:

Families with kids especially in areas where school bus or other suitable transportation services are not available.

Techn(olog)ical aspects (hardware and software):

GoKid is a mobile app available for iOS and Android systems and as a web-based application (usable through a web browser).
The service combines the requests and offerings from parents and verifies the necessary requirements by arranging appropriately the trip (for example by optimizing the sequence of pick-

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ups). The subscription version has additional "pro" features like tracking and notification of arrival at destination ('GoKid Carpool App').

Funding (incl. fare structure):

See section: Opportunities that contributed to the initiation of the project

Business case:

GoKid connect platform is sold to schools.

The basic version of the GoKid app is free.

The-pro version of the GoKid app is available on a monthly subscription basis to parents for US$5/month.

Main actors and their interests:

Parents needing to get kids to school or other events (sports, parties etc.)
School authorities (GoKid connect) as (complementary) transportation support for families.

Intellectual property aspects (patents etc.):

GoKid is a proprietary software product.

5.5.2 Geographical context

Location in Europe, within country and region:

The app and platform can be installed virtually worldwide.

Socio-economic context:

Need for an automated, yet safe and clear facility to support carpools for kids.

5.5.3 Context conditions

General context conditions before the start of a project:

Lack of suitable transportation services especially for sub-urban areas with consequent de-structured, not organized, self-made carpooling (messaging, calls, etc.)

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

50% of schools without bus service ('GoKid Carpool App') requiring heavy private car usage (not always possible for many people) and congestions in areas nearby the school for temporary parking at pick up and drop off times.

Opportunities that contributed to the initiation of the project:

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The service is today available thanks to new ICT possibilities (mobile apps, route planning systems). Funds were available thanks to crowdfunding platforms like iFundWomen (iFundWomen). The project received other funding afterwards and the current investors includes: Village Capital, Inmotion VC (Jaguar Land Rover's Vc arm), Deutsche Bahn Digital Ventures, Techstars ('GoKid Carpool App')

Political context:

Not relevant. The service is a private facility (i.e. usable within a restricted number of families) intended to substitute non-organized carpool methods (self-organization).

Financial context:

• More than 53,000 schools are with limited or no bus systems in the United States
• More than 32 million children are being driven to school daily by their parents in the United States, causing approximately one-third of all morning traffic and emissions and 80 billion hours of lost time for these parents ('GoKid's Press Page').

5.5.4 Case history

Initiation phase:

The GoKid app project was initiated by Stefanie Lemcke, an entrepreneur and an experienced digital manager who once moved to the U.S. perceived the problem of transportation of their kids at school.

Pilot phase:

The first Beta launch was in April 2016; a complete re-launch including mobile web app launch id dated in July 2017.
GoKid Connect had its first paid pilot with a school in California for the 2017 back-to-school season.

Scaling-up and replication phase:

GoKids is a mobility solution for schools of any size connecting families within a school or school district through a secure website. Applicability in different areas can be intended always as limited to the school or institute or geographical area.
The company has plans to expand to support leagues, corporates and events (GoKid, 2016) and this may require scaling up the ICT tools and deploying infrastructure.

5.5.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

GoKid has users in 25 countries, 650 cities, and over 250,000 carpool rides have been scheduled through the mobile and web apps, saving an estimated 3 million miles of driving and 1450 tons of CO_2. The service received or was nominated for several awards. Current partnerships with schools include: Crystal Springs Upland School, St. Lukes, Connecticut ('GoKid Carpool App').

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Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

With over 200,000 carpool rides scheduled through the mobile and web apps the project can be considered to have successfully addressed the problem of transportation of kids to school which includes a percentage of families without availability of a car. The GoKid app is also used to coordinate shared trips to children's sports and social events outside of school facilitating greater inclusion – especially for those parents without car access or who are unavailable to drive their children at the times required.

5.5.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?:

No context conditions seem to be an obstacle to transfer the case.

What are key conditions for the transfer of the key concept (or elements thereof)?:

The GoKid app and GoKid Connect platform have been developed around the well-known carpooling concept and with specific requirements and features as key pre-requisites. The experience gained in the field allowed to refine and improve the product and these are the conditions for its success.

5.5.7 Further reading on similar cases

KiDCarPool - https://www.kidcarpool.com/ - Kid CarPool is an app for families that simplifies the carpool process.

Schoolpool.be - https://www.taxistop.be/en/service/schoolpool/, https://www.schoolpool.be – A Carpooling service for schools in Belgium.

Honqo - http://honqo.com/ - A carpooling platform specifically designed for schools

https://carpool-kids.com/ - School carpooling platform, app and web site

https://www.hopskipdrive.com/ - Lift sharing service for schools in Southern California, bay Area and Colorado.

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5.6 Haltetaxi Zeeland

5.6.1 Essence of the concept

Basic idea:

Haltetaxi is a taxi service operating in the Zeeland Province (Netherlands) since March 2015. The service has replaced some bus lines which are no longer operated. The service runs weekdays from 7.00 to 23.00, on Saturdays from 8.00 to 23:00, and on Sundays from 9.00 to 23:00 (the coverage time is adapted to PT timetables). Furthermore, interchange stops with conventional services are served. To access the service, users must own the "HALTETAXI card" (more details about costs and access, see "business case" section). Haltetaxi service is not accessible with the OV-Card (i.e. the National Card for PT) and PT subscriptions are not valid for Haltetaxi. HALTETAXI card is used to certify a user's reliability and to register any requests required while travelling (i.e. specific transport needs, e.g. wheelchair access, carriage of an animal etc.) Users are dropped on/off at selected (old) bus stops which are now identified by the "Haltetaxi" logo (see following figure).

Figure 49: Users at Haltetaxi stop which is a discontinued bus stop (source: De Provinciale Zeeuwse Courant on-line version, https://www.pzc.nl/zeeuws-nieuws/ruim-baan-voor-zeeuwse-haltetaxi~a59fda6e/).

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Figure 50: Using the HALTETAXI card to access the service. It is not integrated with other PT card systems (source: Website of the Zeeland Province, https://www.zeeland.nl/verkeer-en-openbaar-vervoer/openbaar-vervoer/reizen-met-de-haltetaxi).

Image 2:

Figure 51: Discontinued bus stops that are now being serviced by Haltetaxi are demarcated with a Haltetaxi logo (source: https://www.vlissingen.nl/inwoner/verkeer-en-parkeren/algemeen/haltetaxi.html).

Intended beneficiaries:

Haltetaxi is an open service and it is accessible by all, including citizens who do not reside in the Zeeland Province. There is no specific target group, since the service is for all who need to use the discontinued bus routes. In order to transport people needing for wheelchairs, some vehicles are specifically equipped with low floor and elevator.

Techn(olog)ical aspects:

The booking centre "Gemeentelijk Vervoerscentrale Zeeland" is operated in Terneuzen by the Transport Department of the Zeeland Province. It is open weekdays from 8:00 to 21.00 and can be contacted by phone or e-mail. The booking centre issues Haltetaxi cards and schedules trips. Users

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may book a number of trips (to be carried out on different days) with a single request. A trip must be requested within 1.5hr before departure time. If a trip is carried out in the early morning, then the booking should be made the evening before. Users may negotiate departure stops and times as rides are shared by different passengers with different destinations (i.e. routes are created by the demand). Some criteria are applied to carry out the combination of the trip requests to optimize routes. A trip requested by a user may not prolong the journey route by more than 50% of already scheduled journeys.

Funding:

Haltetaxi service is funded by the Zeeland Province through the Transport Department which is the Public Transport Authority for the involved area. The Province budgeted €2 Million to operate the service over ten years. The user pays a base fare of €0,89 per trip and an additional €0,15/km travelled.

Business case:

The user pays €0,89 for each trip plus €0,15/km travelled plus an extra for a second accompanying person. The tariff was designed to be comparable with the bus service price. The HALTETAXI Card is free-of-charge. Haltetaxi is considered more financially sustainable compared to the operation of bus lines before concessions for bus services were awarded.

Main actors and their interests:

The main actors of the Haltetaxi service are:

- The Province of Zeeland which contracted the service in the framework of the procurement for bus service operation in the Province which took place in 2014-2015. The Province also operates the booking centre.
- The taxi association which were contracted by the Province of Zeeland to operate the service.
- *Connexion* operating the bus service in the Province of Zeeland. As winner of the procurement for Public Transport service awarding. Connexion supports the Province as part of PT service contact obligations for sharing the information required to integrate the service into the conventional one (i.e. timetable optimization among conventional bus and Haltetaxi service, location of interchange stops).

5.6.2 Geographical context

Location in Europe, within country and region:

The Province of Zeeland is located in the western-southern part of Netherlands. The population of the Province is 380.000 inhabitants and the province extends over 2.684 km^2. The capital city is Middelburg.

Topographic situation:

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The population of the Zeeland is scattered in a large number of towns, villages and settlements. The territory between main towns is occupied by dispersed houses which are often grouped in small settlements but sometimes quite isolated. These conditions make conventional Public Transport not financially sustainable.

Socio-economic context:

The region is one of the most touristic in the country as it is a popular sea destination. Therefore, there is a considerable difference between winter and summer users of Public Transport. It is unprofitable to operate a conventional service in certain areas when the number of users is reduced.

5.6.3 Context conditions

General context conditions before the start of the project:

Before 2014, the Province of Zeeland was served by conventional bus services in the peripheral areas and at "low-demand" connections. During the assessment of requirements for the preparation of procurement for bus service concessions, a number of services were considered as "not financially sustainable" due in particular to a budget cut.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

When bus services that were discontinued because they were uneconomically sustainable, the Province of Zeeland had to guarantee an alternative transport mode in the areas where other options (such as cycling) were not viable. Haltetaxi was identified as a feeder ride-sharing service. It was to be operated with vans to allow mobility in the area and connection to main axes that are still served by the conventional bus service. The sense of urgency was heightened by the prolonged time it took for the procurement of a service to be awarded, and by the delay in signing the new contract due to an appeal that was made to court presented by a participant (*Veolia)*. During this time citizens complained a lot about the service cuts.

Opportunities that contributed to the initiation of the project:

The PT regulation in Netherlands allowed the uptake of this service. Haltetaxi was contracted and regulated as obligation included in the framework of the procurement for the PT concession in the province. Funding for operating the Haltetaxi service was planned in the financial value of the procurement and Province and Connexion, PT operator awarded with the concession through the procurement are co-responsible in the service contracting and operation.

Political context:

The Transport Department of the Zeeland Province explored the possibility to subsidize other forms of public transport where the conventional form demonstrated financial unsustainability.

Financial context:

The Haltetaxi service is fully funded by the Public Transport Authority, and is considered a supplementary mobility option.

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5.6.4 Case history

Initiation phase:

Haltetaxi was launched as a follow up after the awarding of the procurement for PT services operation in the Province in 2014. At that time a number of peripheral services was cut and was not included in the tender.

Pilot phase:

Haltetaxi service started in March 2015 substituting bus services which were discontinued and acting as a feeder service to bus lines still operated.

Roll-out phase:

30,000 trips/year are operated (data collected on April 2018) in the whole province. The Haltetaxi service has been integrated in the national real-time infosystem named "9292" providing users information on Public Transport over the country. To do that the "dynamic" planning of Haltetaxi has been integrated in the 9292 platform.

Scaling-up and replication phase:

The first three years of Haltetaxi's operation has illuminated areas of how the service could be improved. These areas are generated from the feedback of the users, the Gemeentelijk Vervoerscentrale (Booking Centre) staff, and the activities of the local (provincial level) forum on Public Transport. A first improvement is related to the service routes. They are currently dependant on bus lines which were operated before, despite Haltetaxi being able to do direct routing and reducing travel time. The aim will be to make routing more flexible. In the same way the number of the server stops should be increased in order to make clearer the evolution of the service scheme compared to the former bus service network. Furthermore, the spatial coverage of the service should be increased according to the emerging needs of the citizens and not limited to previous stops of the discontinued bus routes. Spatial coverage needs to address the inaccessibility of dispersed settlements with less than 50 inhabitants. The Transport Department of the Zeeland Province will introduce some modification in 2018. A full re-planning of the service will be carried out when the concession for PT operation will be tendered once more in 2024.

On the basis of the positive feedback about Haltetaxi, the service has been replicated in other towns and villages, including Goes, Middelburg, Terneuzen, and Vlissingen (see https://www.internetbode.nl/regio/beveland/algemeen/48524/onderzoek-goes-naar-extra-buurtbus-geen-haltetaxi-steden for details on Goes).

5.6.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

The Haltetaxi service is considered a success from a quantitative point of view (i.e. number of trips taken) and qualitative (i.e. customers' satisfaction surveys). The service has been evaluated by more

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than 80% of the users and is appreciated more than the conventional public transport. 92% of the interviewed users appreciated driver behaviour and 88% of staff at the booking centre. 96% of the interviewed users declared that their feeling of comfort and safety has increased. From the financial point of view Haltetaxi has proved sustainable for dispersed mobility demand for smaller communities.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

The users declared that the possibility to travel with public transport was not affected by the cut of public transport service once the Haltetaxi service was implemented. It was also reported that Haltetaxi is more suitable to answer to their needs in particular for travelling in low demand period (i.e. leisure).

5.6.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

In other EU countries, particularly where public transport is largely subsidised by public funding, the choice to reduce public transport offered and substitute it competitive services (such as taxis) for peripheral connections can be considered as an "indirect" form of endorsement to support specific transport forms (in this case taxis operators). In general, this kind of service should be operated as supplementary to the conventional bus service (i.e. in low demand hours, during the night, etc.) but not as replacement.

What are key conditions for the transfer of the key concept (or elements thereof)?

The key condition for the transferability of this concept is cooperation among public authorities, operators and taxi associations.

5.6.7 Further reading on similar cases

Taxi scuola – it is a booking transport service performed by conventional taxis dedicated to people (mainly students) living in two specific rural areas surrounding Livorno Municipality. The idea is to include a shuttle taxi service in the overall PT services offer satisfying the mobility needs of two peripheral residential areas

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5.7 ITNCountry

5.7.1 Essence of the concept

Basic idea:

ITNCountry is a national non-profit transportation network for America's aging population that builds community-based transportation solutions connecting vehicles, drivers and riders with businesses, healthcare providers and families. Transportation is provided by private automobiles 24 hours a day, for any purpose, through a combination of paid and volunteer drivers. The main target group are the elderly and those with visual impairments in small towns and rural areas. ITN stands for Independent Transportation Network.

Techn(olog)ical aspects:

Proprietary software developed to manage the Personal Transportation Accounts and the payments into these (through the ride credit program, Transportation Social Security™, our Car*Trade*™) and out of these when users make a trip.

Funding:

The business model promotes sustainable delivery of services by minimising costs through use of volunteer drivers and passengers generating ride credits as described in the business case section below. Further funding can be generated through donations, corporate sponsorship and partner contributions (see below) which can be used for paid drivers where necessary.

Business case:

The business model is based on riders creating Personal Transportation Accounts, which hold ride credits that can be earned in several ways—by driving as a volunteer, by trading in cars which are no longer needed, or by purchasing tickets. The innovative business model allows volunteer drivers to earn credits for their own future transportation needs, or people can trade cars they no longer drive to pay for rides. Credits can be transferred to elderly family members, allowing for example younger volunteers in one location to help their elderly parents living elsewhere to keep mobile. Partnerships with businesses and healthcare providers also increase the resources available to pay for transportation. Once a month, ITN sends a statement to the organization to pay for the rides that the members take.

Figure 52: ITN Business model Source: https://www.itnamerica.org/what-we-do

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ITNCountry is designed to allow your community to choose to run the program with only volunteers or with only paid staff, or with a combination of the two. The level of paid staff will be constrained by the amount of external funding from partner organisations or sponsorship.

Main actors and their interests:

Private citizens who volunteer as drivers.
NGO's, Citizen-run groups; Foundations Sponsors.
e.g. Hospitals, colleges, large employers, churches, faith-based organizations and community groups.
Community organizations such as churches, assisted living facilities, and health care providers may contract with ITN to provide transportation services for their members. This is a way for community organizations to supplement the transportation services they already provide.

Intellectual property aspects:

ITNCountry communities gain access to trademarked ITN programs such as CarTrade™, Transportation Social Security™, Ride & Shop™, Healthy Miles™, Ride Services, and Personal Transportation Accounts™. It is not clear whether these Trademarks apply only in the USA and whether they infer any IP on the services/programs they relate to.

5.7.2 Geographical context

Location in Europe, within country and region:

ITNCountry is a national program for rural communities across USA giving remote communities access to a national system connecting families across geographic distances and leveraging broader sponsorship opportunities.

Socio-economic context:

Varies by location, but small towns are frequently rich in social capital, neighbourliness, and can-do spirit which are key elements in making the ITN scheme successful.

5.7.3 Context conditions

General context conditions before the start of the project:

Rural communities exhibit tremendous mobility difficulties for anyone without a personal vehicle. In rural areas, traditional public transport solutions fall short. Trips are often infrequent and lengthy, making buses or rail services impractical in addition to being unaffordable. That creates a challenge. Without a car, the only options may be asking a favour or finding a taxi, if there is one, which is not an affordable option for many.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

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By 2030, the number of older Americans will double. For the over 65 population, only 2% of trips are taken on public transport. This is even lower in rural areas.

On average, men in the United States outlive their ability to drive by seven years. Women, who generally live longer than men, survive an additional decade beyond their driving years. Since the majority of communities nationwide are not walkable and do not have comprehensive public transit options, being a nondriver can be a limiting, isolating and even health-endangering experience.

More than 3 million Americans miss or delay medical appointments every year because they lack a ride to the doctor.

Opportunities that contributed to the initiation of the project:

Rural communities have many assets—small towns are frequently rich in social capital, neighbourliness, and can-do spirit. These, paired with countless private vehicles sitting in driveways nationwide, can become the transportation solution that these communities have been looking for.

Political context:

iTN*America* has worked to educate policy makers in many states about a very successful law that was passed in Maine in 1995. That law (LD 847, SP 309) prohibits an insurance company from unfairly or unreasonably increasing a volunteer's insurance premium simply because they use their car to drive others. The Maine law has served as a model in many states, such as Florida and Illinois, and is a great example of public policy that removes a barrier so people can help one another.

Financial context:

The ITNCountry model is self-financing.

5.7.4 Case history

Initiation phase:

Founder of the ITN model, Katherine Freund, was the driving force behind its creation and remains integral to its success as president of the board of directors.

Pilot phase:

First ITN service launched as ITNPortland (Maine) in 1995

Roll-out phase:

In 2006, after years of testing, research and funding from philanthropic organizations, government agencies and AARP, ITN blossomed into ITN*America*—a national non-profit network of community-based senior transportation programs.

ITN affiliates now work in 13 communities across 12 states: California, Nevada, Florida, Missouri, Oklahoma, Tennessee, Georgia, Kentucky, Delaware, Pennsylvania, New Jersey, Connecticut and Maine.

Scaling-up and replication phase:

As ITN is not everywhere, to ensure older people in communities across America have access to quality transportation options ITN developed their Trusted Transportation Partners program. Trusted Transportation

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Partners, or TTPs, offer the highest level of transportation service, the sort of service expected from ITN affiliates, in non-ITN communities.

5.7.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

ITN reached its 1 millionth ride nationwide in May 2018 spread across 14 communities. In 2017 there were almost 5000 active members and 665 active volunteer drivers delivering 82185 rides (average ride distance 15 miles).

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

74 percent of ITN's passengers are women, 26 percent are men. The mean age is 84, with 58 percent of riders age 85 or over.

ITN members can call for a ride anywhere in their affiliate's service area and for any reason. Four out of every 10 rides are related to health care, such as for a medical appointment or dialysis treatment. Roughly 20 percent of the rides are categorized as "consumer," which includes rides for shopping and errands. The remaining 10 percent of rides are for recreation, entertainment and socializing (2017 ITN Ride Purpose Report).

96.9% of riders rate their ITN experience as either “excellent” or “very good” and 92.5% would definitely recommend ITN to a friend. 77.6% of volunteers have given some thought to their future mobility and 30% store credits earned by driving for their own future transportation needs (2017 Customer and Volunteer Satisfaction Survey).

5.7.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

This model is community based using volunteer drivers with their private vehicles. It is transferable wherever sufficient volunteer drivers can be established.

Volunteers should be trained and supervised the same as paid staff. It is crucial to have written, clear guidelines that define the volunteer’s role.

A volunteer driver’s insurance rate should not be impacted by their decision to provide a ride.

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5.8 RideAustin

5.8.1 Essence of the concept

Basic idea:

"Ride Share Austin" is a community driven non-profit organisation that facilitates an e-hail taxi service to Austin City and the Greater Austin region of Texas, USA. Despite its name it does not provide any type of shared ride service. i.e. it does not provide a ride for passengers who have different destinations along a shared route.

The not for profit (NPO) venture has a strong focus on social value creation, and the team is supported by the Austin community in terms of donations, grants and volunteers. RideAustin boasts higher paid drivers than traditional e-hailing services and has a "female mode" that allows premium users to request female drivers so that they may feel safer while travelling. Additionally, riders are given the option of "rounding up" their fare such that the extra charge can be donated to a pre-nominated charity within the app. So far over two hundred and fifty thousand US dollars ($250 000) have been raised.

Although RideAustin advertises that being an NPO pushes down user-fares and thereby increases the social value for a rider (by being service-orientated and not profit-driven), the cost per trip is similar to Uber and Lyft prices. However, Uber and Lyft are not further supporting local organisations. Additionally, RideAustin has partnered with local government to provide free transportation for low-income people to travel to health care services.

Intended beneficiaries:

Employed drivers who are paid higher than traditional wages; riders (i.e. users) especially women travellers; low income travellers and uninsured Travis County residents in need of transportation to health care services; selected Austin charities that benefit from the "round up" payment scheme from riders. These include: Austin Habitat for Humanity, Autism Society, Well Aware, Andy Roddick Foundation, Testicular Cancer Foundation, Livestrong Foundation, Paws of Austin, Dell Children's Medical Centre of Central Texas, Austin Pets Alive, Little Helping Hands, Central Texas Food Bank, and AustinParksFoundation.

Unintended beneficiaries include the local authorities who are supported by RideAustin who facilitate access for low income groups to healthcare services.

Techn(olog)ical aspects (hardware and software):

Cars are primarily owned or rented by the drivers, although they are insured by the company. Drivers have background checks run internally and in conjunction with city authorities. The application used to hail drivers is currently available on all IOS and android operating devices. The software is copyrighted (see intellectual property below).

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Funding (incl. fare structure):

The main income source is contributed by users. Additional income is harvested in the form of donations and unpaid volunteer work. They consist of tech and human resources teams who work in conjunction with some paid volunteers. RideAustin also receives government grants to allow free rides for low-income citizens to travel to and from doctor's appointments. Investor capital was used to start the venture but does not contribute to running costs. Most vehicles belong to drivers who are insured by the company, though it is possible that in a replication initiative, a number of vehicles could be bought and rented to drivers.

Business case:

As an NPO, social value creation by the venture is strived for rather than financial returns. Financial value is created for the organisation to perpetuate itself and for drivers. Drivers earn a higher share of income than traditional for-profit e-hailing companies who usually charge up to 25% commission fees. RideAustin charges a service fee to users and no commission fee to drivers, so drivers are rather enabled to profit from the scheme since they are able to keep most of a fare price (Schiller, 2017). Social value is created for numerous Austin charities who receive donations from riders; low income people who cannot access health care because of lack of transportation; and users whose needs for e-hailing services would not be met without RideAustin during the Uber and Lyft hiatus. Conclusively, both social and financial value generated by the company largely remains within Austin networks and local economy.

Trips for low-income and uninsured Travis County residents to access the health care are covered by a pilot program run by the Community Care Collaborative. They were allocated a Transportation Empowerment Fund as part of the pilot (amount unknown) by the Capital Metro Transportation Authority (The University of Texas at Austin, 2018).

Main actors and their interests:

The main actors are the founders, employees, and volunteers who provide and maintain a local alternative to Silicon Valley owned companies for e-hailing taxis. Drivers' interests include their financial compensation and physical and financial safety (i.e. insurance of themselves and their vehicular assists) and supporting the community initiative with their loyalty as drivers. Users' interests include their physical safety, convenience of using the service, and its reliability. Additionally, users are interested in affordability and not necessarily supporting the community venture as affordability is more important. When Uber and Lyft returned to Austin after their hiatus, the number of RideAustin users dropped by a third as Uber and Lyft introduced heavily discounted rides.

Another key actor is city regulators, who have welcomed RideAustin given that the service was designed to obey the city regulations that Uber and Lyft protested. The city's interests are concerned with safety and governance of e-hailing firms.

Intellectual property aspects (patents etc.):

The primary property of RideAustin is their application available on iOS and Android devices. A number of reservations are stipulated in their intellectual property rights that prohibits any removal of copyrights and trademarks, reverse engineering of the app or any modifications or resale of the

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app. The rights go so far as to ensure that screensharing or mirroring or streaming of the live app is also prohibited.

Other permissions that are not granted include standard protections like: replication of the licensors' company names, logos, products and service names, trademarks, service marks, trade dress, copyrights and other indication of ownership, alone or in combination with other letters, punctuation, words, symbols and/or designs for any commercial purposes.

5.8.2 Geographical context

Location in Europe, within country and region:

RideAustin is not situated within Europe. It is an American company that operates in the state of Texas. The city of Austin is the state capital and is centrally located within Texas, the most southern state of America.

Topographic situation:

The eastern part of Austin is flat, but the west (which includes the suburbs) is rolling hills that occasionally give rise to flash flooding in the east after thunderstorms. The climate is temperate with an annual temperature range of 5-35 degrees Celsius and 50-100mm precipitation per month. The climate does not discourage non-automobile modes of transportation, although the hills of the suburbs may.

Socio-economic context:

The Greater Austin Region was described by *Forbes* in 2015 as the number one "Boom Town". It has a 90 billion-dollar GDP with a well-educated population. It is considered a major hub of development for general technology, pharmaceuticals, and biotechnology. They city of Austin houses 14 higher education learning institutions including the University of Texas (approx. 50 000 students). About 43% of residents aged over 25 hold a bachelor's degree and 16% a graduate degree. This is similar to most of the EU-28 *country* estimates (Eurostat, 2017).

Although Austin is considered one of the most progressive cities of Texas, it is also still one of the most segregated since it has failed to overcome the consequences of its past segregation legal institutions.
The race-class relations of Austin are exhibited as a geographic divide. The city's greater proportion of racial minorities reside in the east while the west is predominantly white. About 65% of residents are white, followed by 30% Hispanic and Latin, and 5% African American.
The geographic divide is a result of a decision to concentrate services for blacks in the east side of the city in 1928 during the "separate but equal" times of zoning. The socio-economic status has remained the same but has grown to include the other ethnic minorities in addition to African Americans.

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5.8.3 Context conditions

General context conditions before the start of a project:

Uber began operating in Austin during October 2014, just one year after it introduced its UberBlack service (the cheapest and non-luxury vehicle option). In the 3 short years that followed, Uber gathered over 10 000 drivers and 500 000 users (Woodyard & Toppo, 2016). It dominated the e-hail market of Austin together with its primary global competitor, Lyft.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

RideAustin was an urgent response to the abandonment actions of Uber and Lyft in Austin during May 2016. The e-hail giants protested a new city regulation that required fingerprint identification of drivers and reporting of basic operational data. Uber and Lyft believed that this regulation would hurt their business model and funded an $8million ordinance (that would have rendered the regulation obsolete). However, Austinites overwhelmingly rejected the attempt of the petition ordinance. Uber and Lyft promptly stopped operating two days after the ordinance deadline. Consequently, many drivers were suddenly left without their livelihood. After the almost immediate exit of Uber and Lyft, several e-hailing start-ups appeared in Austin (see image 1 below). However, RideAustin was the only NPO that was presented amongst the competing companies with a business model aimed at creating shared value.

Figure 53: With the sudden absence of Uber and Lyft in Austin, many e-hailing taxicab companies immediately proliferated. Image illustrated by Rachel Sender (Sisson, 2017).

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Opportunities that contributed to the initiation of the project:

The exit of Uber and Lyft highlighted the city's gap in provisioning of a taxi-cab niche. Austin lacked hailing taxis such as New York's iconic yellow cabs. However, the event also highlighted an opportunity for a future that was possible in a post-Uber era, one that RideAustin took swift advantage of. RideAustin challenged the uniqueness of Uber and Lyft and showed that a fair, affordable, and multi-value business model of an e-hailing taxi service was not only possible, but successful. Even though multiple competitors quickly entered the market after Uber and Lyft stopped operations, RideAustin was the only service based on a business model that aimed to create value in multiple areas. The main opportunity that RideAustin seized was an ideal of "local-loyalty" that competitors failed to recognize. Locals had been disappointed by Silicon giants and the idea of a local business that supported its community in numerous ways was easier to trust than just another company trying to take advantage of an opening market.

Political context:

Uber and Lyft are amongst the world's leading e-hail taxi operators of the global west. They have been self-regulating since their inception. However, local governments have been questioning this continuation. Austin was no exception and the local government instituted regulations regarding safety of the provided services. The regulations were fought with much defiance costing Uber $80 million. The companies believe that their internal background checks before hiring drivers are sufficient safeguards. Additionally, other cities around the US have already ruled against such regulations being imposed. Thirty-five states have introduced Uber-friendly regulations.

Austin councilwoman Ann Kitchen and Mayor Steve Adler encouraged other e-hail providers to establish themselves when Uber and Lyft stopped operating by making a statement that the council was willing to work with any transport provider that would keep in line with the city's new regulations. While Uber encouraged users via the app to contact the city council and request the service to be reinstated immediately, the negotiations between the city and the companies were cut short when state authorities of Texas overruled the local regulations with House Bill 100. This Bill allows for a state-wide framework to be set up that will discuss how e-hailing companies may be regulated. This will be decided in January 2019 and may take up to a year to come into force. Until then all local regulations have been lifted and the companies have returned to their usual operations. Already the lobbying from Silicon Valley has been witnessed with some senators taking a stance of whether these companies even require any regulation at all. Despite the unwarranted overruling by the state, it is the local governments that are directly dealing with the effects of Uber and Lyft's operations. When more than 10 000 drivers were left without a job overnight, the city of Austin stepped in to take care of the collateral damage that Uber and Lyft created. A call centre was set up for the suddenly unemployed, which aimed to re-establish jobs for drivers in other avenues and related fields that offered driving opportunities with various companies in Austin.

Financial context:

Since RideAustin was a very rapid response to a sudden shift in a transport equilibrium, there was little financial security that ensured its initiation. However, impressive and speedy efforts of the community raised over $7million in cash donations as venture capital that covered all start-up costs

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including: vehicle procurement, driver background checks, designing and building the app; advertisement campaigns to gain a user base once the app was launched.

5.8.4 Case history

Initiation phase:

In just five weeks after Uber and Lyft stopped its services in Austin during May 2016, tech entrepreneurs Joe Liemandt and Andy Tryba launched RideAustin. It was made possible by donations and volunteer work of assisting technicians and human resources. During the absence of Uber and Lyft, RideAustin was able to offer drivers who had lost their jobs the opportunity to join the team and fill the void in their livelihoods that had been suddenly created.

Pilot phase:

Rides for the general public officially began on 16 June 2016. The app was developed a mere 5 weeks prior. The venture succeeded because it was quickly recognized and embraced by the Austin community after an extensive advertising campaign.

5.8.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Success is measured by the number of trips and the number of users that engage with the RideAustin app, whether that entails looking up a price estimate of a trip, or whether a user then requests the ride.

Financial stability of the venture has yet to be determined. However, much value has been created for the charities that RideAustin is generating funds for.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Drivers have reported being much more satisfied by working for RideAustin. They feel more financially and socially rewarded for the services they provide, and feel more welcomed by the community at large since they are wanting to cooperate with city rules. This has created a feeling of respect for drivers that was not previously perceived.

5.8.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

"Drivers tell us this is an oasis, they don't want Uber and Lyft back," says [Joe] *Deshotel* [communications manager at RideAustin]. *"There's no secret sauce. If you have a solid app and listen to your consumers, it works."* **(Sisson, 2017)**.

The ability of several e-hail companies emerging in a matter of weeks after Uber and Lyft stopped operating is a testament to the realistic possibility of the venture's duplicability. There is little reason

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to believe that even a parastatal version could not be set up in any other well-developed city in the right regulatory context. Many European countries do not allow members of the public to be drivers in a for-profit-manner unless they hold a taxi or private hire vehicle license. If this initiative were to be duplicated, the start-up process may be prolonged in order to either procure drivers already with this legal status, or to train and qualify drivers.

What are key conditions for the transfer of the key concept (or elements thereof)?

Replication would require a strong technical team to design and launch a successful app but also full local community support for funding a start-up, attaining drivers and human resources volunteers, and finally acceptance by users to come onboard with the start-up. The latter part was encouraged by continued advertising campaigns based on creating a strong sense of community between the company, its users, drivers, government and local charities. Drivers self-report their increased sense of belonging to the city because they feel that they are providing a service that helps keep their city's residents safe.

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5.9 RideshareKC's Guaranteed Ride Home programme

5.9.1 Essence of the concept

Basic idea:

RideshareKC is a publicly funded program, initiated in 1980, that provides commuter resources to individuals and employers in the Kansas City region. It performs a carpool matching service to registered users in the greater Kansas City, Missouri-Kansas region (or within 75 miles of downtown KC, MO) helping to create transportation options for area workers. In addition, the website (https://www.ridesharekc.org/Public/Home.aspx) provides information on alternative modes and/or work options to reduce driving alone. Its stated mission is to, "… increase mobility and reduce congestion by providing information on and promoting commuter transportation services in order to enhance the quality of life for residents in communities throughout the Kansas City metro area."

Those who regularly make use of these options and alternatives may register for the Guaranteed Ride Home programme, which allows users to be reimbursed for travel by taxi, Uber, or Lyft in the event of an emergency. Users may claim up to two reimbursed trips every year.

Intended beneficiaries:

The programmes are intended to benefit both those who live, work, or go to school in the greater Kansas City region, as well as employers and education providers. The intent is to reduce the number of single occupant vehicles on the road, in turn also reducing parking requirements and contributing to congestion reduction and air quality improvements.

Techn(olog)ical aspects (hardware and software):

Users register with a ride-matching service that uses a computer programme to determine efficient matches for potential ride-share partners based on time and days of travel and origin and destination locations. In addition, the website contains an online 'Commuting Cost Calculator' (available at https://www.ridesharekc.org/Public/PublicPage.aspx?ItemName=CommuteCost&FileType=ASCX) that allows users to enter information on their distance and number of commute trips, petrol consumption and fuel costs (along with other indicators) to calculate monthly and annual commuting costs, as well as estimated annual greenhouse gas emissions.

Funding (incl. fare structure):

RideshareKC services, including Guaranteed Ride Home, are available to individuals and employers at no cost. The programme is 100% funded through the federal Congestion Mitigation Air Quality (CMAQ) programme, at a cost of $250,000 per year (spread between Kansas and Missouri at $125,000 each). It is currently funded through 2020.

Main actors and their interests:

The RideshareKC and Guaranteed Ride Home projects are run through the Mid-America Regional Council (MARC), a non-profit association of city and county governments which also serves as the Metropolitan Planning Organization (MPO) for the greater Kansas City region. In the United States,

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MPOs are federally mandated for urbanised regions with populations of 50,000 or greater, and are intended to contribute to enhancing regional cooperation in transport planning. The Kansas City, Missouri-Kansas region served by MARC comprises nine counties and 119 jurisdictions.

5.9.2 Geographical context

Location in Europe, within country and region:

RideshareKC is not located within Europe rather, it is located in the midwestern region of the United States. The region is considered 'bi-state', as portions are located in both the states of Missouri and Kansas. Unlike many other bi-state regions, the metropolitan population of Kansas City is fairly evenly distributed between the two states, though the majority of the population resides in the central counties of Jackson (MO) and Johnson (KS) with employment opportunities also concentrated in these two counties.

Topographic situation:

The city of Kansas City, MO, which has historically functioned as the region's core place, is located at the confluence of the Missouri and Kansas Rivers. While predominantly flat, there are bluffs located along the river. The region's climate is considered 'humid subtropical' and has significant hot and cold swings, with summer temperatures averaging highs of 88°F/31°C and winter averaging highs of 42°F/6°C. Precipitation levels are also reasonably high, averaging 39 inches per year, with a peak in May/June.

Socio-economic context:

The Kansas City region currently has a large number of development projects in place, with many focused on industrial expansion and growth and a reasonably good balance between locations in Kansas and Missouri. However, while job growth has historically been concentrated on the Kansas side of the state line, more recent trends have seen a higher proportion of growth in the Missouri portion of the region (KC Chamber Economic Forecast, 2017).

Such economic benefits are not evenly distributed, however, with the Environmental Justice analysis for the region's long-range transport plan (*Transportation Outlook 2040*) identifying a significant number of transportation-disadvantaged populations spread throughout the region, as seen below.

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Table 6: Transportation disadvantaged populations (Mid-America Regional Council, 2015)

Transportation-disadvantaged populations

Populations	Total	Percentage
Persons with a disability	207,695	11.0%
Elderly populations	223,568	11.8%
Veterans	143,145	7.6%
Persons who use public transportation to get to work	11,884	0.6%
Households		
Households with no vehicle	20,092	2.7%

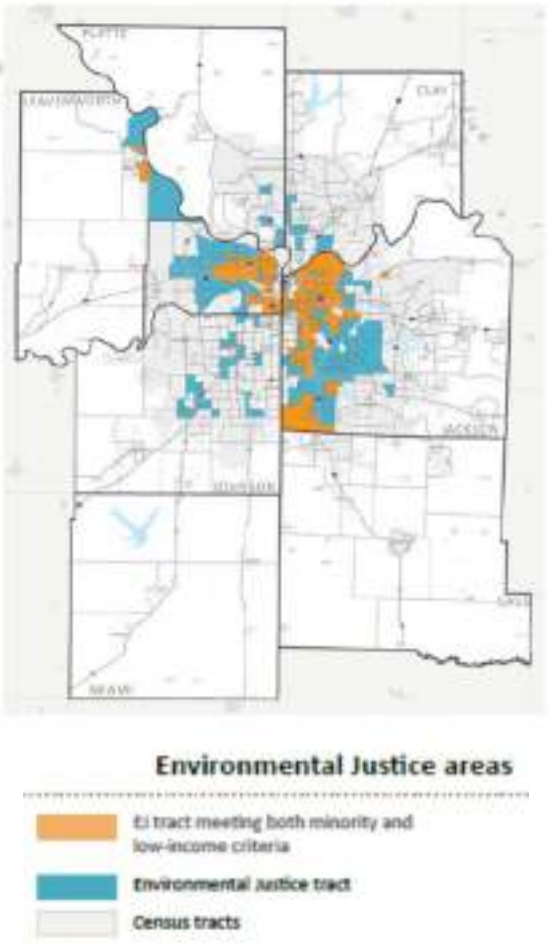

Figure 54: Environmental Justice areas (Mid-America Regional Council, 2015) [2]

[2] *Mid-America Regional Council (2015). Appendix J: Environmental Justice Analysis. In* Transportation Outlook 2040. *Available online at* http://www.to2040.org/plandocs.aspx.

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5.9.3 Context conditions

General context conditions before the start of a project:

Prior to the initiation of RideshareKC and the Guaranteed Ride Home programme, there were a limited number of carpool services available in the region, generally offered by specific employers or on an ad hoc basis. The RideshareKC programme was initiated in 1980 and serves commuters from five counties in Missouri and four in Kansas.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The RideshareKC and Guaranteed Ride Home programme was established with a mission to increase mobility and reduce congestion by providing information on and promoting commuter transportation services in order to enhance the quality of life for residents in communities throughout the Kansas City metro area[3].' The geographic spread of the region, combined with the area's population and employment distribution, made the desire to initiate a coordinated, region-wide carpooling service an attractive one, particularly when enabled by access to relevant funding. Projects funded through the CMAQ process undergo a competitive process, where their potential benefit to the region in terms of air quality improvements and congestion mitigation are assessed and compared against other applications to ensure that the funds are used to support those projects and programmes with the greatest likelihood of beneficial impacts. The sustained nature of the programme is a testament to its realised benefits and the importance with which it is regarded in the community. The programme is of benefit to those persons without other access to reliable transport, and those for whom the cost of commuting would otherwise be unsustainable.

Opportunities that contributed to the initiation of the project:

The programme was largely enabled by access to funding through the CMAQ programme, as well as by the regional commitment to the programme. It has been run through the Mid-America Regional Council (MARC) since its inception, and the organisation's commitment to the programme has likewise been a key component of the programme's longevity. The availability of reliable ride-matching software, and buy-in from local employers and others, have also contributed to the success of the programme on an on-going basis. The programme is supported by three dedicated staff members at MARC – the RideshareKC Coordinator, Program Assistant, and Employer Outreach Specialist.

Political context:

The Mid-America Regional Council, which manages the programme, is governed by a Board of Directors composed of local area elected officials. CMAQ funds are distributed nationally based on a formula that takes into account factors related to the impacted area population and severity of air quality issues in the region. Proposed projects are subject to a competitive application process in which they are first scored by staff to relevant MARC committees (in this case, the 'Active

[3] *RideshareKC (N.D.). Available online at https://www.ridesharekc.org/Public/PublicPage.aspx?ItemName=AboutRideshareKC.*

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Transportation' committee) and then reviewed, amended (if necessary), and approved by the committee, subject to final confirmation by the Total Transportation Policy Committee.

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5.10 She Taxi

5.10.1 Essence of the concept

Basic idea:

"She taxi" is a ride sharing state-owned service operating in Kerala State, India, that provides safe rides for women, with only female drivers. The service is bookable by calling a phone number. The customer care centre manages and organises the bookings and the related trips.

Figure 55: Female drivers of the She Taxi service (Source: https://static.gulfnews.com/polopoly_fs/1.1549139!/image/4066087423.jpg_gen/derivatives/box_460346/4066087423.jpg)

Intended beneficiaries:

She taxi aims to offer a secure and affordable transport service to the women (especially for those travelling at night) and to give an opportunity of employment to women who can undertake a full time job (taxi driver).

Techn(olog)ical aspects:

She Taxi is available for booking via mobile phone: women travelling alone or with families can dial the customer care centre which will provide them with a Unique Identification Code and the vehicle plate number on their mobile phones. All cabs have an electronic payment system allowing the user to pay using credit or debit cards or cash.

The She Taxi vehicles are equipped with multiple security systems for the safety of the drivers as well as the passengers. A control room tracks the taxis in real-time using GPS; there are personal

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emergency alert switches for drivers and passengers inside the car; and a similar safety alert app is installed on the mobile phones of the women drivers.

Funding:

She taxi was developed with substantial investment from the Government, and though partnership with several private sector agencies. In particular, Kerala State Women's Development Corporation (KSWDC) and nationalised banks provide access to financing for women entrepreneurs (mainly for the vehicle investment). Maruti Suzuki India Ltd. is the vehicle provider for She Taxis and provides several types of vehicles at a special price. At the moment, She taxi charges eight rupees (approx. 10 cents) per kilometre, while in 2017 and before it charged 13 rupees (15 cents) per kilometre.

Business case:

The Gender Park, an institution established under the state's Department of Social Justice to work towards gender equity, developed a business model for the 'She Taxi' which foreseen a steady monthly income for the women entrepreneurs besides additional revenues through ads on the sides of the cars, in-car LCD systems for streaming ads and others.

Main actors and their interests:

The main actors involved are:

- Gender Park, an autonomous institution promoted by the Department of Social Justice, Government of Kerala State which aims to guarantee the gender equality in India and to provide safe, secure and responsible' travel for women.
- Kerala State Women's Development Corporation (KSWDC), which aims to promote sustainable entrepreneurship
- Maruti Suzuki Ltd, which is supplying the taxis and providing training to the women drivers

5.10.2 Geographical context

Location in Europe, within country and region:

She Taxi is operated in three Indian cities: the main location is in Thiruvananthapuram (or Trivandrum), the Capital of Kerala state, Kochi (or Cochin) a major port city located on the south-west coast of India bordering the Laccadive Sea part of the district of Ernakulam, and Kozhikode, which lies about 250 km west of Bangalore.

Topographic situation:

Thiruvananthapuram is built on seven hills by the sea shore. All the three cities feature a tropical monsoon climate.

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Socio-economic context:

Thiruvananthapuram is a major Information Technology hub in India and contributes 55% of Kerala's software exports as of 2016. It is also a notable academic and research hub and is home to universities and research centres.
Kochi is a major port city on the south-west coast of India and the most populous metropolitan area in Kerala.
According to data compiled by economics research firm Indicus Analytics on residences, earnings and investments, Kozhikode ranked as the second-best city in India to reside in.

5.10.3 Context conditions

General context conditions before the start of the project:

In India, there is a high level of insecurity in transport services for the women moving alone from one place to another. In addition, due to the poverty conditions, a lot of women can't own a private car and are forced to travel by collective transport that clearly don't cover door to door needs. The conventional transport, specially the railway services, are already organised for the woman safety with dedicated wagon or compartment.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Generally speaking in India, the issue about women's safety while travelling alone is nowadays very relevant as underlined above. With She taxi, Gender Park aims to offer safe, secure and responsible travel for women. In particular, She Taxi aims to increase both the safety of women travelling by taxi, in a transport sector dominated by male employers, and the presence of female taxi drivers that currently is very low.

Opportunities that contributed to the initiation of the project:

In March 2013, Gender Park was founded through the initiative of the Department of Social Justice (Government of Kerala) with the aim to achieve a just society where people of all gender identities have equal access to development opportunities, resources and benefits, and an equal voice in the key decision-making processes that shape their lives, communities, and the state. In particular, GP aimed develop innovative partnerships to support gender equality and inclusive growth.

Political context

The Social Justice Department's mission is to ensure justice to the disadvantaged sections of society and for the implementation of social welfare programmes and services in the Indian state of Kerala. It also provides social security for the aged and infirm through a network of organisations, residential institutions and non-institutional schemes. In this context the She Taxi is an initiative that works on two sides: safe transport and creation of jobs for women.

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Financial context:

She Taxi came up as an innovative public-private partnership (PPP) that serves as a platform to promote a sustainable business model for the economic empowerment, safety and security of women through promotion of entrepreneurship. This was achieved with consistent investment from the government, and through partnership with several private sector agencies and is initiated by the Gender Park, Government of Kerala.

5.10.4 Case history

Initiation phase:

The concept of the She taxi project was developed in 2013. In summer 2013 the promoters started to look for female entrepreneurs to be involved as partners in the project.

Pilot phase:

The She Taxi service was launched on a pilot basis on 19 November 2013 in Thiruvananthapuram with a fleet of five cars. Women who had experience driving a vehicle for more than 200,000 kilometres were employed as drivers after a brief training. It became fully operational on December 1st 2013.

Roll-out phase:

In 2016, there were 45 She Taxis across three cities – 25 in Trivandrum, 15 in Kochi and 5 in Kozhikode. Currently, the She taxi service is still in operation, although the fleet has reduced to only 31 vehicles. There is a high level of uncertainty on the future of the project, due to the high level of competitiveness in the sector (i.e. the other taxi companies and the ride sharing services Ola and Uber).In addition, an online system for booking the service is still not implemented and the reservation can be made only by phone: this constitutes a real challenge in being competitive with the other ride-sharing services bookable by web or app. There is also the difficulty related to find women willing to be drivers. Probably, the service will be closed soon.

Scaling-up and replication phase:

The possibility to keep the She taxi service alive is directly linked to some problems as: coverage the real fee of the taxi trip, missing IT platform for booking the service via web or app, operation costs and procedures, user interface, lack of female drivers. Without a consistent investment for raise awareness about the service (for informing passenger and for recruiting female drivers), and for the development of an advanced IT platform to make the She taxi service competitive with other ride sharing services (i.e. Uber and Ola), the service is likely to close.

5.10.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

Since November 2013, around 20,291 trips have been made serving more than 44,260 passengers. The success of She-Taxi, touted as the country's first 24×7 women taxi network, had led the Gender

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Park, under the state Social Justice Department, to work out a new mode of women-friendly transport system for ordinary women named "She bus". The World Bank, which recently hailed the She-Taxi project as a good model of sustainable entrepreneurship, has also offered support to the proposed all-women-bus project. The Department of Social Justice is proud of the service because it contributes to ensure safe journeys for women and, at the same time, is an opportunity of employment that tackle social exclusion of women. At the same time, there is high difficulty in offering a reliable alternative to the colossus of the sectors.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The female passengers which use the service feel safer when moving from one area to another. A lot of the phone calls to reserve a taxi are being made during the night and early morning hours. Most of the users are usually pregnant women, women commuting to work and even those sending their children to school during early morning hours.

5.10.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The specific society conditions and regulation framework (form transport organization to justice/police control) linked to the Indian situation from one side could limit the transferability of this experience and from another side could be the motivation of a possible case transfer.

What are key conditions for the transfer of the key concept (or elements thereof)?

The concept to make specific service for a specific user group is not new but the application in certain conditions and the related encountered problems and organization aspects could have a relevant interest for the European metropolitan areas. One of the primary aspects for the transferability of the service is related to the financial framework; in particular, the government must be willing to make some funds available for female entrepreneur (mainly for the vehicle investment). In addition, in context where service like Uber and Ola are permitted, the possibility of reserving a trip via app or web should be taken into account.

5.10.7 Further reading on similar cases

Hey Deedee, Mumbai, India

Hey Deedee is India's first all–women instant parcel delivery service operating within the city of Mumbai, India. The all–women fleet is a group specially trained by Zaffiro Learning Pvt Ltd, which aims to empower underprivileged women by skilling them in two-wheeler riding and soft skills, and guaranteeing them a job on its Hey Deedee® platform

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Figure 56: Hey Deedee drivers (Source: http://heydeedee.com/

She Taxis, New York, US

She Taxis is a taxi service app operating in New York since 2015. She Taxi's priority is to offer safe, reliable, and trustworthy female drivers. The service is bookable via app or web.

http://shetaxis.com/

Figure 57: She Taxis-She Rides in the news (Source: https://www.theindychannel.com/news/u-s-world/she-taxis-she-rides-making-travel-safer-for-women)

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5.11 Taxi-Scuola

5.11.1 Essence of the concept

Basic idea:

"Taxi-scuola" is a taxi service that connects young students living in two rural residential areas near Livorno Municipality (Montenero and Castellaccio) with two high school areas in Livorno ("Itis Galilei" and "Francesco Cecioni"). This service is provided by conventional taxis (8 seats plus the driver). For using the service, students have to book (via the high schools) the service for the overall annual period.

Figure 58: Overview of "Itis Galilei" and "Francesco Cecioni" high schools in Via Galileo Galilei, Livorno (Source: Google Maps)

Intended beneficiaries:

The intended beneficiaries are the students who attend the high schools of via Galilei ("Itis Galilei" and "Francesco Cecioni") and who live in the small hamlets of Castellaccio and Montenero. These areas are insufficiently served by the conventional fixed route public transport services.

Techn(olog)ical aspects (hardware and software):

The taxis operating the school service are connected with each other (and with a central call centre that manages the bookings) via radio.

Funding:

"Taxi-scuola" is part of the MODÌ Project (Mobilità Dolce e Integrata nell'area vasta livornese), financed by the Italian Ministry of Environment and Protection of the Territory and the Sea, in the framework of the National Experimental Program of Sustainable Mobility Home-School and Home-Work, and co-financed by Livorno Municipality. The Municipality of Livorno directly finance the service. For using the service, students have to purchase the annual subscription of the bus public transport service.

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Business case:

The areas served by "Taxi scuola" are also served by two conventional PT lines (i.e. line 14 and "LAM Rossa") that do not meet the mobility needs of the small villages within these areas, characterised by a low demand. Therefore, a contract between Livorno Municipality and COTALI (one of the two cooperatives of taxi operating in Livorno) was set up keeping the door-to-door characteristics of the taxi service. One of the two previous PT lines has been kept only for Saturday and Sunday. The Taxi-scuola service entirely relies on public subsidies.

Main actors and their interests:

Livorno Province (the leader of the MODÌ Project) and the Municipality of Livorno are the main responsible of funding and regulation framework. The Taxi cooperative COTALI, contractor, is responsible for the transport service provision. The Regione Toscana is the public body that manages the public transport service contracts in the region. There is the intention to include the taxi-scuola service in the conventional public contract.

5.11.2 Geographical context

Location in Europe, within country and region:

Small villages of Castellaccio and Montenero, in the surrounding areas of Livorno Municipalities.

Figure 59: View of Castellaccio area, Livorno (Source: Google Maps)

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Figure 60: Montenero

Topographic situation:

Castellaccio and Montenero are both situated in hilly areas (the altitude is around 300 meters) south of the city of Livorno. These areas are located around 12 kilometres away via Galilei.

Socio-economic context:

Castellaccio is a residential area with approximately 240 inhabitants. Montenero is famous for the presence of the Sanctuary of the Madonna delle Grazie (*Santuario di Montenero*), patron saint of Tuscany, visited every year by thousands of tourists. In any case the target are the students living in these areas with real difficult in using the existing conventional PT service. Generally speaking, Montenero is a rich area.

5.11.3 Context conditions

General context conditions before the start of the project:

Residents of Castellaccio and Montenero travel almost exclusively by private car. Bus services are infrequent and slow due to the high number of stops and indirect routes taken on the way to the centre of Livorno. Students going to school by bus require a minimum 1 change and a total of 90 minutes to reach their school. In addition, mostly due to the long distance, but also to hills and the lack of cycle paths, biking is not a suitable option.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

For the high school students living in such areas, it was really inconvenient to reach the school by the bus, so parents were obliged to bring their children to school by car. As already stated, the minimum 90 minutes for reaching the school was one of the reasons of the social exclusion that the Municipality of Livorno wanted to face with the Taxi School solution.

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Opportunities that contributed to the initiation of the project:

The Ministry for the Environment and Protection of the Territory and the Sea provides funding for any territorial area with more than 100,000 inhabitants to encourage the development of projects that improve residents' mobility for home-to-school and home-to-work trips. This funding provided the Province of Livorno the opportunity to develop the Taxi-scuola service.

In the meantime, the Province and Municipality of Livorno are working at the institutional level to include this solution as part of the public transport services.

Political context:

The Livorno town Council was really interested in this initiative in order to offer an alternative solution to the private car to people living in the surrounding areas of Livorno

Financial context:

The Taxi-scuola service, part of the MODÌ Project, is financed by the Ministry of Environment and Protection of the Territory and the Sea and co-financed by the Livorno Municipality. The service is offered at the same cost of the bus service.

5.11.4 Case history

Initiation phase:

The contract between COTALI taxi Cooperative and Livorno Municipality has been signed in March 2018. The Taxi-scuola service started in March 2018, providing rides to school for 13 students.

Pilot phase:

The pilot phase was carried out from March 2018 to June 2018, offering the service to the students of two high school in Livorno living the Castellaccio and Montenero areas. The service is operated by two taxis. The service was planned to be re-activated for the start of the new school year in September 2018.

Roll-out phase:

The Taxi-Scuola service was in standby for the summer period up to the end of 2018. On the 27th December 2018, the contract has been re-signed, with the aim to provide the taxi service from January to June 2019. This latest version of the contract foresees a maximum of 40 students, thus the number of passengers has tripled. The service is being carried out with 5 vehicles. There is the intention to extend the service also to students at other schools. Moreover, the Municipality and Province of Livorno are working at institutional level to include this service in the regional public transport service contract. This contract is signed between the Government of Toscana (Regione Toscana) and the main PT operators of Toscana.

Scaling-up and replication phase:

The Taxi-scuola service and concept has a high potential of scaling-up and replication both in terms of contracting and managing aspects. Beyond the general PT service contract aspects, Taxi-scuola

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could be included in the demand responsive transport service family planned as part of the conventional bus transport services.

5.11.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

In 2018, the Taxi-scuola service allowed 13 students to save 1 hour each day travelling between home and school, at the same cost as a bus pass. The Livorno City Council considers Taxi-scuola to be a success and thus in December 2018 it was decided to 1) re-activate the service 2) to extend the maximum number of students (from 13 to 40). In addition, there is the intention to extend the service to students of other institutes.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Before the implementation of the "taxi-scuola" service, the families living in the Castellaccio and Montenero areas were more or less isolated from the public transport network and had no other option but to take their children to school in Livorno by car. With the new service, the families can rely on a secure, efficient and high-quality service.

5.11.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The main "condition" is the availability of financial resources to start testing the service and the willingness of the taxi companies to offer their vehicles.

What are key conditions for the transfer of the key concept (or elements thereof)?:

The key condition is related to the willingness of the local municipality to support and subsidise the service and to the possibility to reach an agreement with the taxi operators to operate the service.

5.11.7 Further reading on similar cases

GoKid Carpool APP

GoKid provides schools, teams and active families with a powerful tool to manage day-to-day schedules. The mobile app integrates key technologies that easily facilitate carpool management.

https://www.gokid.mobi/

Reference and websites

http://www.gonews.it/2018/03/12/scuola-taxi-si-estende-servizio-livorno/

http://iltirreno.gelocal.it/livorno/cronaca/2018/03/13/news/a-lezione-ci-vado-con-il-taxi-1.16588312

http://www.mobydixit.it/edizione2017/wp-content/uploads/2017/12/LIVORNO.pdf

http://jcity.comune.livorno.it/documents/10979//3223240//dlg_00193_27-03-2018.pdf

5.12 Via (on demand ride share via app)

5.12.1 Essence of the concept

Basic idea:

Via is an app which is owned by the transportation network and real-time ridesharing company Via Transportation, INC. It provides fully dynamic on-demand ride-sharing services in order to launch a comprehensive on-demand public transit solution for intracity trips in cities such as New York, Washington, D.C. and Chicago (see Figure 61).

Figure 61: intracities where Via is available

Via aims to replace the city's single-route bus service to offer other transportation options in areas where none existed before. It works closely with cities to design a fully dynamic city-wide service that will complement other public transportation options.

After setting up the passengers' pick-up location and the drop off destination point for the ride, Via instantly matches these passengers with others going to a similar destination in the same vehicle, following an optimized flexible route that minimizes detours and delays.

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Figure 62: Via end-user steps (Via Transportation n.d.)

Intended beneficiaries:

Residents, tourists and citizens of cities living in areas where there are not enough public transport services.

Techn(olog)ical aspects (hardware and software):

Via will send a VIA pick-up point very close to the passenger's pick-up location in order to match drivers and passengers in a more efficient way.

The passenger will receive text messages with information about its ride: Time for pick-up point, information about the car, etc.

Funding:

- On March 2014 the company raised 10$ million in Series A round financing.
- On April 2015, Via raised 27$ million in Series B financing.
- On May 2016, Via raised 70$ million in Series C financing round as well as 30$ million of C4 Ventures.
- Finally, on December 2017, the company received 50$ million into a joint venture with the German automaker Daimler, with the aim of expanding into Europe as well as working more closely on other business opportunities together. (de la Merced 2016) (Lunden 2017).

Business case:

The Via business model is based on a real-time ridesharing service. Via wants to build a mass-transit system designed from the ground up to allow a fully dynamic public transportation system. Via uses

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a simple model concentrating in high density urban markets, where public transit is available but undesirable for any number of reasons (Via Transportation 2017).

Figure 63: VIA Vans, (Lunden 2017)**.**

Most trips are short, and the goal is to keep drivers active through pooled rides that match passengers going in the same direction. Drop-off and pickups are not in the exact address provided by the user.

The cost per ride is 3$ approximately, and there are promotions and discounts during the first weeks.

Via is attracting drivers because the company takes less of a share of the fares. While Uber/Lyft take is 25-40% (and up), Via takes 5-10%. It is more efficient, since they're only operating in high density areas and passengers are required to walk short distances to minimize driver inconveniences (Ince 2018) (Hawkins 2018).

Via also offers surge (called Rocket Pay) in peak times ranging up to 2 or 3 times a normal fare.

The main values of Via are (Ince 2018):

a. To focus on efficiency, especially route efficiency.
b. To demonstrate that a niche player can survive in this industry.
c. To define the (supposed) network effects of this industry.

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Main actors and their interests:

- Via
  To match multiple riders going to the same direction with vehicles following optimized routes to maximize efficiency and quality of service.
- Cities:
  To improve the public transportation system in areas where public transport is available but still insufficient.
- Drivers:
  To earn money.
- Users (citizens, tourists, etc.):
  To have access to transport in an affordable price.

Intellectual property aspects:

- Service features:
  - Powerful rider aggregation algorithm
  - Dynamic predictive routing and pricing
  - Automated service monitoring
  - Seamless integration
- App

5.12.2 Geographical context

Location in Europe, within country and region:

Via is also located in different cities around Europe such as:

- VIAVAN: Amsterdam (the Netherlands), London (United Kingdom), Berlin (Germany)
- ArrivaClick: Kent (United Kingdom)
- PLUS: Paris (France)

Topographic situation:

Not relevant.

Socio-economic context:

Via is working in different areas of cities where there is a lack of public transport services.

5.12.3 Context conditions

General context conditions before the start of a project:

Poor offer of public transport services.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

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People in risk of social exclusion because of the unavailable offer of public transport in the area and the expensive prices of the other transport solutions.

Opportunities that contributed to the initiation of the project:

Via, as already described in section 4.1.1, raised $137 million with private investors including 83North, C4 Ventures, Ervington Investments, Expansion Venture Capital, Hearst Ventures, Kapor Capital, Lior Prosor, Pitango, Planven, Poalim and RierPark. After these rounds, Daimler's Mercedes Benz division invested $50 million into a joint venture with the startup.

Financial context:

$187 million of external funding in order to set up the business and to expand into new markets (explained in section 4.1.1 as well as in two points above)

5.12.4 Case history

Initiation phase:

It was founded in 2012 and launched exclusively in Manhattan, before expanding to Chicago in November 2015. August 2016 it was launched in Washington. March 2017 started in United Kingdom and right after in Austin, Texas. The same month, Via partnered with Curb to allow users to hail a yellow taxi for a shared ride in certain areas of Manhattan. In December 2017 the company partnered with the city of Arlington, Texas.

Pilot phase:

The pilot phase was in 2012 in Manhattan.

Scaling-up and replication phase (Via Transportation n.d.):

- New York City, Chicago, Washington: VIA
- Austin: Pickup
  The client is Capital Metropolitan Transportation Authority and the goal was to upgrade legacy dial-a-ride service.
  The results were favourable, ridership grew by over 60% and vehicle utilization improved by 50% in just a few months.
- Kent (United Kingdom): ArrivaClick
  The client is Arriva Bus UK, a Deutsche Bahn Company and the goal was to offer a first-and last-mile service connecting commuters to a high-speed train station.
  There was a rapid adoption of the on-demand rides in low-density environment.
- Paris (France); PLUS by VIA
  The client is Keolis and LeCab and the goal was to integrate sharing into e-hailing service.
  LeCab's Via-powered service provides the highest-quality share ride experience in Paris.

After the joint venture between Via and Mercedes-Benz Vans, Via launched its shared ride service in London, Amsterdam and Berlin as VIAVAN:

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- Amsterdam (the Netherlands)

Rides within the central city zone cost a flat rate of just €5. To celebrate the launch of the service, all rides within this zone were fixed just €2 for the first two weeks. (VIAVAN 2018a)

Figure 64: ViaVan

- **London (United Kingdom)**

Figure 65: Via Van and user (VIAVAN 2018b)

Launched in zones 1 and 2, presented as an alternative to Uber, for a limited time all ViaVan rides to or from zone 1 cost £3.

- **Berlin (Germany): VIAVAN by VIA**

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Figure 66: Via Van (VIAVAN 2018c)

80% of VIAVAN'S BERLKÖNIG SERVICE's fleet is fully electric. Berlkönig is the largest public sector deployment of an on-demand shuttle service anywhere in the world.
In this case, this fleet also includes an accessible option for passengers who require wheelchair assistance. This case had an initial fleet of 50 vehicles with plans to expand the service to 300 vehicles.
To mark the launch, for a limited time all BerlKönig rides cost 4€.

5.12.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Since 2012 Via has grown and received much funding. Press has followed Via's case explaining their success in many occasions.

Now, Via has performed more than 30 million rides and the platform has 1 million members.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Via wants to build a mass-transit system and aims to get up to six passengers headed in the same direction to their destinations. The customers will be picked up close to their current locations and ideally dropped off close to their preferred destinations.

5.12.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

- In some countries VTC models could have a lot of barriers as the licenses related to these services are regulated by the local administration. This could lead to a lack of vehicles needed to provide the service.
- It is necessary to clearly define the threshold of the minimum amount of public transportation required to implement the VIA service. The area where the VIA service has to be implemented needs to be clearly defined due to other neighbourhoods with a similar amount of public transportation could ask for the same service.

What are key conditions for the transfer of the key concept (or elements thereof)?

- Cities willing to contribute to invest in public transportation in favour of partnerships with privately held technology start-ups.
- City staff working closely with Via to design fully dynamic city-wide service that will complement other public transportation options.
- Drivers who wants to join the Via team and start earning money.
- City policies adjusted to the requirements of Via service (related to the licensing of the vehicles working).

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- City council mobility technicians can validate and justify where to implement the service and where is not required.

5.12.7 Further reading on similar case

- Uber: On-demand transportation technology that connects driver-partners and riders. (Uber Technologies Inc. 2018)
- Lyft: Ridesharing platform that connects clients with other passengers with the same route or location.
- (Lyft n.d.)

Both are primary competitors

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6 Training & assistance

6.1 Disability Awareness Training for Transport Operator Staff

6.1.1 Essence of the concept

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), greater awareness for passengers with impairments and understanding of their needs is to be achieved. Next to the internal information provision and training aspect, cases where transport operators engage in a continuous dialogue with advocacy groups on location (e.g. in busses, at stations) or provide specific courses for specific disabilities (e.g. deaf awareness course) could be identified.

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 becomes knowledgeable about potential barriers users may experience and know in what way help can and may be provided, also considering legislation and insurance issues. Overall, resentments are diminished and the understanding for the situation of impaired transport users increases.

The identified awareness guidelines and training frameworks concerned several of the following themes: types of disabilities, legislation, stereotyping, fear of crime, available resources for support, communication, best practices, and ongoing skill development.

Intended beneficiaries:

The information guidelines and trainings are intended for transport operator staff and are to benefit transport users with impairments.

Techn(olog)ical aspects:

The methods used in the cases of Transport Operator Staff Awareness training that could be identified in the overview study range from the provision of simple brochures and extensive guide books created by transport operator associations, to elaborate frameworks for training sessions that enable operator organizations to carry out personnel training internally. All information, guidelines and training frameworks were developed in cooperation with advocacy groups for citizens with impairments.

Main actors and their interests:

The creation of information brochures, guide books and training frameworks is mostly put forward and financed by transport operator associations (e.g. association of bus operators of the German state of Baden-Wuerttemberg). These associations seek to provide their transport operator members with the necessary information and tools to fulfil necessary staff training in conformity with new regulation. Also, specific transport advocacy groups and expert committees were found to produce

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disability awareness material for operator staff (e.g. the UK's Disabled Persons Transport Advisory Committee). Also, international research and development organizations (e.g. the World Bank) as international are engaged in the production of disability awareness material.

Intellectual property aspects:

Information, guidelines and training frameworks are proprietary to the organisations producing these documents. Most of these documents are available online or in print versions, for purchase or even free of charge.

6.1.2 Geographical context

Disability Awareness Guidelines and training frameworks were found to be produced and applied by organizations in the UK, Germany and New Zealand. Furthermore, the World Bank has created a 'Transit access toolkit for drivers in public transport' at the international scale.

6.1.3 Context conditions

General context conditions before the start of a project:

Despite widespread improvements in the situation of public transport passengers with impairments in recent years, these users continue to face daily obstacles when travelling. A key element of this is poor understanding at the side of transport staff, who are often unable to give travellers with impairments the support they would like to provide.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups (50 words):

As disabled user groups are particularly dependent on public transport, advocacy groups state that drivers need to be able to recognize passengers with disabilities and respond appropriately to the needs of these passengers, enabling them to provide support in a manner that is stress-free for everyone. Misunderstandings and prejudices should be eliminated for normality and security in dealing with each other.

Opportunities that contributed to the initiation of the project:

EU Regulation 181/2011 on passenger rights in bus and coach transport requires training for crew members. The drivers should be able to respond appropriately to the needs of passengers with disabilities and learn to handle them stress-free.

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6.1.4 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

The application of awareness information and training frameworks, but especially the dialogue with representatives of disabled user groups and users themselves is described to lead to a reduction of misunderstandings and thus reduces potential for conflicts.

6.1.5 Further reading on similar cases

This overview description bases on several transport operator staff awareness training efforts. The following provides more information on these efforts.

- Training brochure for bus drivers and PT service staff of the association of bus operators in the German state of Baden-Wuerttemberg (in German, for purchase) available at: https://bit.ly/2xltZds
- Disability, Equality and Awareness Training Framework for Transport Staff of the Disabled Persons Transport Advisory Committee (UK) available at: https://bit.ly/2xnTFpH
- Transit Access Training Toolkit for Drivers in Public Transport of the World Bank available at: https://bit.ly/2xvHvdz
- Smaller cases that provided input to this overview were disability awareness training efforts of Transdev (see: https://bit.ly/2tg4BUx p.18 for information) and the case of a dialogue between disabled advocacy groups and transport operators in the German city Garching (see https://bit.ly/2NmUIQF for information in German)

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6.2 Donostia - public transport for over 60s



Figure 67: Donostia San Sebastian PT activities for over 60s (AENEAS 2018b)

6.2.1 Essence of the concept

Basic idea:

Donostia San Sebastian actively promotes public transport as an alternative to private vehicles. One of the measures to increase the capacity of public transport has been to increase the use of public transport amongst the increasing 60+ age group, training and giving them instructions on how to improve safety, bus lines, transfers, ticketing, etc (AENEAS 2018a).

Intended beneficiaries:

The increasing 60+ age group

Techn(olog)ical aspects (hardware and software):

None

Funding:

This initiative is part of the AENEAS project (Attaining Energy-Efficient Mobility in an Ageing Society), a European project in the framework of the Intelligent Energy Europe (IEE) program.

Business case:

Three target lines of action were promoted: promoting pedestrian mobility, older people and public transport, and improving road safety for older people.

Three activities were implemented as part of the project: Measure 1 – Promote walking among older people, Measure 2 – Adapting Public Transport for older people, Measure 3 – Older people and road safety.

Main actors and their interests:

- The increasing 60+ age group: learn about public transport safety, bus lines options, transfers ticketing, etc.
- Club Vasco de Camping Elkartea: organise 20 trips to different city places to promote walking.
- Real Automovil Club Vasco Navarro (RACVN): meetings and workshops about road safety.

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- Compañía del Tranvía de San Sebastián (CTSS) and DBus: workshops and practical sessions about public transport in different retired places of the city.

6.2.2 Geographical context

Location in Europa, within country and region:

Donostia San Sebastián (Spain)

Topographic situation:

Coast-line, embedded in hilly surroundings.

Socio-economic context:

Stable population and mixed economy based on tourism, services and industry in the metropolitan area. Population of 184.000 habitants.

6.2.3 Context conditions

General context conditions before the start of a project:

For 20 years, Donostia San Sebastián has pushed policies and designed plans to increase walking, cycling and the use of public transport in the city. Now, it has developed a transport network and infrastructure for the non-motorised transport (Donostia San Sebastián 2018).

Moreover, the city has increased the public transport lanes and now, it has one of the highest indexes of traveling using urban buses per person and year (~150 times).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

There is a need to design a vertical public transport plan and to improve the pedestrian communications between the flat city and the hilly city where half of the population live.

Opportunities that contributed to the initiation of the project:

The project AENEAS (funding), Donostia San Sebastián city and all the organisations that have collaborated with this initiative (Club Vasco de Camping Elkartea, RACVN and CTSS).

Political context:

Donostia San Sebastián city council has pushed the initiative in order to improve public transport and non-motorised journeys (i.e. cycling, walking, etc.).

Financial context:

This initiative was funded by AENEAS, a European project in the framework of the Intelligent Energy Europe (IEE) program.

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6.2.4 Case history

Initiation phase:

The objectives of Donostia-San Sebastián city defined in the initiation phase were:

- Identify and eliminate the obstacles in the pavements
- Organise an information campaign
- Adapt the transport public services to elderly people needs
- Improve the road safety and foment the use of non-motorised mobility

Pilot phase:

During the Pilot Phase, some activities were done

- Promote walking among older people: The city council organised, with the collaboration of the Club Vasco de Camping, fifteen walking tours for elderly people. Each walking tour has more than 60 participants (AENEAS 2018b).

Figure 68: Walking tours DONOSTIA (AENEAS 2018b).

- Public Transport adapted to elderly people: Donostia Bus company (DBus) has promoted and organised workshops and practical sessions to spread how is organised the public transport. 15 workshops were organised with an assistance of 25 persons per each (AENEAS 2018c).

Figure 69: Public Transport Workshops DONOSTIA (AENEAS 2018c).

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- Road Safety training for the elderly sector to promote and guarantee the road safety in Donostia-San Sebastián: 20 workshops were organised by the city council and RACVN (AENEAS 2018d).

Figure 70: Road safety training DONOSTIA (AENEAS 2018d).

Scaling-up and replication phase:

Within the AENEAS project 4 other cities also implemented different Pilots: Kraków (Poland), Munich (Germany), Odense (Denmark) and Salzburg (Austria).

6.2.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability)?

Yes, they do. After the pilot phase implementation different success criteria were analysed:

- Incentivise walking for elderly people:
  To encourage people to walk at least once per week
  To visit interesting places of the city
  To increase the sociability level between the groups of activities

- Public Transport adapted to elderly people:
  The users learned how to beneficiate from it and which are the new methods to improve public transport safety and how to react when an incident happens.

- Road Safety training for the elderly sector to promote and guarantee the road safety in Donostia-San Sebastián:
  Elderly people behaviour related to road safety was analysed. The participants discussed about how people can improve it. Moreover, in the second part of the workshop, a presentation about the evolution of sustainable mobility was presented and different cities use-cases of risky situations were discussed, in order to think about possible solutions for each risk/situation.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

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Yes, they do. The confidence of the Pilot activities participants related to road safety, pedestrian lanes and public transport increased. Their attitude was more positive, and the surveys showed that most of elderly people prefers to walk, cycle or use public transport instead of using other motorised transports.

6.2.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

- Local political interests of each municipality and, consequently, the budget set aside for the funding of this initiative
- Necessity of private transport to arrive to destination from the origin because of lack of public transportation or impossibility to access by foot
- High occupancy in the public transport in peak hours.
- Topography of the city that complicates walking encouragement in elderly people

What are key conditions for the transfer of the key concept (or elements thereof)?:

The key conditions for the transfer of the key concept are:

- To have a city topography that allows elderly people to move around by foot.
- A public transportation that provides to their citizens a level of comfort enough for elderly people.
- City staff working closely with other private organisations to offer workshops and other practical sessions.
-

6.2.7 Further reading on similar cases

- TMB offers activities to retired people to better know how public transport works in Barcelona https://fundacio.tmb.cat/es/tmb-educa/actividades-personas-mayores
- RedActiva: Promoting mobility in cities for old people https://static1.squarespace.com/static/5a21610890bade1ee622d6ce/t/5ab9aabc03ce64c09d3bcb02/1522117333296/180327_RedActiva_web.pdf

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6.3 Manchester - travel training

6.3.1 Essence of the concept

Basic idea:

Manchester Travel Training Partnership (MTTP) is a free borough-wide resource that teaches young people with special educational needs and disabilities how to independently use public transport safely according to their individual requirements. The programme is dually managed by Lancasterian School in West Didsbury and Manchester City Council's Transport Co-ordination Unit (TCU).

The programme is a one-on-one training that primarily teaches users how to get to and from their places of education. The partnership additionally facilitates events for students to apply their new-found skills, include shopping trips, personal safety days, and other social activities. The training outlines two aspects of safe independent travel. The first is how to plan a journey and navigate the transport system according to infrastructure needs, and the second is navigating the social interactions that take place on PT. This entails how to deal with bullies and/or overly friendly strangers. MTTP aims to teach travel-independence while using PT so that the target group can access their rightful services of transport and education. By engaging in the programme young students learn how to become more confident and assertive on PT.

Intended beneficiaries:

Young students with special educational needs or disabilities who need to get to and from places of education (e.g. school, college, places of work experience). There are no minimum or maximum age limits to participate in MTTP, but students have to be in some form of education up to college level so the age range tends to be 11 to 25 years old. The skills acquired during learning how to navigate to and from these sites are transferrable to using other parts of the PT network and are used long after they have left school.

Techn(olog)ical aspects (hardware and software):

While there are many apps in development and available for teaching travel training, MTTP does not use any. They have found that available technology does not yet negate the need for one-on-one mentors who are better able to determine what an individual student requires. Apps have been designed to rather help facilitate parents as teachers.

A typical training session first involves road safety. Students are usually taken to their home or suburb to determine typical dangers encountered when navigating roads. This is catered to an individual's needs, and takes into account the abilities of a student to read or to orienteer etc. Once this is completed, theory and practical sessions are then used to demonstrate how to catch different modes of PT, again determined by an individual's mobility or learning requirements.

Use of local transport operators' apps are advised by the website and students are taught how to use them during theory sessions. Such operators include coaches, buses, and trains, who provide route planning for their specific services. Additional journey planners are also reviewed to encourage

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multimodal knowledge, since individual operators only offer route planning for their routes. The additional journey planners include Google Maps and the Transport for Greater Manchester journey planner.

Finally, training is concluded with personal safety and problem-solving lessons.

A tracker app is suggested for a minority of students whose families can be informed of their location during transit (in the event that a student gets lost and might be unable to communicate this).

Funding (incl. fare structure):

MTTP is solely financially supported by the City Council which funds the organisation from their transportation budget. However, MTTP is subjected to an "invest to save model", meaning that travel training is only available and limited to students who would in the long run, save the investor funds. According to this model, "home to school" transport education is prioritised above everything else. Nevertheless, training can take place as many times as is necessary (e.g. if multiple routes, or different destinations related to school activities need to be mapped out). This free repeated training is known as "top-up training" and is a vital option for users who often need it again in future when they become uncomfortable with the system after initial training has taken place. For example, if they experience a negative event and may need to redevelop their confidence and/or gain support in dealing with microaggressions experienced from other travellers.

The travel training has a follow-up scheme built into the programme to monitor how students experience their travels long after they have completed it.

Business case:

The social value created by this initiative is as equally valued as its financial returns. Although Transport for Greater Manchester (TfGM) provides reduced fares and concessionary prices for those with special needs (Transport for Greater Manchester, 2018), the financial motivation to better enable this target group's use of public transport is to prevent them relying on door-to-door travel assistance provided by the borough. Travel assistance has greatly inflated the overall costs for TfGM in the past. Still, focus is equally placed on the social value that the business model generates, i.e. the personal benefits that come from inclusion to transport and community which fosters independence.

Main actors and their interests:

Organisers:
Manchester Travel Training Partnership, the Travel Coordination Unit, and Lancasterian School are all focused on integrating those with special needs in their places of education and enabling some level of independence from their families and the state. The borough of Manchester is also interested in the long-term financial savings they can make when candidates are successfully trained to use PT.

Young people with special needs and their parents are interested in developing their independence both in the short and long term. Independent travel to places of education and early career working locations ensure that students are less likely to be excluded from being educated and extracurricular school activities which are important for developing social norms and better integration with society.

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Intellectual property aspects (patents etc.):

None.

6.3.2 Geographical context

Location in Europe, within country and region:

Manchester is situated in the north-west of the island of Great Britain, approx. 250km NW of London. It is both a city and one of the 10 metropolitan boroughs that make up "Greater Manchester" in the United Kingdom. Since MTTP is a partnership with the City of Manchester, it only runs at the city level in one borough. Other travel training is independently organised by the other boroughs. However, they do intermittently meet to share resources and ideas in a quarterly forum.

Topographic situation:

Wet weather is one of the only concerns for barrier-free walkability since the region has no dry season. Heavier precipitation occurs during winter, which is generally regarded as mild.

Socio-economic context:

Manchester is the second most active economy in the UK. Its borough is inhabited by approximately 600 000 people while the Greater Manchester region is populated by 3.2 million. Greater Manchester consists of rural and semi-rural villages, industrial towns, and is mixed with suburban development forming a conurbation. There is a diverse mix of high value and active economic hubs between some very deprived communities. The inequality in Greater Manchester is attributed to the lack of skills in the younger population aged 19-40 years old, which makes up the larger proportion of the overall population. The region's residents fail to achieve university degrees in a proportion as high as the rest of the UK, and less than half of students leave high school with a pass in core subjects Mathematics and English. The thriving economy is not benefited by all and is supported by migrant workers who rely on the city's good transportation access (M. Hunt, 2012).

6.3.3 Context conditions

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Due to central government budget cuts the local authority was having difficulty managing its ever-increasing transport budget and was looking for ways to reduce its transport expenditure. In conjunction with this, local pilot schemes (such as MTTP) and a growing national movement of other travel training (Easter Seals Project ACTION, 2012) were showing that it was a life skill that young people were mistakenly being deprived of when receiving door-to-door transport with the travel assistance scheme.

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Opportunities that contributed to the initiation of the project:

In 2008, the predecessor of MTTP, the Independence Development Service (IDS), had been showcased when it placed as runner-up in the Guardian Newspaper's public service awards for innovation in transport. In consequence, the local Council partnered with the IDS to reduce its ballooning travel assistance costs. An additional driver was the enthusiasm of the people who had taken part in the project. They had seen it 'work' and were impressed by the effect it had on the young people.

6.3.4 Case history

Initiation phase:

The Learning Skills Council (now the Skills Funding Agency and the Young People's Learning Agency) was a governmental entity that funded innovative projects for young people with disabilities. Together with the City of Manchester's management, it funded a scheme for a trainer to teach young disabled people how to use PT on a one-to-one basis. The project was the Independence Development Service, and was coordinated by the Lancasterian School.

Pilot phase:

The IDS was then replicated with a group of college students of Loreto College, and another group of visually impaired students at Trinity High School.

Roll-out phase:

The MTTP was officiated in January 2008 as part of Lancasterian School. A working group was created to provide one central service. It consisted of a single co-ordinator and five trainers. These staff members were procured from the Independence Development Service. A strong partnership with the Transport Co-ordination Unit (TCU) was also set up. The TCU provides travel assistance for pupils with special needs if travel training is inappropriate for a particular individual. The TCU is responsible for the initial assessment and home visit to ensure that an individual is eligible for door-to-door travel assistance according to national guidelines. TCU currently provide transport for 1100 children over 250 routes in the borough (Manchester City Council, 2018).

Scaling-up and replication phase:

MTTP has remained the same size in terms of budget provided by the Council for many years. Despite being able to prove that there is a need for the service and savings to be made, the local authority finds it difficult to increase the size of this service while other services are being cut. The size of the operation has instead been increased by helping other boroughs with their travel training programmes. MTTP was instrumental in starting up the Wigan travel training and also ran Trafford's for many years (see similar case studies below for further details). MTTP is also involved with all special needs' schools in Manchester and most of the mainstream ones too. The latter is dependent on how many disabled young people a mainstream school has at any one time.

The challenge that the local authority face with scaling up is that the central Government seeks to outsource services to the private sector, thus it is reluctant to increase MTTP's service while it is being funded by the state.

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6.3.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

MTTP uses self-reported evaluation forms completed both by parents and students which queries if and how barriers of access to PT were overcome. This is the primary indicator of success for the project which aims to determine how perceptions of PT have been shifted and how it has impacted users' lives and independence. Evaluation forms also explore satisfaction with the programme and whether there are any remaining concerns. Findings are reported in the following section.

An additional measure of success is the financial savings earned by the Council because of the number of students trained per year. The investment of each trainee is closely monitored. It costs on average £3000 per young per person to train. This is about half the cost if a student would rely on Travel Assistance.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

The skills learned during travel training to get to and from places of education were also transferred to the rest of the transport system. Greater movement and inclusion were enabled particularly to after-school activities and off-campus events. Learning to independently use public transport has also developed greater confidence and self-esteem for young people who had fears about themselves and using PT safely.

While friends and family can be a part of the training, the skills taught are aimed to teach full independence, including from the relationships that young people usually rely on to get around. The positive reinforcement and encouragement from family interactions during travel training has allowed practical, social, and communication skills to be learned that are applied outside of family interactions during PT travels. Finally, independent travel has also led to a greater sense of awareness of one's environment. When young people have to actively navigate by themselves, they take on the alertness of their surroundings to keep themselves secure and safe. This has fed into the dynamic of confidence building and taking on responsibility for themselves.

Unintended beneficiaries of the intervention are the parents of these students. They are as transformed and enlightened by the process as much as the students. Parents have reported feeling more trust of and for their children using the PT system knowing that they have had a proper introduction. Furthermore, parents' safety concerns and fears are diminished when they learn how their children can safely be self-sufficient.

6.3.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?:

Funding and trained staff to work with people with learning disabilities are the limiting factors of this case. During particular periods (the school holidays), demand for travel training sometimes outweighs staff and classroom capacity. Adequate research is required in the area that travel training is being transferred to, specifically to determine the size of the target group, and how much capacity

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may be needed. The number of students that can be trained each year is dependent on each mentor's ability, experience and the journey plan, but roughly 10 – 12 students can be trained per mentor per year. It costs MTTP £3000 per young per person to train. This is about half the cost if a student would rely on Travel Assistance.

What are key conditions for the transfer of the key concept (or elements thereof)?:

Urban environments with good transport network and online tools: transferring the key concept may be difficult if the training were to take place in rural areas with less developed transit networks, particularly for exercises of journey/route planning.

Trained staff who are suited to work with special needs students and have a passion for public transport.

Funding that is inclusive to all those on a special needs spectrum.

While support from *local authorities* can be beneficial, it is not necessary for a successful venture should funding be provided from another avenue.

6.3.7 Further reading on similar cases

Travel training that takes place in the other boroughs of Greater Manchester are as follows (Transport for Greater Manchester, 2019):

- Members of GMTTF Travel training in Bolton by Pure Innovations
- Travel training in Bury by Pure Innovations
- Travel Training in Stockport by Pure Innovations (download Word document)
- Manchester Travel Training Partnership (download Word document)
- Travel training in St Helens
- Trafford Independent Travel Training
- Travel training in Wigan
- The Redwood School Independent Travel Programme

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6.4 Travel Buddy

6.4.1 Essence of the concept

Basic idea:

The Travel Buddy Service operates in the London Borough of Hounslow and provides independent travel training and travel support to adults with a physical disability or mental health difficulty on how to use public transport systems. The service covers public transport (buses, trains and tubes, tubes) and walking routes. Support is provided by adults with disabilities who have been fully trained and are employed as Travel Buddies by the London Borough of Hounslow. The Buddies accompany the service users on their required journeys, offering advice and practical support to increase independence, confidence and personal safety awareness whilst in the community and when using public transport (buses, trains, and tubes).

The services provided include:

Travel training for using public transport
One-to-one travel support
Group buddy support for groups of people requiring assistance
One-off journey support for individuals requiring assistance on a single trip.

The Travel Buddy can accompany a service user to help in accessing public transport modes in terms of understanding timetables, payment, routes, and so on. This service provides guidance which enables the individual to gain confidence in independently using the service on a future occasion.

Safety awareness workshops for residents in the London Borough of Hounslow.

Intended beneficiaries:

To be eligible for the service users need to:

- be aged 16 or over and living within the London Borough of Hounslow
- have a disability (learning disability, autism, physical disability, mental health difficulty, sensory impairment or a long-term health condition).
- be aiming to increase and show a commitment to developing your independent travelling skills.
- be willing and able to travel using public transport
- be physically able to walk short distances
- be known to a professional who is able to provide information on your disability

Techn(olog)ical aspects:

Technological aspects include the provision of information (for example: wayfinding, route planning and real-time travel information) and safety aspects (for example: improved security, lighting, guard rails and emergency buttons).

Funding:

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The Travel Buddy service is paid for by the London Borough of Hounslow. There is no cost at the point of use for individuals using the service.

Business case:

London Borough of Hounslow provides subsidies to enable individuals requiring assistance to receive it from persons who have experienced similar challenges to themselves. Enables those individuals to travel independently and access healthcare, work, employment and leisure opportunities.

Main actors and their interests:

London Borough of Hounslow. Travel Buddies who were trained by the London Borough of Hounslow.

6.4.2 Geographical context

Location in Europe, within country and region:

Specific neighbourhood(s)/districts in the UK; in particular the London Borough of Hounslow.

Socio-economic context:

Even the Travel Buddy Service is not specifically targeted to socio-economic features of the target group, we need to consider that this service assists individuals who have limited access to private cars and such a condition is more likely among lower income persons.

6.4.3 Context conditions

General context conditions before the start of a project:

Individuals who have a physical disability or mental health difficulty would not have received support in using public transport or walking routes. They would have either had to use the services/routes by themselves, which might have proved too challenging in many instances, or to have asked a friend or relative to accompany them and provide assistance.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The target user groups, namely, individuals who have a physical disability or mental health difficulty, were perceived by the London Borough of Hounslow of being at risk of exclusion through being unable to access or use public transport services or walking routes to gain access to services and facilities.

Opportunities that contributed to the initiation of the project:

Funding provided by the London Borough of Hounslow to train the Travel Buddies in the necessary skills for accompanying and guiding individuals with disabilities to use public transport, based upon the experiences that they had themselves undergone.

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Political context:

London Borough of Hounslow pays individuals who might find it challenging to gain employment and who share similar experiences with the individuals whom they are assisting within this scheme. The scheme fits into wider equality and diversity objectives of local and national government; namely that of being accessible and to ensure the transport system facilitates access to jobs, services and leisure opportunities, regardless of disability or social circumstance.

Financial context:

Funding is provided by London Borough of Hounslow to pay individuals who might find it challenging to gain employment and who share similar experiences with the individuals whom they are assisting within this scheme.

6.4.4 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Success criteria are such that the scheme provides employment for individuals who may typically face discrimination and challenges in obtaining employment. It also enables individuals who might otherwise find it too difficult to travel and access much-needed services to gain confidence in doing so, through having the empathy and assistance of fully-trained individuals who might have experienced similar challenges themselves.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, as it helps those individuals whom might otherwise experience challenges in gaining employment in addition to the user groups who find it challenging to use public transport.

6.4.5 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

There exist few barriers to transferability. However, obtaining funding for the scheme might present a barrier. There also needs to be a willingness of individuals to be recruited as Travel Buddies and to receive training to participate in the scheme.

What are key conditions for the transfer of the key concept (or elements thereof)?

Funding is needed to pay for individuals to become Travel Buddies and sufficient provision of public transport and walking routes are needed to enable travel by these modes to take place on a regular and/or frequent basis.

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7 Information provision & route planning

7.1 Aira app

Figure 71: Aira App concept

7.1.1 Essence of the concept

Basic idea:

Using augmented reality, Aira provide instant access to information to anyone, no matter where they are in life's journey. It connects people who are blind or low vision to a trained professional agent who is dedicated to further enhancing their everyday experience – completely hands-free assistance at the touch of a button (Aira 2018).

Figure 72: Aira user

Techn(olog)ical aspects (hardware and software):

Aira technology instantly connects the people with a sighted professional agent who delivers visual assistance anytime and anywhere.

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The connection is made via wearable smart glasses and an augmented reality dashboard that allows agents to see what the blind person sees in real time (Kanuganti and Ray 2017).

This Horizon Kit is a gadget that has superior connectivity, stylish design, AI capabilities, and easy-to-use hands-free experience.

Funding:

Aira received different investors such as Seed Round (2015), Series A (2016), Series B (2017)

From more than 5 different investors: Arch Venture Partners, LUX, Felicis Ventures, Argoretum Ventures and JAZZ Venture Partners, etc. (Aira n.d.).

Business case:

Individuals can use Aira for free through Aira access. This Aira Access have three forms:

A) PROMOTIONS – limited and on-going promotions that provide free access to Aira agents

B) PRODUCTS – free to use for tasks that involve certain products like Vispero's JAWS screen reader

C) LOCATIONS – free to use while in a growing number of locations like Walgreens, AT&T stores, airports, and federal buildings.

Also, Business case is based on subscriptions:

	Guest	Intro	Standard	Advanced
Pay Monthly	Free	$29	$99	$199
Regular Minutes	Free to download. Free to use	30 Minutes	120 Minutes	300 Minutes
Features	*Smart phone app *Aira Access calls *Free Aira offers	*All guest features *Connect with agent anytime, anywhere *Referral program	* All guest features *Connect with agents anytime, anywhere *Referral program *Minute sharing *Horizon upgrade available	*All guest features *Connect with agents anytime, anywhere *Referral program *Minute sharing *Horizon upgrade available

Table 7: Aira subscription plans(Aira n.d.)

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Each user can pick the plan that makes more sense for him/her, sign up and download the App to the smartphone.

Also, the users can also pick the Horizon Kit as an accessory to add to their Aira plan. This gadget has superior connectivity, stylish design, AI capabilities, and easy-to-use hands-free experience. New subscribers can rent-to-own for $25 per month over a 24-month period, or make a one-time payment of $600.

After singing up, Aira community will send the Aira Horizon Kit to the user.

Main actors and their interests:

- Blind and low vision people: To get remote assistance to be independent.
- Aira Team: To serve as visual interpreters for the blind people, helping users accomplish a wide range of daily tasks and activities – from navigating busy streets to recognizing faces and literally travelling world.
- Some other businesses around the world: They partnered with Aira to provide free access to more people, in more ways (e.g. AT&T)

Intellectual property aspects (patents etc.):

Aira Tech Corporation

7.1.2 Geographical context

Location in Europa, within country and region:

It's available all around the globe, more common in US but it has recently launched specific offers in Australia and New Zealand, Canada, and has one pilot in UK and Ireland.

7.1.3 Context conditions

General context conditions before the start of a project:

Simple navigation daily life doing simple tasks (e.g. cooking, shopping, clothing oneself, checking expiration dates, studying a map for directions, etc.) presents huge challenges to be faced by blind or low vision people.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Aira target users are 300 million of blind and low vision people. Helping them to face daily challenges (Kanuganti and Ray 2017).

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Opportunities that contributed to the initiation of the project:

New technology emerging using IoT, smart glasses, widespread bandwidth and human-assisted AI.

Financial context:

They have incomes from crowdsourcing initiatives and from the users' service subscriptions.

7.1.4 Case history

Pilot phase:

The service started to be available only in the United States and some parts of Canada. Then, it was tested in New Zealand.

Roll-out phase:

After the Pilot Phase, Aira officially launched the App in Canada and Australia, New Zealand, UK and Ireland.

Scaling-up and replication phase:

Other Pilot programs are available in some other countries.

7.1.5 Impact assessment

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The option of having assistance anywhere and anytime to manage situations efficiently and independently is the key success criteria. Another one is the availability to have free access to this service (Aira Tech Corp 2018)

7.1.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

- The tariffs fixed require in some countries / contexts a cooperation between the company and the City Council to avoid inequities.
- Knowledge of the city where the service is implemented is required to solve each incidence that can arise to the customer in each city in each moment.

What are key conditions for the transfer of the key concept (or elements thereof)?

- Partnerships with City Councils or some other businesses around the world to provide free access to more people, in more ways (e.g. AT&T)
- The quality of the information that the contact person can provide in each moment to the blind person is basic

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7.2 APP&Town Compagnon

7.2.1 Essence of the concept

Basic idea:

Figure 73: *App&Town Public Transport App* Icon. Available for Android and IOS (Google Play, 2019).

App&Town Compagnon (App&Town Companion (ATC)) is an innovative intelligent guidance system that enables autonomous navigation and multimodal PT use for people with mild to moderate cognitive and physical disabilities. Although the walking mode journey planner can be used anywhere in the world, the PT network has only been integrated for the cities of Barcelona, Madrid, and Laval (Canada). The application gives clear step-by-step directions and instructions that are precisely customized for each user's needs, improving their mobility, independence, self-esteem and quality of life.

After downloading the app, an operator or supervisor registers a user and who their legal tutor will be. A tutor, operator, and supervisor can create different routes for the user. During transit, a user is monitored. Within the configuration phase or when starting a trip, the operator and supervisor are assigned to the user, and are responsible for their supervision along the entire journey and to manage any incident that may arise. The user only has to open the app, choose a route (see fig. 1) and follow the instructions until their final destination.

Intended beneficiaries:

This app has been designed to allow everyone who is capable of autonomy to navigate PT networks. This includes people with cognitive and physical disabilities.

Techn(olog)ical aspects:

Hardware: ATC can be used on android devices, although IOS compatibility will be available shortly. A user may be provided with phone if they do not have one. However, these devices are usually locked such that they can only run the ATC app on it.

Software: Visual, intuitive and user-friendly App has a fully adaptable interface for each users' capabilities allowing multiple choices of text and images, audio instructions, or only images. The software is owned and controlled by the developers, Mass Factory, to the extent that each download is monitored and authorized so that they may facilitate assigning supervisors and tutors to a user.

Most notable functions of the app include real-time tracking of users over the entire trip chain for monitoring; algorithms that customize routes according to users' capabilities and route difficulty; continuous fault monitoring of the system, battery level, GPS, mobile network connectivity, and any out-of-route movements.

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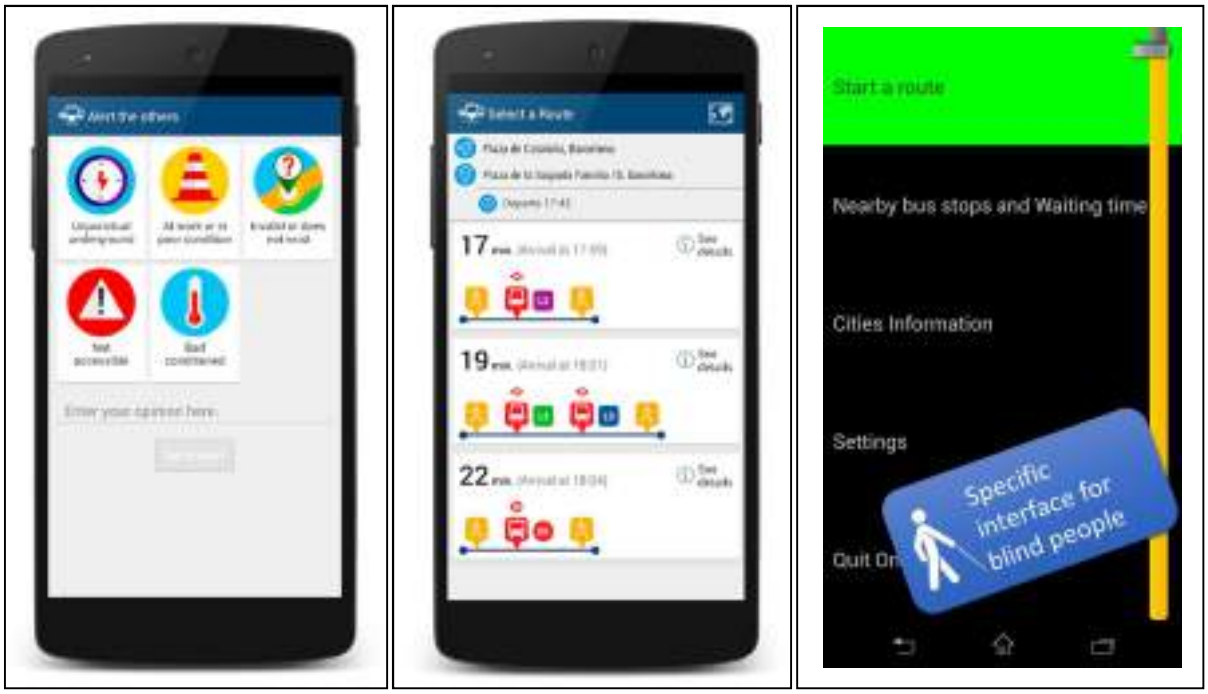

Figure 74: *In-app screenshots during transit.*

The first screen highlights the capability for the app to alert others while the second displays possible routes to a destination. Users are able to select which route they are most comfortable with. An alternative user interface has also been designed for those with visual impairments or blindness that do not require looking at the screen. The app also has a built-in help button that is always visible and directly connects a user to the Control Centre.

Funding:

The ATC system is sold to cities. The procurement process is usually slow and can create difficult cash flow issues for the company. The cost is determined by the complexity of a city's PT network, and the size of the available target market.

Business case:

Mass Factory has an impact-based sustainable business model that aims to create both social and financial value from their ventures. i.e. that all products and services offered have an explicit intention to generate social benefits while creating financial returns for the business. Their ATC product creates social inclusion of people with special needs, enhances mobility and self-esteem of its end users, and improves the overall quality of life for them and their families. It replaces the dependence of using paratransit and/or the availability of others by facilitating access to a larger, more flexible, safe, and inclusive public transport network. By decreasing expenditure on paratransit, public administration resources can be optimized and used more efficiently, thereby creating further social value.

Main actors and their interests:

The following organisations have cooperated in the development of ATC. Empresa Municipal de Transportes of Madrid; Société de Transports de Laval; as well as the following organisations in Barcelona:

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Public Entities	Transports Metropolitans de Barcelona; Àrea Metropolitana de Barcelona; and Centre Metropolità d'Informació i Promoció del Transport (Metropolitan Centre of Information and Promotion of Transport)
Rail Operators	Renfe Operadora; Ferrocarrils de la Generalitat de Catalunya (Catalan Government Railways)
Bus Operators	Nitbus; Authosa; Mohn; Oliveras; Rosanbus; Soler i Sauret; SGMT Aerobus; TCC2; and Transportes Urbanos y Servicios Generales, S.A.L.
Tram Operators	Trambaix and Trambesòs

Further collaboration was necessary for the effective design of the app from the following disability organisations: Sant Pere Claver, Fundación Fundacion ONCE, and Ampans.

Intellectual property aspects (patents etc.):

The application was designed and is managed and owned by Mass Factory Urban Accessible Mobility, S.L.

7.2.2 Geographical context

Location in Europe, within country and region:

ATC is available in the cities of Barcelona and Madrid (Spain) and Laval (Canada). Laval is situated in southwestern Québec, north of Montreal. It forms its own administrative region of Quebec.

Socio-economic context:

ATC is specifically designed to be used in urban areas with a well-developed PT network.

7.2.3 Context conditions

General context conditions before the start of a project:

Mass Factory is a company that was formed by seven students of the *Universitat Autònoma de Barcelona*. The team was led by PhD candidate Jordi Roig with the aim to create innovative products that add value to society. Their first project that the team created was the OnTheBus App; a free Android app to help plan urban trips by foot and/or bus. It had a universal design with built-in capabilities for visually impaired people.

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Figure 75: **ATC began with the development of the OnTheBus app *(Mass Factory, 2017)*.**

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

ATC was borne from OnTheBus when Mass Factory was approached by *Société de Transports de Laval* (STL is the public transit network for Laval) to design a multimodal PT GPS and guidance tool for people with cognitive disabilities. STL sought to empower travellers who were using paratransit but could use the fully accessible PT network with some assistance. They wanted to improve the independence of those with the capability so that they could also reduce their expenditure on paratransit services.

Opportunities that contributed to the initiation of the project:

In 2012 STL made a formal expression of intent with Mass Factory to help assist in the creation of ATC. Discussions and brain-storming began around what the intended purpose was (i.e. to move users from paratransit to railway and bus systems which already had accessibility infrastructure) and a contract was signed two years later.

Financial context:

In order to produce ATC for STL, financial support of five years was required and that the intellectual property rights would remain the sole property of Mass Factory after the development was completed. However, it would be licensed for free until 2020.

7.2.4 Case history

Initiation phase:

Design began with the collaborative efforts of STL in 2012, development was conducted from 2014 onwards, and the product was released in Laval in 2016.

Pilot phase:

Laval acted as the first pilot city for the app primarily catered to those with intellectual and cognitive disabilities. With the introduction of the ATC system, fifty users were able to successfully access and use the broader PT network while being closely monitored and supported by their supervisors, tutors, and/or their family.

Roll-out phase:

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Two years later in 2016, Mass Factory procured their first city contract with Barcelona. It proved very difficult to implement the system in the company's home town due to the slower workings of public entities to make sales. However, Mass Factory was still being financially supported by STL as part of their five-year agreement. This made it possible for the app to be further developed from what was released in 2014 in Laval. In 2016, the original idea of founder Dr. Jordi Roig, who himself is blind, was materialised. The app that was released to seventy users in Barcelona was able to additionally cater for people with physical disabilities, although the market mostly comprised of the elderly with dementia and other memory disorders.

Scaling-up and replication phase:

Mass Factory is currently working with *Réseau de transport de Longueuil* (RTL) in Québec; the *Ministry of Social Affairs and Social Services* for the *City of Tel Aviv* to deploy ATC. There are also plans to offer the system across the entire Catalonian region, and to have a pilot in France and the UK. However, the latter is dependent on winning the *Small Business Research Initiative Competition* to develop an assistance app to help people with disability use public transport. Similarly, Mass Factory has partnered with *SmartColumbus* for the *US Smart City Challenge*.

7.2.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

ATC is perceived as a highly successful tool by their founders, who also benefit by using the app for themselves. Success is determined by the number of new downloads and users that come online each day, the number of trips that are made per user, and the level of satisfaction that end users and tutors report. Due to the nature of the app, monitoring the activity and the way that apps are being used is easy. A final measure of effectiveness of the ATC system is the number of times that a private taxi needs to be called out for an emergency situation if a user becomes lost or distressed and can't be guided back to the PT network. That said, a private taxi has never been dispatched from any of the call centres.

ATC has also won numerous awards for its innovation including: the 2016 Social Inclusion "Excellence Awards" through ICT of the Telecom Engineers' Association; Fundación Bancaria "la Caixa" award in 2017; the best entrepreneurial project winner at the 4th Premios Discapnet in 2017; Winner of the 2nd UNINNOVA Awards for Best Product/Service in 2017; and winner of the 3rd Red Cross - ICT Awards for Technology Innovation with Humanitarian purposes in 2018.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Tutors and supervisors collect overview opinions and general feedback from the users. The results are overwhelmingly positive and show that the app is giving people more than just improved mobility, but all the benefits that come with social inclusion too. The 165 reviews made about the app in the Google play store has yielded an average of 4 out of 5 stars.

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7.2.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Transferability can only be achieved by sales to cities. It has not been easy to launch and sustain this start-up. Unfortunately, procurement for social impacts projects are not as attractive to private investors, which limits sales to the public sector. ATC is a neoservice and many cities do not yet have the correct protocols in place to purchase them. Red tape often causes drawn-out sales cycles. However, there are state entities that are making funds available for disability innovations which has eased the start-up's cash flow challenges since 2015.

Given that there are already plans of up-scaling their reach, an additional factor to cash flow that may limit transferability is capacity depending on when transferability would take place.

Finally, there are legal obligations for supervisors who monitor users along their journeys. These obligations differ between cities. For example, in Laval, the responsibility falls to the state as ATC is a part of the paratransit contracts, but in Barcelona the responsibility falls to the Mass Factory call centre since the transport authority did not want to take on the mild risk. Additionally, Laval requires users above the age of sixteen to legally give permission to their supervisors to monitor their movements as part of their privacy rights, even if a supervisor is a parent. Transferability may be limited by the legal conditions of different regions, but there is little reason to believe that it would inhibit transferability for an EU context.

What are key conditions for the transfer of the key concept (or elements thereof)?

- The capitalistic market has not always valued what ATC can do given that its target is not necessarily for the masses, despite that everyone can use it. Success has come from a strong motivation of believing in what they are offering the globe.
- Partnering with disability organisations is important for designing useful features and for acquiring users, tutors, and supervisors. They are additionally necessary for advertising the ATC system and can be a source of funding too.
- Interest from cities and patience that is required for dealing with long procurement processes and managing internal finances.

7.2.7 Further reading on similar cases

Mass Factory consider the major routing applications as competitors since ATC can be used by everyone. This includes: GoogleMaps; Moovit; CityMapper; Transit Agency Apps (Local and Regional). The most similar case to ATC is GoOV app. It also is a PT navigator for people with cognitive and physical disabilities. Other walkability navigation for blind and visually impaired describes the environment, announces points of interest and street intersections as you travel: Ariadne GPS; BlindSquare; Nearby Explorer; Sendero GPS; WalkyTalky; Wayfindr; CerQana; Seeing Assistant; and NotNav.

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

7.3.1 Essence of the concept

Basic idea:

A full PT network journey planner that gives information on barrier-free travel chains in public transport of Berlin. The journey planner provides information of barrier-free connections and also gives additional accessibility details of interchanges (e.g. interactive station plans), stops and vehicles. *Verkehrsverbund Berlin-Brandenburg* (VBB) also offers a free door-to-door travel assistance service for all mobility or visibly impaired persons and older people who may need help using public transport. They additionally provide free travel and mobility training, and escort services for bus and train journeys. The journey planner works in conjunction with the many infrastructural provisions that *Berliner Verkehrsbetriebe* (the local public transport company) provides to enable successful journeys for the mobility impaired.

Figure 76: Journey planner showing how barrier free routes can be generated (Bührmann et al., 2011)

Intended beneficiaries:

According to VBB, about one third of PT users in Berlin experience some sort of limited mobility that may either be temporary or permanent. The journey planner seeks to cater to all users with limited mobility, whether it is someone with a permanent disability, a temporary injury, or simply a user who may have goods with them and cannot navigate as easily as usual.

Techn(olog)ical aspects (hardware and software):

Planning a barrier-free journey can be done via the *Berliner Verkehrsbetriebe*'s website, mobile app, or by calling the customer service centre.

Funding (incl. fare structure):

The planner was created with funds from the *Bundesministerium für Wirtschaft und Technologie* (Federal Ministry of Economics and Technology) which financially supported the BAIM and BAIMplus projects (funding Code: 19P8002B; see initiation phase for more details).

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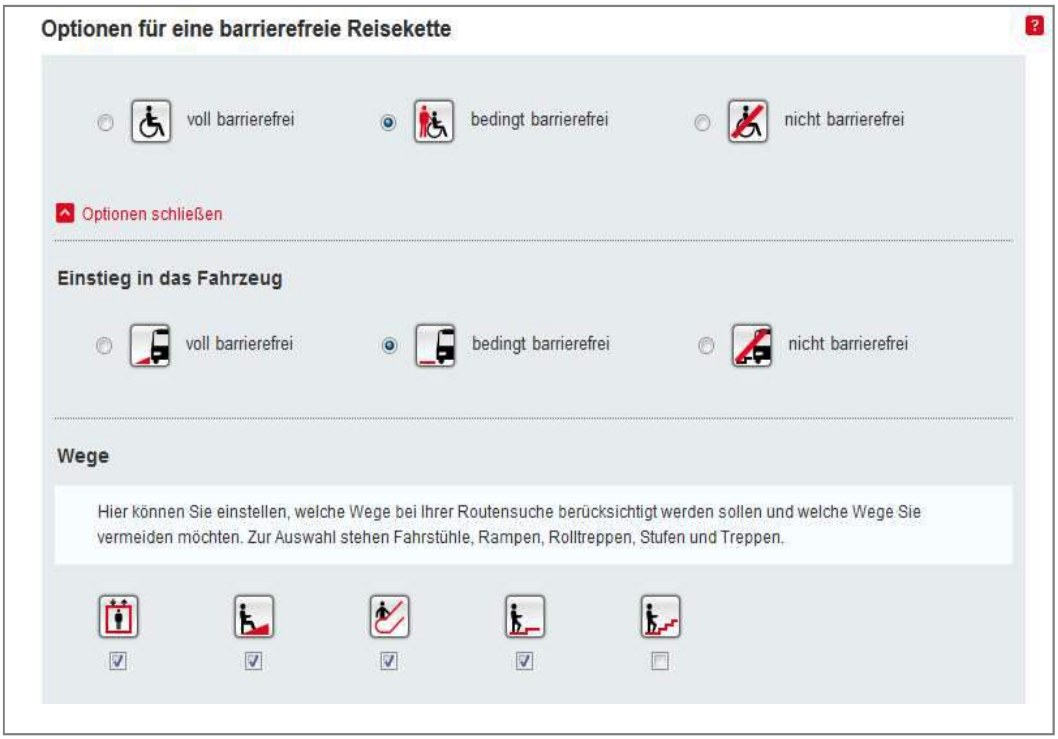

***Figure 77:* A screenshot of the journey planner showing details of barrier options that may be selected.**

The first row queries the type access wanted: fully barrier-free, conditionally barrier-free, or not barrier-free. If conditional is selected, then travellers have further options of selecting vehicle entry and type of step-accessibility for paths.

Business case:

Severely disabled persons travel at reduced prices and some even free. Thus, the business case for this project is to create social value rather than financial value. However, if one third of users were unable to effectively use PT because of barriers, this would result in significant financial impacts.

Main actors and their interests:

The BAIMplus Project Consortium consisted of: *Hofheim am Taunus* (leader), VBB (licenser of the journey planner software and data owner), *HaCon Ingenieurgesellschaft mbH* (technical developers and licence holder of the planner), *SemanticEdge GmbH*, *IVU Traffic Technologies AG* (responsible for database management, ticketing management, and accounting), and *Rhein-Main-Verkehrsverbund Servicegesellschaft mbH* (associated partner).

Intellectual property aspects (patents etc.):

HaCon who also work for *Deutsche Bahn* (DB) hold the primary rights of the journey planner software as the original technical developers.

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7.3.2 Geographical context

Location in Europe, within country and region:

Berlin is the capital city of Germany and is situated in the Northeast of the country.

7.3.3 Context conditions

General context conditions before the start of a project:

BAIMplus is an extension of the BAIM project which started in 2005 with aims to provide and disseminate information for people with reduced mobility to use PT more easily. BAIM made it possible for people to run searches that queried the exact whereabouts of lifts, escalators, and other mobility aids. The project focused on pooling data and data management and organising it in a way that it could be retrieved and be applied in useful way for people with reduced mobility. Before the project there was hardly any information regarding accessibility routing. A system called Inforadio, a radio broadcast, was used by operators to notify people several times a day of lifts that were out of order. Users also had to call individual PT operators to collect this information.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

It was clear something had to be done to make travel easier for the physically disabled although they did not spark the initiation themselves. *Berliner Verkehrsbetriebe* aims to provide complete barrier-free access across Berlin by 2020 (Berliner Verkehrsbetriebe, 2018).

Opportunities that contributed to the initiation of the project:

The project was very clearly catalysed by the national calls of the BAIM project and the cooperation of the consortium.

Financial context:

After the end of the funding programme, data maintenance (e.g. data about length of a platform, updating the system when a lift breaks down or is repaired) had to be ensured which was not easy. Generating data used to be extremely laborious and costly, e.g. walking along a platform counting steps. Nowadays, all this data is captured in digital format. By now it is has become evident that data maintenance simply has to be part of routine maintenance services that are related to and covered by VBB's internal budget.

7.3.4 Case history

Initiation phase:

The journey planner was developed and refined as part of the *Barrierefreie ÖV-Information für mobilitätseingeschränkte Personen*. BAIM and BAIMplus projects' aim was to support and facilitate participation in public passenger transport by providing target group-oriented information about

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barrier-free travel options by means of adapted information paths and services. In particular, the target groups were older travellers and people with reduced mobility (Forschungsinstitut Technologie und Behinderung, 2019).

Roll-out phase:

The BAIMplus project took the success of BAIM further by expanding the traditional route planner into a journey planner that was linked with real-time data, foot navigation between stops, and personalised voice services. It streamlined the management of barrier-free travel information and it had the potential to be extrapolated beyond the VBB network.

Scaling-up and replication phase:

There was a research-based follow-up project to BAIMplus called m4guide (2013-2016) to further improve the planner to include the needs more disabilities. However this scaling up of the planner was not extended to other regions. M4Guide's aim was to further improve the routing capabilities of the journey planner within railway stations by adding turn-by-turn instructions and other supplementary path information (so-called annotations) to fully guide blind and visually impaired people. This function was important as transfer buildings and indoor areas were not yet fully equipped with location services (Verkehrsverbun Berlin-Brandenburg, 2019). There were experiments with GPS positioning which worked reasonably well in unobstructed outdoors, but not in narrow streets for example. Within indoor spaces, there were experiments with all kinds of technical kits that worked well but it would exceed the financial capacity of VBB to equip all stations and stops with this system (besides, a number of train stations belong to DB).

7.3.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

VBB uses data from there sever access of frequencies of visits and usage of the planner to monitor is success and usefulness. It has been shown that the planner is regularly used (running several thousand requests per day) and that usage particularly surges during change of schedules or when new construction sites go up.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?:

Although VBB does not conduct active measurement, assessment, or surveys, there have not been any majorly negative comments or complaints received. Additionally, handicapped companions (e.g. to go from home to a doctor's office called "Fahrbegleitservice") use the system a lot to determine the best route for their clients. They anecdotally report having positive experiences with the planner.

7.3.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Licensing of the software has to be routinely purchased from HaCon and a data manager would have to be procured.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 770115

What are key conditions for the transfer of the key concept (or elements thereof)?:

1. Cooperation with all PT operators, especially DB to disclose their accessibility features of stations and PT vehicles (e.g. width of doors, space provision for wheelchairs, low-floor buses etc.) although they are contractually obliged to do so.
2. Collaboration with city authorities who give notice when there is a new construction site near a PT stop.
3. Participation with local disability organisations. For example, in Berlin *Wheelmap* (a GIS map locating wheelchair accessible POIs) approached VBB and now reliably report break-down of lifts that their users identify in a crowd-sourced fashion. VBB additionally works with a blind people's association.
4. Support from media entities to disseminate information regarding the innovation.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 770115

7.4 Be My Eyes app

Be My Eyes

Figure 78: Be My Eyes App

7.4.1 Essence of the concept

Basic idea:

Be My Eyes App is a free app that connects blind users to a network of sighted volunteers. Using videoconferencing technology, blind users record what they're looking at so sighted helpers can describe it for them. (Eone Magazine 2015).

Techn(olog)ical aspects (hardware and software):

- App connecting blind and low vision people with volunteers that through a videocall can contribute to help them to be more independent (BeMyEyes 2018).
- A gestural and a vocal interface optimizes the program in terms of usability and accessibility.
- It has more than 180 languages available and available in more than 150 countries.
- If the volunteer can't attend the videocall, the App redirects the call to another volunteer.
- The App uses gaming strategies and gives points to the volunteers when they help other persons.

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Funding:

Crowdfunding campaign, awards and $300,000 investments during the early stages (Eone Magazine 2015). Their aim is to raise money mainly from foundations or donations.

The app is developed by RoboCat. It is a non-profit app that accepts donations and collaborations for translating the app to other languages.

Business case:

Be my eyes App is a free App with more than 1,5 Million of volunteers subscribed and more than 91k blind and low vision users.

The App is present in more than 150 countries and translated to more than 180 languages.

Main actors and their interests:

- Blind and low vision people: To get some help from volunteers to be independent with simple tasks.
- Volunteers: Help blind and low vision people with their simple/complex tasks.
- Translators: To increase Be My Eyes community and make it more accessible.

Intellectual property aspects (patents etc.):

RoboCat. Hans Jorgen Wiberg, founder and app inventorand Christian Erfurt, CEO of Be My Eyes.

7.4.2 Geographical context

Location in Europa, within country and region:

Starting in Denmark, now the App is present in more than 150 countries all over the world (BeMyEyes 2018).

7.4.3 Context conditions

General context conditions before the start of a project:

Simple navigation daily life doing simple tasks (e.g. cooking, shopping, clothing oneself, checking expiration dates, studying a map for directions, etc.) presents huge challenges to be faced by blind or low vision people.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The founder, Hans Jorgen Wiberg, is member of the Danish Association of the Blind and chairman for the blind association in his area, and he knows a lot of blind people. At some point, he started to use FaceTime and he spoke to some of his blind friends about it. One of them said he used it when he needed visual assistance. The problem was that he always had to call someone known when he needed help.

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Opportunities that contributed to the initiation of the project:

Wiberg came with the new idea of making a group of volunteers who could answer a call from blinded person asking for some simple help. He went to a start-up weekend event, where he presented the idea and he found the perfect team to join him. They won the 'Most innovative idea' price and after the event, they spent one year raising money from crowdfunding campaigns and they received funding from one big foundation in Denmark (Sheffield 2017).

Financial context:

They are surviving from crowdsourcing, investments and donations.

7.4.4 Case history

Initiation phase:

Wiberg had the idea and started working to create the perfect team and to rise the sufficient money to push the project.

Pilot phase:

They did a lot of testing and scaled it up more and more. Starting with him and his wife and gradually letting more and more people into it. They launched in the Danish app and they selected 150 blind testes and 400 helpers in Denmark. This allowed them to find more bugs before the official launch (Eone Magazine 2015).

Roll-out phase:

Now they are operating the service in more than 150 countries (available in more than 180 languages). The community has 1,5 Million of Volunteers subscribed and more than 91k blind and low vision users.

They started offering the IOS version but now they also have an Android version of the App.

7.4.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability)?

The Be My Eyes app is successful; the community has 1.5 million of volunteers subscribed and more than 91k blind and low vision users. It is available in more than 180 languages and users from 150 countries are using it (BeMyEyes 2018).

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Totally, now blind and low vision users have help in their daily actions from volunteers around the world. It allows them to be more independent.

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7.4.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Culture of trust around this initiative, users need to have the conviction that volunteers will help them at any time.

What are key conditions for the transfer of the key concept (or elements thereof)?:

- The number of volunteers all around the world that are helping blind people
- Free app
- Funding from investments and donations
- 180 languages availability

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7.5 Blue Badge/Safe Journey Card/Customer Injury Cards

Figure 79: Blue Badge Image source: https://www.vercida.com/uk/articles/tfl-launch-please-offer-seat-badge?keyword=blue+badge

7.5.1 Essence of the concept

Basic idea:

These three schemes are similar in terms of providing a visible indication (by card or badge) that the wearer requires assistance due to having additional mobility requirements.

'Blue Badge' which reads "Please offer me a seat" to help people affected by invisible disabilities across the Transport for London (TfL) network. Gives people confidence to ask for a seat if not offered one and enables those unable to take public transport without a seat to secure one. Provides assurance and peace of mind to each individual that a seat will be offered when needed. The badge is usable across all TfL services, spanning the London Underground, London Overground, TfL Rail, as well as on station platforms and in waiting areas.

'Safe Journey Card' - free print-out that helps passengers inform the driver if they need any help with their journey (for example, if visually impaired or hard of hearing). Gives people confidence to travel when they may not feel they can ask for help verbally. This operates on UK routes where First Bus is in operation.

'Customer Injury Card' – Transdev Melbourne - a customisable card for some regular customers with special needs. The aim is to help drivers identify and assist people with unconventional needs that are generally less known or not directly visible. Showing the card mandates the driver to act unconventionally, for example by lowering a bus ramp without questions, or arguments about walking aids, etc.

Intended beneficiaries:

Blue Badge - any invisible disability that may lead to reduced mobility, for example, elderly, developmental disability, and special needs. Invisible disabilities can affect all sectors of the population and can be a barrier to using public transport; therefore, the scheme is not limited to the elderly or obviously disabled individuals.

Safe Journey Card is for the above target groups, plus those experiencing reduced mobility through having young children, or through being temporarily disabled through injury, or suffering from a cognitive disability (mental health).

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Techn(olog)ical aspects:

Only requires equipment to print out the cards/badges.

Funding (incl. fare structure):

Funding is needed for the organisations operating the schemes to pay for printing of the cards/badges and for administrative purposes (producing and posting the cards/badges to individuals who apply). In the case of First Bus, the cards can be printed out by individuals at home.

Business case:

Funding is provided to enable individuals who have additional mobility needs to travel and access services and facilities. The schemes support local authorities and private organisations in meeting their equality and diversity requirements.

Main actors and their interests:

Blue Badge - Transport for London manages this scheme. The badge will be usable across all TfL services, spanning the London Underground, London Overground, TfL Rail, as well as on station platforms or in waiting areas.
Safe Journey Card – is managed by First Bus.
Customer Injury Card is managed by Transdev Melbourne.
All three schemes require willingness and co-operation of individual drivers/operators of public transport.

7.5.2 Geographical context

Location in Europa, within country and region:

Blue Badge - London and Greater London, UK
Safe Journey Card - First Bus network nationwide across the UK, covering urban and rural areas.
Customer Injury Card – Melbourne, Australia

Socio-economic context:

The cards are all able to be used by eligible individuals irrespective of the socio-economic context.

7.5.3 Context conditions

General context conditions before the start of a project:

Individuals would typically need to ask for assistance/for a seat if needed. Assistance/a seat might then be provided (or might not be). Individuals may not have felt comfortable or been confident in making such requests and therefore might have been reluctant to travel on public transport, thereby reducing their mobility and experiencing difficulties in accessing essential services and facilities.

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Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Target user groups would have been at risk of exclusion through reluctance to request assistance when needed.

Opportunities that contributed to the initiation of the project:

Awareness among key persons in governance roles through equality and diversity policies of the needs of individuals with hidden disabilities and the difficulties faced when travelling by public transport.

Political context:

The scheme aims to fulfil the national UK Government equality and diversity objectives of increasing the mobility and accessibility of target user groups.

Financial context:

Funding only required for production and administration of the cards.

7.5.4 Case history

Pilot phase:

Blue Badge – a pilot trial was undertaken in 2016 following the success of the 'baby on board' badge. It was trialled by 1200 people with hidden disabilities over a six-week period and achieved great success. During the trial, 72% of participants reported that their journey has been easier because of the badges. Passengers reported feeling more confident when asking for a seat on 86% of journeys and 98% said that they would recommend the badge to somebody who could benefit from it.

The Blue Badge scheme was rolled-out across the TfL network in April 2017 and now has over 80,000 users.

7.5.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Success can be measured by the number of people with hidden disabilities and/or special needs increasing their mobility and accessing essential services and facilities. Success can be monitored in terms of health and social criteria (for example, a reduced number of individuals accessing healthcare for physical and mental issues due to their improved physical and mental wellbeing; Also through a reduction in missed healthcare appointments for those who need to access healthcare being able to travel to appointments; and additionally through reported wellbeing benefits in terms of social

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interactions and opportunities for socialising with others). To a lesser extent, success could be measured by the number of persons with a disability wearing the Badge or by the number who have downloaded the respective documents. Currently there are over 80,000 Blue Badge holders in the London area.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, they are grateful to have the scheme as it reduces feelings of anxiety about travelling and wondering whether a seat or assistance will be available and without needing to request this. During the pilot trial, 72% of participants reported that their journey has been easier because of the badges. Passengers reported feeling more confident when asking for a seat on 86% of journeys and 98% said that they would recommend the badge to somebody who could benefit from it.

7.5.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Requires co-operation from transport operators and drivers to accept the cards and social acceptance to enable individuals to feel confident in using the cards/badges.

What are key conditions for the transfer of the key concept (or elements thereof)?

Cards can show any message so can be tailor-made according to the passengers need.

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7.6 E-Paper

7.6.1 Essence of the concept

Basic idea:

The Electronic Paper (E-Paper) display offers solar powered, wireless and sunlight readable e-paper bus stop displays. Implementation of the system has begun as a Pilot phase in Vienna, with the aim of improving passenger information at stations. The system will show current timetables and will be equipped with a text-to speech mode to enable blind and visually-impaired persons to receive information by voice output. E-paper provides arrival times and advanced passenger information including departure times in real time.

Intended beneficiaries:

While the system will be available to all, a key focus is to improve information resources for blind and visually-impaired travellers. The screen can be made to different heights to cater for the various requirements of individuals.

Techn(olog)ical aspects:

E-Paper is a technological system consisting of a e-paper driver board, which powers its solar-powered display range. The billboards connect wirelessly, refreshing the information displayed in real-time, via an online process that takes place at a central location. The system uses reflected rather than emitted light, which improves visibility and readability under inclement conditions. Information provided by the relevant transport operator is uploaded and visualised on the screen, and may also be translated in a voice-to-text and text-to-speech system that enabled blind and visually impaired persons to receive information by voice output.

The main advantages of e-paper over traditional LCD screens are paper-like readability and extremely low power consumption. E-paper reduces eyestrain since it simulates paper rather than a computer screen. E-paper is easier to read outdoors and in bright sunlight, therefore, it is ideal for all indoor and outdoor displays, such as traffic signs and passenger information noticeboards. Electronic paper displays provide high-resolution and no glare visibility, allowing users to view text and pictures clearly and at any angle. E-paper power consumption is minimal since electronic paper displays need no power to display an image; they simply use power to change the content. Each e-paper display comprises a thin film consisting of millions of small capsules filled with a clear fluid containing tiny particles, each about as wide as a human hair. The particles inside the capsules are of different colours and different electric charges. Electrodes are placed above and below the capsule film. When a positive or negative electric field is applied to an individual electrode, the colour particles with the corresponding charge will move either to the top or bottom of a capsule, making the surface of the e-paper display appear a certain colour.

Funding:

The E-Paper system has been implemented in Vienna as part of the Straßenbahnhaltestelle der Zukunft (Tramstops of the Future) project since 2016. Specific funding information is not immediately

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available, but has been requested. Although there is the initial cost of installing the e-paper system, considerable staff resource costs will be saved from no longer needing to regularly travel to remote bus stops to update the information manually.

Main actors and their interests (50 words):

The project has been the result of joint working between Wiener Linien, the Vienna public transport operator, and the Austrian Association in Support of the Blind and Visually Impaired.

Intellectual property aspects:

All IP is connected to the E-Paper devices.

7.6.2 Geographical context

Location in Europe, within country and region:

Located in Vienna, Austria. Also installed in Ljubljana, Slovenia.

Topographic situation:

Not relevant; however, e-paper technology remains operational in any weather even during power outages.

7.6.3 Context conditions

General context conditions before the start of the project:

Traditional LCD screens would have been used to provide information to travellers.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The Austrian Association in Support of the Blind and Visually Impaired and Wiener Linien started working together to improve the accessibility of the network for blind and visually impaired people 20 years' ago. This co-operation has led to an increased awareness for the needs people with restricted mobility, and for the practical, financial and technical possibilities that the public transport operator can offer. As a result, the efficiency of the joint work grew significantly.

Opportunities that contributed to the initiation of the project:

Political context:

The European Accessibility Act enforces the establishment of common rules to fulfil the needs and requirements of people with reduced mobility within the European Union. However, the Austrian Association in Support of the Blind and Visually Impaired highlights that substantial progress has been made thanks to good co-operation with Wiener Linien. Convenient solutions have been

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implemented in Vienna, which have improved the situation for both blind and visually impaired people, making Vienna one of the capital cities with excellent conditions for all passengers.

7.6.4 Case history

Initiation phase:

In May 2016 the Straßenbahnhaltestelle der Zukunft (Tramstops of the Future) project installed the first ePaper device at the bus stop "Stephansplatz". The first goal involved technical proficiency testing to collect data about availability (high/low temperatures) and data stability (real time departures).

Pilot phase:

E-paper pilot second phase was in progress in June 2017, and involved devices at 12 stops that aimed to assess performance relating to:

- Accessibility mode (bigger characters and text to speech)
- Vandalism
- Customer Feedback

Good results were obtained from the technical part and the accessibility mode, but the customer feedback (object design, Interface,) revealed that improvements could be made. This prompted a redesign process with two external experts (object design and interface/user experience design) -> indicate (http://indicate.digital/).

The next step will be a new "frontend and device design" for ePapers.

Scaling-up and replication phase:

The e-paper system enables information to be updated remotely, thus reducing the need for individuals to travel out to every specific bus stop to change the information manually. This considerably reduces staff time and effort, as the information can be updated almost instantly via electronic means. However, currently the design aspects are being optimised prior to scaling-up and replication.

7.6.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability?

Initial testing from the pilot phase proved the technical aspects of the devices to be robust and functional in different environments. Further improvements to the object design and user interface and user experience design are underway.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

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The project improves passenger information by providing arrival times and real-time information, along with a text-to speech mode to enable blind and visually-impaired persons to receive information by voice output. However, customer feedback from the pilot phase suggested improvements were needed with the object design and the user interface and user experience design.

7.6.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

There may be financial constraints in installing and maintaining the e-paper system; however, these costs should be considered alongside the potential cost savings from staff resource time and effort in manually replacing information at bus stops at regular intervals. As the e-paper service is still in a pilot phase the costs of installation and maintenance as not yet established for wider scale implementation.

7.7 Guidance for visually impaired and barrier free access at all stations/stops in Prague by 2025

7.7.1 Essence of the concept

Basic idea:

In order to make Prague's public transport system accessible to everyone, Dopravní podnik hl. m. Prahy (DPP) the municipality's inhouse public transport operator, has installed a system to enable better orientation and information provision for visually impaired users travelling in its surface transport and metro systems. DPP thereby makes use of widely recognized guiding aids, like leading grooves in the flooring and information panels in Braille at handrails and has additionally installed a remote-controlled acoustic beacon system in metro stations and on tram vehicles.

Intended beneficiaries:

Citizens with visual impairment and blind people.

Techn(olog)ical aspects:

DPP's strategy to improve the orientation and information provision for visually impaired users of its surface transport and metro system is based on widely recognized, physical measures, which are enhanced through the use of acoustical beacons. Metro stations where wayfinding for visually impaired users is not given through natural features of the station (e.g. columns) have been updated with leading grooves in the ground that provide for wayfinding with a white stick. Handrails in metro stations were equipped with panels in Braille, providing information on its location and directions. In addition to these physical measures, acoustic beacons were installed in metro stations and at tram

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vehicles. This system is based on a transmitter which is available in the form of a remote control or integrated in a users' blind stick.

With this remote control, users can activate a series of acoustic beacons, which are installed at specific locations in metro stations, for example at escalators, underpasses and exists. These beacons either submit a basic acoustic signal or provide additional voice information (e.g. in case of a running escalator ahead). At platforms, the transmitter allows the user to activate a specific visual signal to the metro driver, informing him or her about the presence of a visually impaired user who wishes to embark the train. Drivers are alert and can ensure easy and safe embarkment, for example by opening all doors of the metro set.

When using the tram system, the transmitter allows users to activate a speaker at the exterior of the tram vehicle that provides audible information on the line number and direction of the arriving vehicle. Inside trams, busses and metros, an automatic announcement system generally provides information at every stop and station.

Funding:

The investment for the installation of both the physical orientation and information systems (leading grooves and Braille information panels) as well as the technical systems (acoustic beacons) is made by the city of Prague who furthermore subsidizes its transport operator DPP for the operation of the systems.

Business case:

With the initial investment of the system being taken by the City of Prague and its operation being subsidized by the city, the system is strongly dependent on the city's budget.

Main actors and their interests:

Initiator for the installation of the system was the Czech Association of Blind and Weak-Sighted – or Czech Blind United (SONS), who seek to continuously improve the physical and societal conditions for self-determined life of citizens with visual impairments. The city of Prague as investor and subsidizer of the system has the goal of becoming a barrier-free city and DPP as public transport operator who operates the stations and beacon systems, seeks to provide a transport system that is available and accessible to all citizens and visitors of the Czech capital.

Intellectual property aspects:

The acoustic beacons together with the remote transmitter technology is provided by various technology providers. The technologies and systems in use do not fall under particular patents.

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7.7.2 Geographical context

Location in Europe, within country and region:

Prague is the capital and largest city in Czechia, located centrally in the western part of the country. The city covers an area of 496 km^2 and has 1.25 million inhabitants, making it the 14th largest city in the European Union.

Topographic situation:

The city is situated in the Bohemian Basin along River Vltava, which stretches through the city for about 30 kilometres. The city thereby covers the Vltava valley, several surrounding hills and the Pražská plošina plateau, creating a rather diverse, mostly hilly topography.

Socio-economic context:
The capital region and Prague as city is historically one of the economically dynamic centres of Czechia. Prague's economy accounts for about 25% of the Czech GDP. When comparing European regions based on GDP per capita in purchase power standards, Prague ranks as 6th best performing European region. Prague harbours around 750.000 jobs and it employs about a fifth of the entire Czech workforce, with services accounting for 80% of employment. Wages are significantly higher in the capital region compared to all other regions of the country.

Figure 80: View of Prague's famous Karlsbridge and Castle

General context conditions before the start of a project:

During the shift from socialism to capitalism after 1989, Czechia has been experiencing profound political, economic and social changes which also impacted the provision of public transport. Until 1991, accessibility of public transport for impaired citizens was not perceived as concern. Thus, the public transport systems, especially the metro system of which the first line came into operation in 1974, were not initially planned and constructed as barrier-free system.

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Sense of urgency; problems that were perceived as pressing:

The overall lack of concern for public transport accessibility for citizens with impairments prior to 1991 led to a situation where public transport in Prague was hardly accessible, leading to the creation of a strategic approach to making Prague in general, and its public transport in particular, more accessible for everyone. The Czech association of the blind and weak-sighted used this momentum to initiate the installation of systems for the orientation and information of visually impaired users in Prague's public transport.

Political and Financial context:

The Council of the City of Prague set a priority aiming at making the City's public transport system in its entity gradually accessible for all. On the basis of this priority, funds became available for the investments into the system and its operational subsidization. The regulatory rulings around the European Accessibility Act further reaffirm this political decision.

7.7.3 Case history

Initiation phase:

The need for a system allowing for better orientation and information of visually impaired users in Prague's public transportation systems was expressed by the Czech Association of the Blind and Weak-Sighted (SONS). Visually impaired users were previously only able to orient by surface plasticity.

Pilot phase:

The remote activated acoustic information provision at the exterior of tram vehicles was introduced to all tram vehicles in 1998 after a two-year test period at several vehicles. The acoustic beacon system in metro stations was shortly tested and afterwards rolled out to all stations of the system, according to the availability of funding from the city budget.

Scaling-up and replication phase:

The elements of the systems were and are being continuously enhanced through consultations with representatives of the Czech Association for the Blind and Weak-Sighted (SONS). Suggestions from these meetings lead to further improvements of the system in particular and conditions of users with visual impairment in general.

7.7.4 Impact assessment

Do the local initiators consider the project a success?

Prague's public transport operator DPP considers the remote activated beacon and announcement system by itself as a success. Nevertheless, these systems should be seen in context with the total strategic approach to create a barrier free public transport system, which for visually impaired users also concerns physical adjustments in stations, like leading grooves and Braille information panels. It is the combination of these physical elements with the remote activated announcements and

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acoustic beacons throughout the systems that significantly improves the conditions for independent travel for visually impaired citizens and visitors.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The feedback of visually impaired users provided through the consultation with the Czech Association of the Blind and Visually impaired (SONS) was highly positive and the continuous consultation allowed for the identification of further points of improvement.

7.7.5 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Every aspect of DPP's approach to making its public transport systems accessible for visually impaired users is highly transferable. Neither elements of the physical aspects nor the technical aspects concerning the remote-controlled beacon system are particularly context specific.

What are key conditions for the transfer of the key concept (or elements thereof)?

In order to create an orientation and information system, cooperation with local stakeholder organisations and interest groups representing visually impaired public transport users appears as key success factor. The continuous consultation with such representation groups allows for the adaptation of such a system to the varying contexts of different transport systems and stations.

7.7.6 Further reading on similar cases

Prague's public transport operator DPP's system for the information and orientation of visually impaired public transport users on the base of beacons can be considered a frontrunner example. With technological advancement, new types of transmitters and beacons become available and the widespread use of smartphones provides new possibilities for customized information provision, also for target user groups like visually impaired public transport users. Two cases could be identified, where Bluetooth based beacon technology in combination with smartphone applications are currently tested to provide information and orientation for visually impaired users in metro systems.

In **Munich**, Münchner Freiheit metro station has been equipped with beacons (which function as Bluetooth transmitters). When in range of these, people who are blind and visually impaired can use an app that helps them navigate and use public transport services within the station. The beacons also locate the user, thereby enabling them to receive position-specific information. Read more about the Munich Case at: *http://civitas.eu/news/app-developed-blind-and-visually-impaired-metro-users-munich*

In **London**, a month-long trial where wireless beacons that tracked users and provided descriptive notes onto their smartphone was held at Pimlico station in 2015. The trial led to an installation of beacons for the orientation and information of visually impaired users at Euston tube station. Read more about the London Case at: *https://www.wired.co.uk/article/wayfindr-navigation-visually-impaired-euston*

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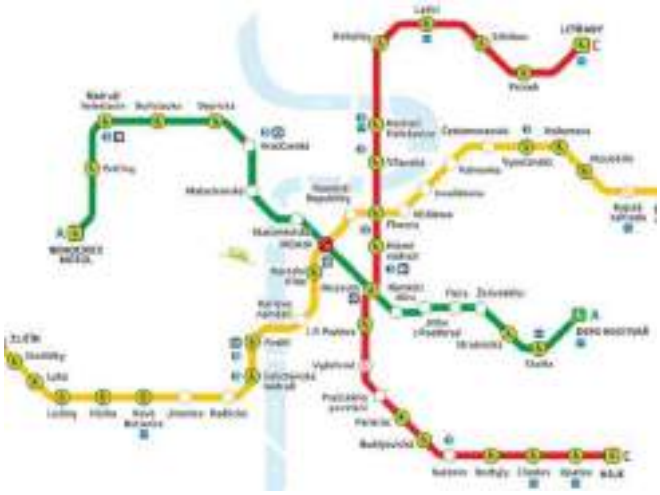

Figure 81: Information on wheelchair accessibility of Prague Metro. (Source: https://guests.blogactiv.eu/files/2017/06/metro-accessibility.jpg)

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7.8 Audio Atlas Project & Ways4Me

7.8.1 Essence of the concept

Basic idea:

Ways4Me and Audio Atlas are smartphone applications that help physically and sensorially disabled people to navigate public transport services by providing guidance and information about the PT system. Audio Atlas is designed to help physically disabled people as well as anyone who is simply not knowledgeable about how to navigate the public transport system, while Ways4Me is tailored specifically to the needs of visually impaired and blind people. Both apps include features such as trip planning, external and internal navigation functionalities and alerts notifications: the purpose of these alerts is to allow internal localisation, to warn of difficult segments, and to provide additional information to describe complex spaces. They make use of crowdsourced data as well as data provided by the PT operators, and are able to interface with hardware such as Li-Fi[4] and RFID chips, as well as reading QR-codes to support internal navigation (i.e. within a metro station) and interactions with the objects (i.e. provision of information or instructions).

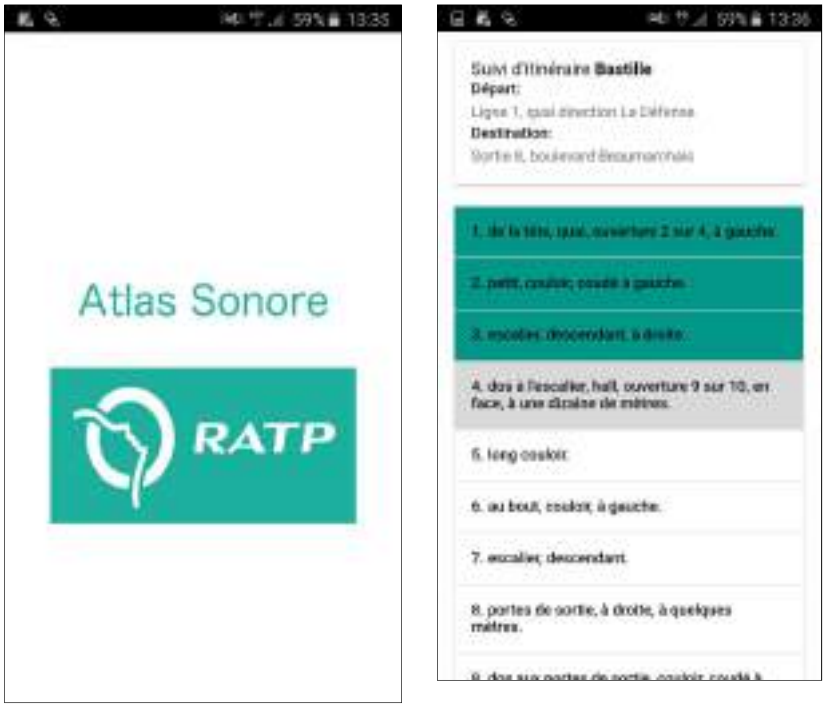

Figure 82: Atlas Sonore (Audio Atlas) app interface (Source: https://www.ratp.fr/en/accessibility/audio-atlas-project-guide-yourself-more-easily-through-our-stations)

TeleAtlas is an app that guides the users to a specific platform, exit or connection within a station. The Audio Atlas is an audio guide rather similar to those found in certain museums. It allows him/her

[4] *light fidelity, a LED-based wireless data-transmission technology which can be used to avoid interference with radio waves*

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to move through the spaces, segment by segment, according to the route best adapted to the user's profile (sight impaired, passengers who must use elevators instead of stairs, occasional users, foreign tourists, etc.).

Figure 83: Ways4Me app interface (Source: https://www.youtube.com/watch?time_continue=67&v=mJxGzX2TrOc)

Ways4Me provides scheduled (timetable) and static information (map, lines, etc.) of the different PT services in the area. The services can be provided by different PT Operators whose information are accessed, centralized and integrated by Ways4Me back-end module. The app provides also independent indoor navigation based on the interactions with inertial RFID, QR code and WiFi connections. Ticketing solutions can be integrated in the APP. Text-to-speech function supports the user interaction. A direct communication between the APP and the public transport vehicle can be established allowing the user to send a stop request to the vehicle.

Intended beneficiaries:

Ways4Me: visually impaired people

Audio Atlas: visually and physically disabled people, as well as people who are unfamiliar with the PT network

Techn(olog)ical aspects:

Hardware: Audio-Atlas interacts with mobile phone sensors and external equipment such as Li-Fi to receive alerts to accurately detect user's localisation, warn the user of difficult segments (i.e. a staircase) and provide the user with additional information to describe complex spaces. Ways4Me can read data from RFID chips, wireless LAN and QR-codes to run internal navigation when the satellite navigation is not available (e.g. in a railway or metro station).

Software: The software used for both Ways4Me and Audio Atlas manage static and real-time data on public transport, including network, service scheduling, real time information on the operation of services such as the platform for vehicle boarding, from the ITS operated by the public transport operators, AVM/AVL – Fleet Monitoring Systems. This data allows the apps to provide information services and trip planning functionalities.

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Audio Atlas tailors its trip planning and navigation information to the user's profile (e.g. sight impaired, passengers who must use elevators instead of stairs, occasional users, foreign tourists).

Ways4Me offers a wide range of information services for visually impaired and blind people which can be integrated also from other platforms: for example, ticket purchasing and direct communication between the app and the public transport vehicle to send a stop request. The mobile applications have an intuitive and barrier free interface with TTS[5] functionality. Augmented reality can be added to the user interface but it is not currently available.

Funding:

Audio Atlas was developed within the Equisens project, an initiative joined by the Consultative Committee for Accessibility of RATP (the Paris public transport operator). The aim of the project is to install equipment and amenities in public areas for persons with limited sensorial capacity. The equipment to be installed included also audio beacons enabling the sight impaired to locate metro and RER (regional rail) station entrances, thanks to the messages they broadcast when triggered by universal remote control. The Equisens project is part of the 5-year investment programme signed by RATP (Régie Autonome des Transports Parisiens) and Île-de-France Mobilités, the transport organising authority for the Ile-de-France region.

Ways4Me was developed as part of a research project funded by the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) and the Austrian Research Promotion Agency (FFG). The project was led by the degree programme "Energy, Transport and Environmental Management / Energy and Transport Management" of the FH JOANNEUM GmbH and involved nine different organisations.

Main actors and their interests:

Ways4Me and Audio Atlas were both promoted by the local public transport operator and developed through collaboration between IT companies and research institutes.

Audio Atlas:

- RATP (Régie Autonome des Transports Parisiens): Paris public transport operator
- Urbilog: a digital specialist on integrating persons with disabilities
- The Department of Technology, Handicaps, Interfaces and Multimodality (THIM) at the University of Paris 8
- RATP's Accessibility Advisory Committee (comprised of 9 associations) has been invited to participate on several occasions

Ways4Me:

- VOR: Transport association for Austria's eastern regions of which including parts of Lower Austria, the Burgenland and all of Vienna. It participates to the initiative through its associate

[5] *Text to Speech, functionality to vocalize the text shown by an application*

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Wiener Linien and other PT operators in the surrounding areas. Their associated members act as a data and services (tickets payments) providers to be integrated in the APP

- ÖBB: Austrian National Railways Operator. It acts as data and services (tickets payments) provider; these services have been integrated in the APP.
- Wiener Linien: Public Transport Operator in Vienne region which operates buses, trains, trams and underground services. It acts as data and services (tickets payments) provider; these services have been integrated in the APP.
- VAO: Austria's first nationwide traffic information system. It acts as data provider to be integrated in the APP
- FH JOANNEUM GmbH: developed the technological solutions
- Fraunhofer Institute: supporting the development of the technological solution providing expertise in provision of added value services for Public Transport
- Health and Social Association: Österreichische Arbeitsgemeinschaft für Rehabilitation (ÖAR) and Österreichischer Blinden- und Sehbehindertenverband (ÖBSV). They support the users' requirements analysis acting also as test users.

Intellectual property aspects:

The intellectual property is owned by the IT providers and research institutes that developed the technological solutions.

7.8.2 Geographical context

Location in Europe, within country and region: Audio Atlas is operated in Paris, Ways4Me in Vienna.

Topographic situation:

Metropolitan areas

7.8.3 Context conditions

General context conditions before the start of the project:

No similar systems have been operated before.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Metropolitan areas (such as Vienna and Paris) and larger cities have complex transport network which cannot be fully accessed for people with physical/cognitive impairments or disabilities or for not-frequent users (as tourists, etc.). Furthermore, PT locations (as stations or bus stops) can still have some physical barriers reducing the accessibility for impaired/disabled people. App such as those experimented in Paris and Vienna can play a key role in improving accessibility to Public Transport.

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Opportunities that contributed to the initiation of the project:

New emerging technologies (technological solutions for data exchange between systems, app development, improving performance of GPS which can be miniaturized at low-costs in the portable devices, higher performance of data communication network, availability of innovative low-cost solutions for data transmission as RFID or QR code) are opportunities to develop this kind of services. Crowdsourcing tools and solutions can help in guaranteeing data availability and improved quality information over time. Good cooperation with representatives of user groups can foster the requirements analysis and give the appropriate approach to start the design phase. Tran-sectorial cooperation (i.e. between the IT provider, the PT Operator and the user groups association) are required for the testing and tuning of the APP which need to comply with different operational scenarios and conditions.

Political context:

In Paris the project was developed based on the commitment of Île-de-France Mobilités, the transport organising authority for the Ile-de-France region which sign a 5-year investment programme with RATP.

For Way4Me, the Federal Law on Equality of People with Disabilities (Bundes-Behindertengleichstellungsgesetz – BGStG) which has been in force since the year 2006 was a positive factor towards improving the situation of visually impaired and blind people.

7.8.4 Case history

Initiation phase:

The Audio Atlas project was launched in 2017, the Ways4Me took place between 2012 and 2014.

Pilot phase:

Audio Atlas covers 383 metro and 65 RER stations; the first implementation stage and evaluation of results took place in 2017.

Ways4Me was first tested on a bus then the equipment was certified for the deployment phase which took place in 2014.

Roll-out phase:

The second stage of the Audio Atlas project aims to extend the app to cover the whole public transport network in Paris. It is now under deployment.

7.8.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Following the successful pilot phases, both apps were extended to cover larger portions of the public transport networks.

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Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, the participation of citizens association confirms the effectiveness of the defined solutions.

7.8.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

- ✓ Lack of collaboration among the stakeholder, IT providers and citizens association
- ✓ Lack of investment programme

What are key conditions for the transfer of the key concept (or elements thereof)?

- ✓ Willingness of the local authority to officially support and subsidise the implementation through an investment programme
- ✓ Selection of the most suitable solution for the local context: solutions developed at local level by national provider or research institute or products developed by big IT companies
- ✓ Sustainability of maintenance costs for hardware equipment to be installed at stations/bus stops

7.8.7 Further reading on similar cases

AccessPal, Athens, Greece

AccessPal is a crowdsourcing platform which offers accessibility and navigation services for people in a wheelchair. Barriers for wheelchairs are communicated by the users themselves.

https://accesslab.gr/portfolio/accesspal/

KVT Voice, Kaunas, Lithuania

KVT Voice APP solution provides blind and visually impaired users of public transport with more convenient and faster access to relevant information about services in real time.

https://www.intelligenttransport.com/transport-articles/69289/kvt-voice-making-accessibility-more-mobile/

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7.9 Route4U

7.9.1 Essence of the concept

Basic idea:

The Route4u smart accessibility route planner is a barrier-free sidewalk mapping tool for people with reduced mobility. It consists of useful mobility and accessibility information in cities around the globe that has been crowd sourced and collated in an interactive, smartphone-based GIS map. The app is currently available in six European cities (Dublin and Swords, Ireland; Budapest and Székesfehérvár, Hungary; Portsmouth, England; and Angers, France), and caters primarily to wheelchair and pram users. The activities involved when using the app is for surveying and rating infrastructure that allows sidewalk accessibility, access of entrances to buildings and other points of interest (POIs), as well as the facilities within these places. I.e. the app allows users to both see information already entered and also add their own information.

Figure 84: Route4u functions as any basic GPS navigator but with the added capability of generating routes that avoid obstructions which have been logged by app-users. Obstructions are uploaded instantly to the database, which has a city-wide reach. The database is thus constantly updated by users and volunteers who survey cities daily.

The plan has been structured to involve a wide variety of participants who can both contribute to and benefit from the crowd sharing platform. Participants include:

- Users: actively assess and report mobility options, and use the route planner for barrier-free navigation.
- Volunteers: Similar to users, but whose primary role is to assess and report mobility information about sites. They are not differentiated from users within the app. They are usually able-bodied people that initiate the use of the app in a new region and are organised by the developers in combination with a city's administration.

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- Points of Interests: local businesses, education institutions, shopping malls etc. can be surveyed and certified by Route4u users as accessible spaces.
- Brands: larger businesses or brands who want to incorporate inclusion and care into their branding or social portfolios can contribute information about their inclusive and accessible infrastructure of their premises. This can further motivate their corporate employees and their customers to also participate in the app and help shape a more inclusive environment.
- Cities: Route4u acts as a free dissemination tool for cities to publish where and what accessibility implementations have made. They can additionally receive smart city analysis for a fee, and attain live information on how their city's accessibility changes over the day, month, or year. Route4u creates awareness for city authorities about walkability and other mobility options, which helps better inform their urban planning.

Intended beneficiaries:

Wheelchair and pram users are the direct beneficiaries of this app. Wheelchair users include those using traditional manually driven wheelchairs, electric wheelchairs, and those propelled by hand bikes. Unintended beneficiaries can include bike users who do not live in cities with progressive bike infrastructure. Google maps is still unable to generate bike routes without the option of avoiding staircases; however, Route4u has enabled the ability to do this. This is particularly useful for cities that have not yet implemented wide spread bike infrastructure.

Techn(olog)ical aspects:

Users and volunteers can actively assess accessibility by automatically surveying sidewalks, manually rating the accessibility of POIs, and report issues or hazards that they encounter such as construction sites or temporary obstructions such as parked vehicles on sidewalk etc. (see images below). The quality of sidewalks can be automatically assessed using the internal navigation hardware of devices to transmit gyroscope and acceleration data.

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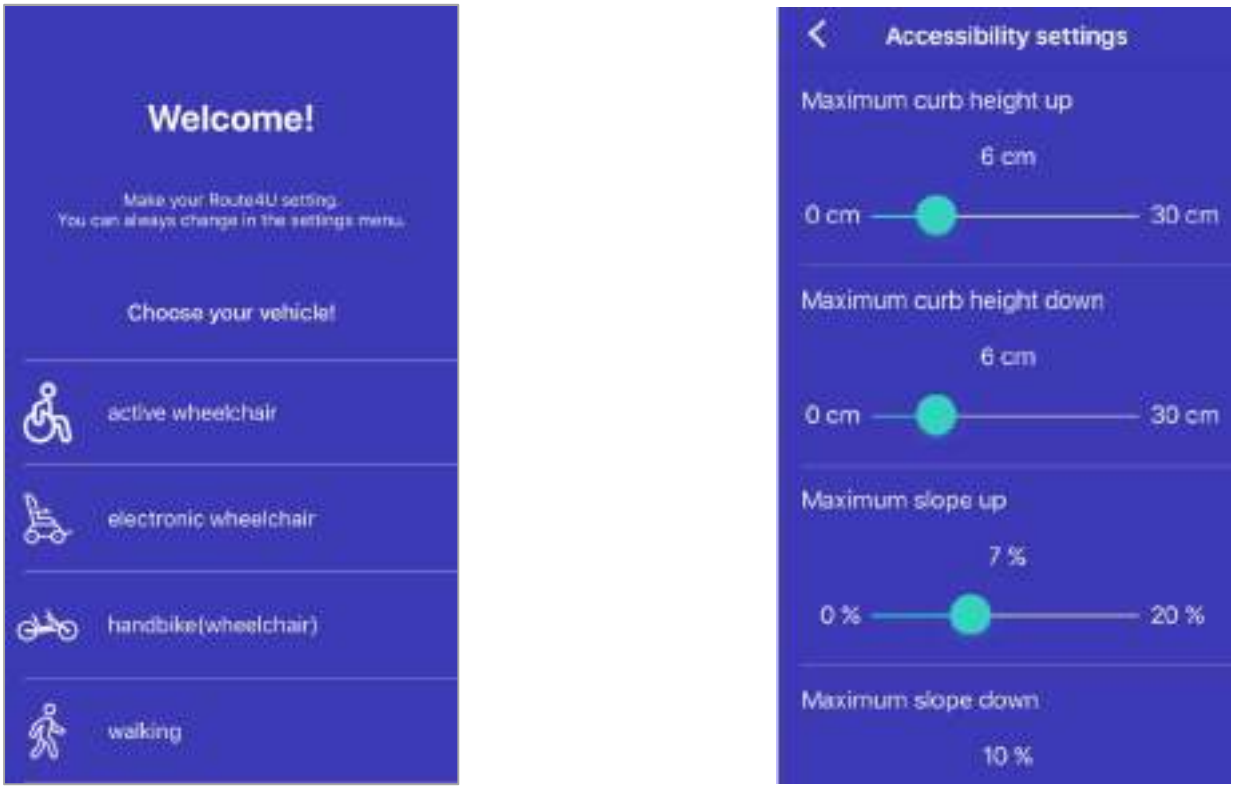

Figure 85: When users first download the app, they are presented with the above screens. Selecting the mode of transport alters the routing outputs according to the users' needs, which can be reselected later and manually adjusted for personalisation as seen in the second screen (Route4u Magyarország Kft, 2016).

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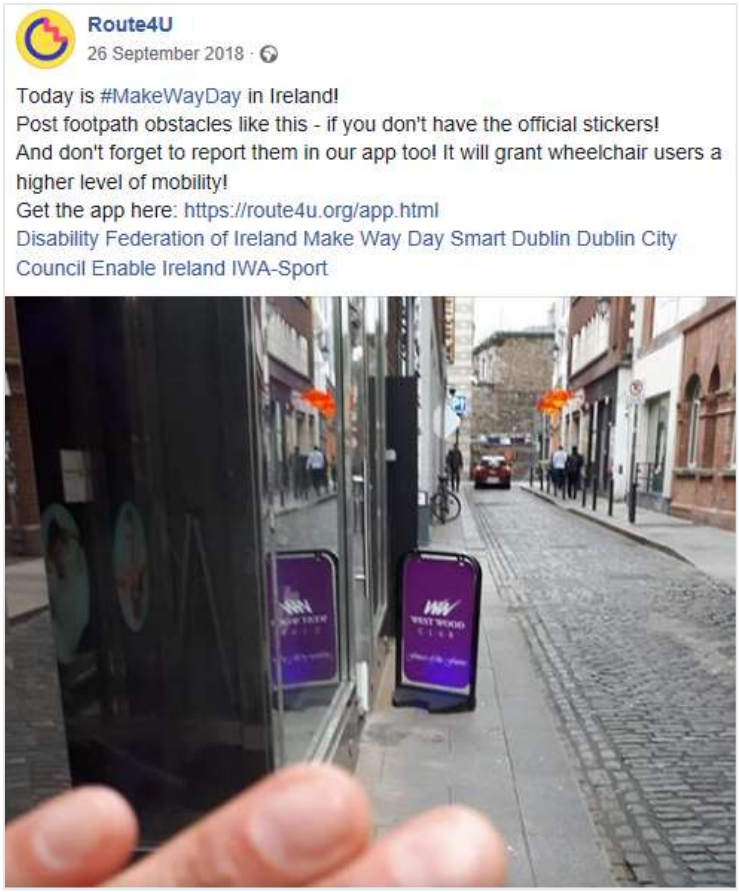

Figure 86: Route4u is particularly useful for attaining foreknowledge of temporary obstructions that impede the way of a person with reduced mobility. In the example depicted above, the sidewalk contains two obstructions that would require a traveller to enter the cobble-stoned road. When this is marked on a map, a user can then have the option of using a parallel street that is obstruction free (Route4u, 2018a).

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Figure 87 Streets are colour coded: according to accessibility and sidewalk quality, hazards are depicted with a triangular warning sign (not shown above), and POIs can be searched for individually, with indications such as nearby accessible toilet facilities (Route4u Magyarország Kft, 2016).

Larger businesses can use the application to display the most comfortable routes to their locations as well as partner with Route4u by providing rewards that are earned by users who participate in the crowd sharing aspect of the app. Crowd sourcing information is incentivised by gamification approaches to user engagement. Users are incentivised by earning points and badges within the app that can be exchanged for real rewards. These gifts or awards are provided by partnering organisations and include complimentary coffees, giveaway products and vouchers, or discounted tickets etc. Volunteers can also additionally compete with each other and compare scores, earning them "hero" statuses within their local communities.

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Figure 88: Score boards of users and volunteers who have participated in the crowd sharing aspect of the app. Points and badges (the animal icons shown above) are awarded according to the amount of information contributed to the maps. Points can be exchanged for prizes that have been sponsored by partnering organisations ***(Route4u, 2017c)****.*

Unfortunately, in order to participate in the crowd sourcing the rules of participation stipulate that one must have a Facebook account since route and location information of devices that have the app installed are shared with third party servers, including social networks. Users only have the choice of how social networks interact with them, but are unable to separate their Route4u account and info from Facebook (Route4u, 2017a).

Funding (incl. fare structure):

The organisation is fully funded by investors, including Angel investors, Aquincum Incubator, and Virgo Systems.

Other investors and partners that support them are displayed with tiered statuses on the website according to their contributions.

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Tier Level	Partner
Diamond	• Design terminal • ELTE Research University • Heineken.
Gold	• Budapesti Városarculati Nonprofit Kft • The city of Budapest • MAGYARORSYAG • Sony • Elmü emasz • Magnet Bank • Budapest Enterprise Agency
Silver	• Portsmouth City Council • Virgo • Vodafone • Alcatel • Acer

Business case:

Route4u is interested in selling their services to cities, including co-ordinated surveying of accessibility, analysis tools including generating maps, and providing navigation for citizens for free. Route4u additionally offers decision making support for cities after analysis has been conducted. The business model is in the process of being restructured to allow for more flexible options for city procurement and sales.

Main actors and their interests:

Developers aim to create easy-to-find information on accessibility for sidewalk-navigation purposes.

Users and volunteers may grow to depend on, or at the least have their mobility enhanced by, the app and are to some extent also responsible for updating the database such that others may benefit from their knowledge and vice versa. The app's effectiveness and usefulness is dependent on users' and volunteers' participation in crowd sourcing accessibility information. Should they begin to decrease their participation, they also reduce the usefulness of the app for themselves. The incentives built into the app's game-like design appears to operate as a successful measure to counter disengagement, although it is unknown what proportion of information is offered by users, and what is provided by volunteers of the organisation. A user is someone who primarily uses the journey

Depending on *the city* and their priorities of improving infrastructure for the mobility-impaired, there may be interest in disseminating knowledge of accessibility provisions in a positive manner using the Route4U platform. Additionally, cities may be interested in encouraging social cohesion by encouraging citizens without mobility impairments to engage with the app (i.e. as business owners or as volunteers etc.) this enhances not only the mobility for impaired people but also their visibility in society. Finally, the main interest of cities is the planning tool that Route4u can provide. City officials can access the present quality of their infrastructure, and obtain information on zones of the city that have been identified as unwalkable or inaccessible to those with reduced mobility.

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Figure 89: City officials can use Route4u's "Hive", an interactive tool that makes identifying problematic nodes that inhibit their city's walkability and accessibility ***(Route4u, 2018b)****.*

Businesses and other POIs will primarily be interested in being featured on the map and being exposed to users and volunteers through the promotion rewards. The motivating factor for participation is that being captured in the database and being exposed through promotions may open their companies to new customers, and at the least let existing customers know they care enough to encourage more inclusivity. This applies for other corporations and brand managers who share the interest when collaborating with Route4u in providing gifts for crowd sources to earn.

Intellectual property aspects (patents etc.):

Once data is uploaded to the app it becomes the sole property of Route4u as stipulated by the participation policy (Route4u, 2017b). This is not necessarily the case for data that is provided by cities but can be decided during a procurement process. The app itself is not marketed for sale and is a part of the organisation's business model. It is expected that duplication or replication in any manner would result in offended parties. Particularly, because the venture is still in the start-up phase.

7.9.2 Geographical context

Location in Europe, within country and region:

Route4u already operates in Dublin and Swords, Ireland; Budapest and Székesfehérvár, Hungary; Portsmouth, England; and Angers, France.

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7.9.3 Context conditions

General context conditions before the start of a project:

None.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Route4u's creation was catalysed by the developer's personal experiences. The push came from seeing the need for it in their own daily life. From here, a start-up incubation programme was created. There were no external pressures that motivated the idea.

Opportunities that contributed to the initiation of the project:

Route4u is able to morph from an idea to a viable venture through the efforts of its start-up team. A strategic approach is being used to convince potential investors that the project is a much needed and profitable one.

Political context:

Route4u has incorporated working with cities from the initiation of their business plan. The role that cities play are two fold, the first are as clients, and the second is the environment in which citizens may fully immerse themselves with the app's facilitation. The political context is different for each participating city. For example, Dublin has decided to trial the app's capability in only a small part of their city (the Docklands) as part of an innovative business research program, while the city of Budapest has already been fully integrated to the database to be used as a planning tool. Each context is marked by the individual aims of a city.

Financial context:

As most start-ups, Route4u is currently dependent on investors that see their potential. Their financial sustainability may develop as the venture grows, and more cities are contracted.

7.9.4 Case history

Initiation phase:

Route4u started as an idea when one of its founders incurred the issue of barriers in their daily life. Evolving the idea to a marketable venture has not been easy and has not yet been fully reached. In consequence, there are no clear-cut development phases that have occurred for the organisation as yet. They have, however, passed a few milestones over their first years including:

- Completing an incubation programme at the Design Terminal with AngelList (involving business consultation and mentoring, organising local and international trade show presence, and early stage investment mediation).
- Releasing the first version of the app.
- Making their first sales as part of being in a Small Business Innovation Research (SBIR) programme with Dublin. However, the venture remains in a pre-commercial procurement

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phase. Whether is survives its start-up years and progresses into a viable venture is difficult to tell.

7.9.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Route4u is considered a success in terms of innovation by their developers and the tech industry. They have won numerous awards as a start-up firm; however, their main measure of success is financial sustainability since it would be very difficult to measure the impact on personal freedom, relationships, employment or happiness level of users. However, they have yet to secure financial sustainability, and have entered into a phase of redesigning their business model.

Further effectiveness of the app may additionally be observed when cities decide to use Route4u's data in combination with their analysis tools to better plan infrastructure, enabling accessibility for all.

Only one third of data that makes up Route4u's maps are provided by users. Able-bodied volunteers appear to play a larger role in mapping out the walkability of cities (Route4u, 2018b). Route4u's success could be theoretically assessed by the ratio of information that is offered by volunteers and that by users. As the app gains more success its need for volunteers should decrease. However, it is unknown if there are enough users with reduced mobility who would alone be able to offer exhaustive information about their city. This may be the reason for requiring multiple sources of the "crowd" in the crowd sharing collaboration. I.e. businesses and corporations, city officials, and other POIs.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

"Best aid for our mobility since the invention of the wheelchair" ***(Route4u, 2014).***

The organisation closely monitors each review made about the app in the different app stores, as well as the reports made on social media. There is widespread consensus that this app has dramatically benefitted users, not only in terms of their mobility but also their visibility in their societies. They feel more a part of their cities knowing that the general society is participating in making their way easier, both by using the app but also by being more aware to not cause obstructions in the first place.

7.9.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

Extensive collaborative effort and human resources are required for the Route4u app to become a self-sustaining enterprise. It is likely that additional data storage and the financial consequences thereof are worth considering in any transferability exercise. A further problem for the organisation during its expansion is with sales to cities, as this incurs extremely long cycles and different and

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complicated procurement rules depending on who the city is. Enduring red tape and making initial contacts are very slow processes.

What are key conditions for the transfer of the key concept (or elements thereof)?

This venture is not transferable without the co-operation of Route4u, who is first and foremost financially motivated. It is key to partner with them if this case is to be extrapolated to other regions.

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7.10 SafetiPin (score) - My SafetiPin, SafetiPin Track, SafetiPin Nite

7.10.1 Essence of the concept:

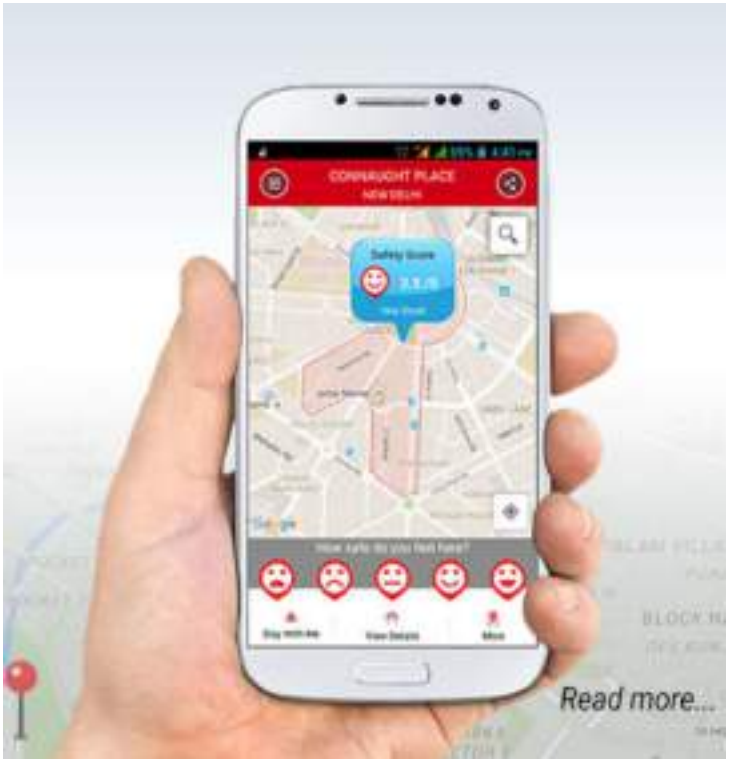

Figure 90: Interface of the Safetipin Application with safetiscore of an area and possibility to rate the perceived safety. (Source: http://safetipin.com/theme-assets/safetipin_common/images/banner-city.jpg)

Safetipin initially starred as map-based mobile application allowing anyone, anywhere in the city of Delhi to see the safety score of a location, displayed through a colour-coded pin on a map – hence the name Safetipin. Users are engaged in the process of creating safety through rating a location's safety score. These crowdsourced score ratings are based on a nine-factor safety audit, which includes aspects like the gender balance of location users, presence of security, transport options and lighting. Users can view the safety audits and view safe or unsafe locations to plan potential travel routes accordingly.

Based on the same parameters used in the crowd-sourced audit of locations within the Safetipin app, an experiment has been rolled out that seeks to define a locations' safety through photographs. Smartphones with the so called Safetipin Nite camera app, which takes pictures and sends these to the Safetipin servers automatically, are mounted at the windscreens of taxi services, allowing for the large-scale collection of photos of public spaces at night. The pictures are then tagged according to the safety audit parameters and analysed through crowdsourced comparative analysis.

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Through the Safetipin Track application, users can have themselves be tracked by predefined community members, such as friends and family. The same counts the other way around where users can follow the tracks of users in their community who express their wish to be tracked by enabling the tracking mode.

Intended beneficiaries:

Initially intended for women, Safetipin leads to overall increased awareness and engagement for safety which everybody benefits from.

Techn(olog)ical aspects:

Safetipin uses and provides a number of technology solutions for a crowdsourcing approach to safer cities for women and everyone. It thereby provides apps, to engage with individuals, as well as back end solutions for large scale data collection and analytics.

Core technology is the Safetipin app which allows for the audit of a location based on a set of nine parameters that contribute to the perception of safety. These parameters are the Lighting in the Area, the Openess of the Area, the Visibility in the Area, People Density, Security presence, Walk Path quality, Transportation in the Area, Gender Diversity in the Area and Feeling. Each audit conducted by a user of the app results in a colour coded pin (red, orange or green – based on the audit score) which is visible to everyone using the application. Each audit's exact location, date and time are presented, and users can express their comments on the rating. A safety score of a location is then generated by considering all audit data of an area. The app furthermore allows user to have themselves tracked by community members. For more largescale data collection, a camera app has been developed that enables automated photo capturing, for example by means of smartphones mounted to the windscreens of taxi services.

Figure 91: Interface of the Safetipin Nite Application taking photos of the surrounding automatically while mounted to the windscreen of cars (Source: http://safetipin.com/theme-assets/safetipin_common/images/banner-nite.jpg)

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Funding:

The development, roll out and operation of the Safetipin apps is funded through the support of donors and strategic partners of the organization. These partners include aid organizations, the local governments of the cities where the technology finds application, universities and research organizations, and corporates.

Business case:

Safetipin is a social enterprise providing the technology solutions that enable 1) engagement of individuals in the crowdsourced collection of safety data and 2) the large-scale data collection by means of automated photography, and 3) the analytics and representation tools to make safety data available to individuals, interest groups and governmental bodies.

Main actors and their interests:

Main actor in the case is the Safetipin social enterprise, which concepts, develops and operates the technology platforms by itself. The apps were envisaged to help individual women and others make safer decisions. The larger goal of the organization, however, is states as the sharing of data "*so as to get stakeholders to improve urban environments.*"

Intellectual property aspects:
The Safetipin name, trademark and technology platform are proprietary to the Safetipin social enterprise but available to use for public, private and non-governmental organizations.

7.10.2 Geographical context

Location, within country and region:

The Safetipin apps have been first launched in Delhi, officially the National Capital Territory of Delhi, which is the city and union territory which includes New Delhi, the capital of India. Delhi is located centrally in the far north of India.

Socio-economic context:

The case covers the entire city and territory of Delhi, which comprises the largest commercial centre in northern India. Nevertheless, the various districts and neighbourhoods of Delhi must be considered to show very diverse socio-economic and demographic contexts. This great socio-economic divergence is a characteristic shared by all cities in which Safetipin is used currently.

7.10.3 Context conditions

General context conditions before the start of a project:

The urgency of the issue of street safety in Indian cities can hardly be overstated. Data collected by India's National Crime Records Bureau showed a sharp increase of 26 per cent in reporting of crimes against women in 2013. All cities have shown an upwards trend in reporting of crimes. In Delhi, rape cases have doubled from 2012 to 2013. Delhi has the highest number of cases of crimes against women among India's 'million-plus' cities, followed by Mumbai and Bangalore. It is clear that in all

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these cities, violence against women is an important concern and reporting has increased significantly over the past few years. Nevertheless, the absolute numbers are still quite low, pointing to the fact that there is still under-reporting of crimes against women.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Crimes against women were greatly discussed headline news in the wake of the gruesome gang rape and murder "Nirbhaya", which took place in Delhi in December 2012. This case is widely recognized as a milestone in awareness of safety in public spaces.

Opportunities that contributed to the initiation of the project:

With the rise of mobile technology, smartphones and mobile internet have become a key tool in empowering people to address social issues. Safetipin uses this potential of ever-increasing smartphone use and mobile internet availability.

7.10.4 Case history

Initiation phase:

For the initiation, the key parameters affecting safety which were to be used in the crowdsourced audits had to be identified. Previous studies and audits of public space safety all over the world were taken into account and delivered the list of parameters, which were further modified through discussion with global experts in order to achieve highest possible validity. Secondly, a scale to rate these parameters became necessary. A traditional Likert scale ranging from "strongly agree" to "strongly disagree" was considered too subjective, which led to the creation of a rubric-based assessment which includes wider characteristics of the parameter in question to reduce subjectivity (e.g. for the parameter lighting, the best score is described by the rubric "whole space brightly lit").

Pilot phase:

The parameters and rubric scales were incorporated into the mobile app and trialled in a pilot that was conducted in randomly chosen areas of Delhi by volunteers who received a training by Safetipin prior to the pilot. The piloting was to identify whether the app and the assessment using rubrics was relevant and accessible to users from different regions of the city with varied socio/economic characteristics.

Roll-out phase:

The Safetipin app was launched in November 2013 in Delhi. After the launch of the Safetipin app which allows for the crowdsourced auditing and map-based representation of the safety of locations, the complementary tracking application has been created. The GPS navigation-based system allows users to have themselves track or in return track a person who has expressed its wish to be tracked by enabling the "Track Me" function of the application.

In addition to the personal applications for individual use, Safetipin has produced the SafetiNite camera application for smartphones that enables a large-scale data collection by means of

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photographs. Safetipin furthermore provides analytics tools for these data to identify the safety of public spaces from these photographs, using the same auditing parameters.
For areas with less availability of mobile data (and smartphone technology) Safetipin is developing a model for offline data collection in cooperation with NGOs and social enterprises.

Scaling-up and replication phase:

Safetipin's technology is currently applied in eight Indian cities and furthermore adopted in Colombia, Kenya, Indonesia and the Philippines where it finds application in the respective capital cities.

7.10.5 Impact assessment

Do the local initiators consider the project a success?

Safetipin considers the launch of their technology platform a success as it provided more thorough insights into the perceptive safety situation in Delhi and other Indian and international cities. The application has been found to be used by a large proportion of men and women, which is describing to speak of the concern for public safety among the wider public. It must also be noted that app usage is generally higher amongst men than women.

7.10.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The application of the Safetipin technology platform is not dependent on any context conditions.

What are key conditions for the transfer of the key concept (or elements thereof)?

For the application of the Safetipin technology platform, widespread use of smartphones and mobile internet are sufficient conditions.

7.10.7 Further reading on similar cases

The online presence of Safetipin describes their technology platform its application in more detail. A similar case example is Egypt-based initiative Harassmap (harassmap.org/en).

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7.11 Showing the way in Toulouse using pictograms

7.11.1 Essence of the concept

Basic idea:

Tisséo – since 2017 the public transport company of the city of Toulouse (France) - has developed a system of signage at metro stops and interchanges via pictograms. The system is adapted to communication-impaired people, non-native and illiterate individuals and it enables them to find their way on public transport, both on the platforms and outside. The symbols give a visual representation of a concept linked to the name of the station. For example, a rose for the Roseraie station; a goose for the station called "Patte d'oie" (goose foot); a houseboat for the "Canal du Midi" station and so on. If for instance tourists are visiting Toulouse and they don't speak the French language, these symbols can help them out as they easily guide the transport user toward where they should get on/off and which direction to take. The project is named "from picture to picture subway" (« mon métro d'image en image »).

Placed on the walls and on the platforms to identify the station, and above the exit doors to indicate the direction of the line, these symbols - associated with the name of the stations - constitute non-textual landmarks used by people who cannot read or having difficulty remembering the steps of a move. They are complementary to current passenger information signage.

Figure 92: Some examples of pictograms in the metro of Toulouse

These visuals, now deployed in 48 subway stations, are the result of graphic design research carried out over 4 years as part of a partnership between Tisséo Collectivités and graphic designer students.

This project, carried out in close collaboration with associations of people with disabilities, responds to the provisions of the 2005 law to promote access to public transit at all types of users regardless of their disability. The project offers also the opportunity to awaken the local culture with symbols that are linked to the origins of places in the heart of the metro, narrating little stories.

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This new system was developed in order to comply with accessibility law. In fact, in 2009 Tisséo adopted the "Schéma Directeur d'Accessibilité", which involves various activities that had to be implemented by 2015 aimed at achieving suitable mobility that is easy and convenient for everyone.

A mobile application called "Eô" (free), enables to prepare or adapt the journey using only images (and personal pictures) as well as a card game, adapted to cognitively impaired people, complete this initiative.

Figure 93: A map of the metro of Toulouse using pictograms

Intended beneficiaries:

Persons with reduced mobility (PRM), impaired people, non-native and illiterate individuals but also children and visually impaired individuals, and the numerous tourists who don't speak French

Techn(olog)ical aspects:

Hardware: Next to the metro station's name, drawings associated with the name of the stations are placed throughout the station's platform and entrances. These symbols are non-textual landmarks and help people who cannot read or have difficulty remembering the steps of a move to recognise the stop and the metro directions.

Software: Provision of information (e.g. wayfinding, route planning, real-time travel information).

To further facilitate these trips and enable all users to use the metro system (i.e. communication-impaired people, non-native and illiterate individuals), the Toulouse public transport operator has also developed an application named **"eô"** available for free. The application allows to prepare trips using only photos and images (involving also other means of transport beside the metro), and to move around in full autonomy. With the mobile application "eô", users choose their points of

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reference to carry out the totality of the trip integrating (or not) a trip in the metro. "Eô" then accompanies the journey without any recourse to reading. A card game has also been developed. It will be made of a set of maps that facilitate the preparation of a trip. The users can build their route and will be able to locate the visuals of the movement.

Figure 94: The "eô mobile application (source: Tisseo, http://www.tisseo-collectivites.fr/)

Funding:

The project is funded by Tisseo – Toulouse public transport operator. *Tisséo-Voyageurs* is in charge of the implementation.

Business case:

The public transport operator Tisseo created a partnership with the local Design college in 2014, the Lycée des Arènes. Current students on design had the possibility to become actors in the field of accessibility and mobility and test their ideas in reality. Several proposals were received and a committee chose the project called « l'anecdote ». A Technical Monitoring Committee and the Scientific Committee were established in order to ensure the relevance and accuracy of the anecdote

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chosen for each visual and to guarantee the effectiveness and feasibility of the proposals.

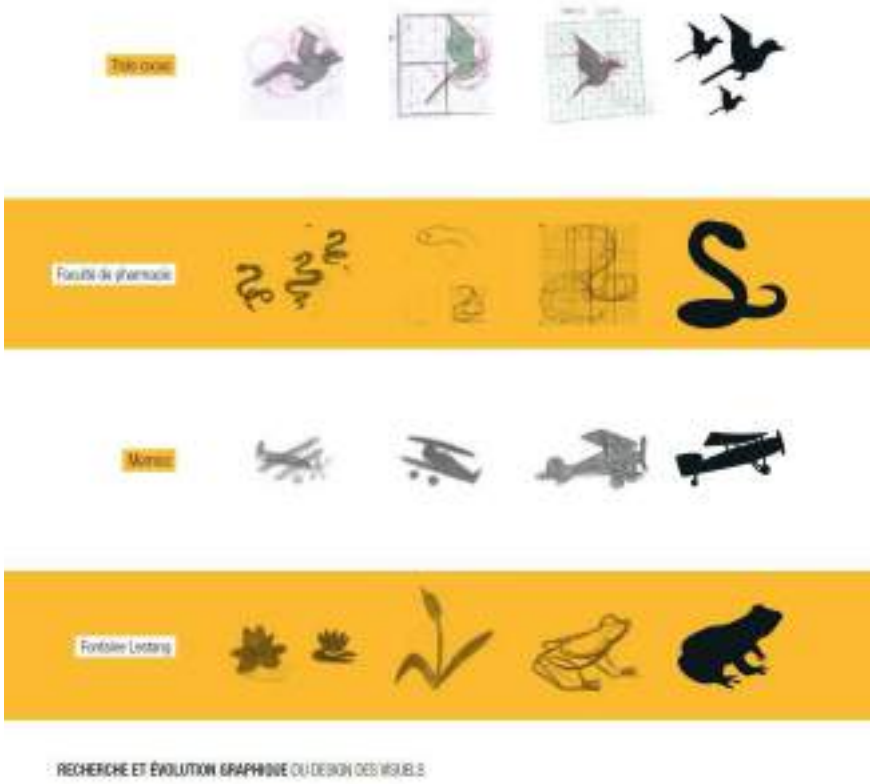

Figure 95: The draft pictograms elaborated by the local Design School

Main actors and their interests:

Public transport operators, stakeholder form technical Monitoring Committee and the Scientific Committee who dealt with the selection of signages proposed by the local Design school. Multi-partner approach of the project: Tisséo Voyageurs, the public transport "operator", strongly associated to the project development, and in charge of deploying the project on site (operationally). PRM associations / Actors of the different forms of disability; high school specialized in Design (Lycée des Arènes); Actors of health services; Actors of culture; Actors of education; Actors of arts and local history.

And with Tisséo Collectivités accessibility commission ("CARUT") making the link between those various actors and associating them to the Tisseo decision-making process (governance).

Intellectual property aspects (patents etc.):

Rights reserved for the young designers. Tisseo has the rights to use the drawing only for transport use.

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7.11.2 Geographical context

Location in Europe, within country and region:

Toulouse is located in the Midi-Pyrénées region in Southwest France and has a total population of 475 438 inhabitants (2016 data). Toulouse is the capital of the French department of Haute-Garonne and of the region of Occitanie. It has a large historical centre, which poses some problems to mobility. Tisseo is responsible for the organisation, exploitation and financing of public transport in Toulouse and its surrounding areas. The metro crosses different disadvantaged areas and the project helps people to travel by themselves, it contributes make people becoming more autonomous, especially elder people, given that 13% of the population in Toulouse is around the age of 65.

Socio-economic context:

Toulouse is an industrial and economically-dynamic city, especially in the field of new technologies. Toulouse is the 4th French metropolis, cradle for the European aeronautics and space industry, and undergoing a massive growth: 150,000 jobs generated over the past 20 years, +15 000 inhabitants and +7 000 jobs every year, 500 000 additional daily travels expected by 2025.

7.11.3 Context conditions

General context conditions before the start of a project:

This initiative is unique in Europe and makes Toulouse a pioneering city in terms of transport accessibility for people with disability issues. Other cities that developed a similar system already several years ago were Mexico City and Fukuoka in Japan (see section on similar case at the end of the case description).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

In Toulouse, the "Mobility Project 2020-2025-2030" aims to provide a response to the exceptional demographic and economic growth of the Toulouse conurbation that will generate 500,000 additional daily trips within the next 10 years. In this perspective, and to reduce the high number of sole occupants in cars, Tisséo Collectivités is putting efforts and is going beyond legal obligations to make its network more attractive, more accessible and more pleasant. Giving priority to vulnerable people such as visually impaired and deaf is perceived as the priority.

Opportunities that contributed to the initiation of the project:

Tisseo took inspiration from Mexico City thanks to the EU project Nodes that showed the best practice. The meeting with an association of deaf people was also key to start the project. Tisseo meets regularly with associations of vulnerable travellers. Tisseo is pioneering in transport accessibility in France (more than the average).

Political context:

The project was made possible thanks to the fact that the president of Tisseo is keen in making public transport accessibility better for everyone.

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Financial context:

The 2015 French Disability law and the related initiatives "Agenda d'Accessibilité Programmée (Ad'AP)" have provided a good context to implement such initiatives such as the "mon métro d'image en image". Related funding was not used for this specific project given its reasonable cost. However, despite the reasonable cost, funding has to be anticipated as it is an evolving and spreading project (adaptation of travel information documents, etc.) requiring regular small investments.

7.11.4 Case history

Initiation phase:

The initiation phase was structured as follows:

- In 2008 there was the creation of Tisséo's urban network accessibility commission (CARUT) followed by the work with associations of vulnerable groups. In 2010 there is the study of needs.
- The pictogram as an aid to movement: 1st study conducted by the "Association Départementale de Parents et Amis de Personnes Handicapées Mentales" (ADAPEI)
- 2012-2013: Project analysis and reorientation
- Elaboration of specifications for research and design of visuals
- 2014: Partnership with the Lycée des Arènes
- Design of signage to assist in the movement and identification of metro stations.
- 2015: Workshop
- Student proposals and selection of the winning "anecdote" project
- Establishment of the Technical Monitoring Committee and the Scientific Committee to ensure the relevance and accuracy of the anecdote chosen for each visual and to guarantee the effectiveness and feasibility of the proposals.
- 2016. Realization
- Definition of visuals for all stations and graphic consistency for an optimized use of recognition symbols.
- Design of tools to help the use of visuals by the lycée des Arènes.
- 2017. Deployment in the métro and launch of the Outils

7.11.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

Drawings in the metro network is innovative by its uniqueness in France in a public transport network (at global level: existing in Mexico and Fukuoka, Japan), by its inclusive ambition (children, cognitive impaired people, tourists but it can also be useful to every passenger) and by the fact that its multi-partner approach has involved the actors of disability, health services, transport, culture, education,

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arts and local history. Tisséo Collectivités invited to present the drawings project at the French "8èmes Assises Nationales de l'Accessibilité" on 13-14/06/2018.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Users' satisfaction rate (internal survey – December 2017): 43% of interviewed people have heard of the service, which 88% of interviewed people approve the service. Number of downloads of the "êo" mobile app: 411 on Google Play and 327 on iTunes since November 2017.

7.11.6 Transferability considerations

What are key conditions for the transfer of the key concept (or elements thereof)?

The use of pictographic information to help anyone and all to locate or find one's way implies an inclusive way of design. Every kind of impairment must take part and the impact on every stakeholder must be taken into account. If not, whatever the political engagement, the project won't succeed. Such a methodology is usable by any public transport system, and many other fields, such as education, healthcare and elderly facilities.

7.11.7 Further reading on similar cases

"The symbolic simplicity of Mexico City's metro signs", The Guardian, available at: https://www.theguardian.com/cities/2014/dec/09/symbolic-simplicity-mexico-city-metro-signs-lance-wyman

Fukuoka City Subway, *Inclusive Design - a people centered strategy for innovation, A practical introduction to Inclusive Design for Businesses & Designers - how to get started!*, available at: http://www.inclusivedesign.no/transport/fukuoka-city-subway-article150-264.html

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7.12 The Welcome Card

7.12.1 Essence of the concept

Basic idea:

The Welcome Card is an adaptable app-and-card based solution that helps asylum seekers to navigate the asylum-seeking application process, while also giving them information and access to early-inclusion activities and existing public services, such as transportation, language and skill-based courses, cultural and networking events.

When the asylum seeker arrives and places their asylum request, they're registered with the national migration agency and receive their personalised Welcome Card (with RFID chip), to be used during the application process as both an identification card and as a key to their case status. The card allows them access to communal activities and public services in their area, while the app provides information about these services, in addition to the latest information about their application status. In these ways, The Welcome Card helps to facilitate the transition from being an asylum applicant to being a socially included resident with better access to social, financial and educational opportunities.

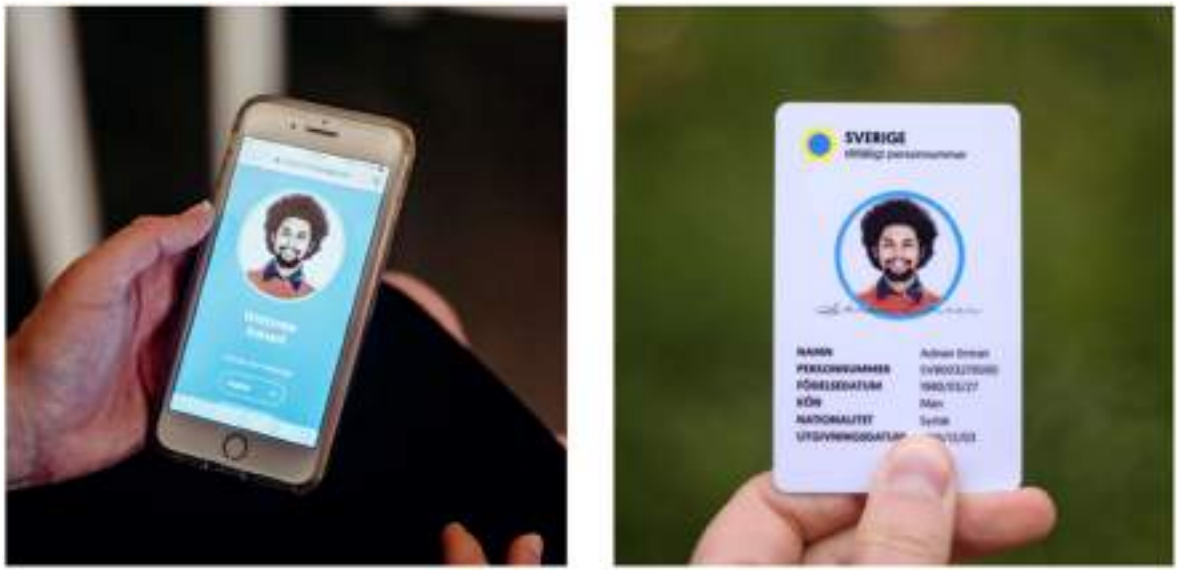

Figure 96: The Welcome Card app and card (The Welcome Card, 2018a)

Intended beneficiaries:

Asylum seekers

Techn(olog)ical aspects:

Hardware: The Welcome Card has a radio-frequency identification (RFID) chip which allows the card to be personalised for the user, permitting them access to publicly available services in their area, including public transport.

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Software: The Welcome Card app gives asylum seekers access to their application process, as well as providing information on activities and public services in their area, a discussion forum, FAQ, and direct messaging with the migration agency.

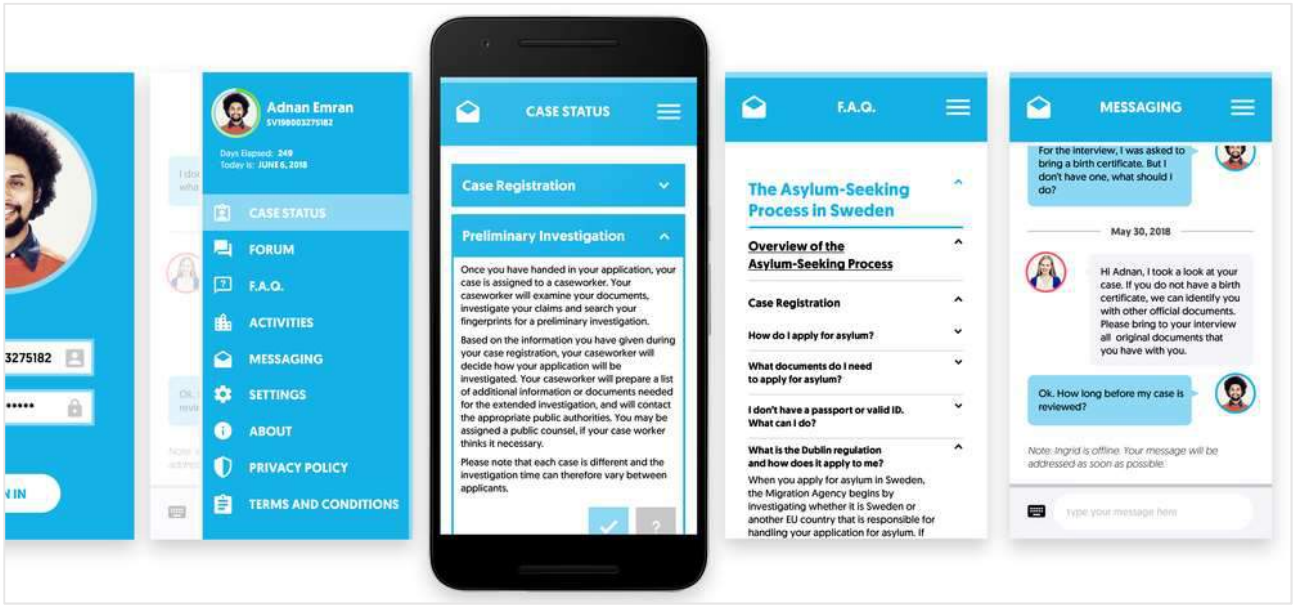

Figure 97: Screenshots of The Welcome Card app's features (The Welcome Card, 2018a)

Funding (incl. fare structure):

The Welcome Card is freely issued. It enables its users to received reduced fees for certain services. In particular, the price of a public transport ticket is adjusted by The Welcome Card based on a user's age and market circumstances. I.e. PT prices fluctuate with the market price.

Business case:

The Welcome Card seeks to create both social and indirect financial value. While it does rely on public funding, it does not aim to create a profit. Its model is able to return the investment through the reduced time and money saved by the public entities who process asylum seekers. In doing so, they vital social value for these people.

Furthermore, offering such a service in other EU countries would promote investment in human capital that approved asylum seekers can be. By granting asylum seekers freedom of movement, access to opportunities for gaining new skills, learning a language more quickly, networking, and eventually job-seeking, a region's human capital is grown when the person begins to participate in and contribute to society through their own initiatives.

Main actors and their interests:

The Welcome Card was developed by an interdisciplinary Swedish/ Italian/ American team, consisting of an experienced designer, visual designer, migration adviser and IT manager.

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7.12.2 Geographical context

Location in Europe, within country and region:

Currently available in Sweden.

7.12.3 Context conditions

General context conditions before the start of a project:

"In 2015, Sweden received 162877 asylum applications, a 300% increase since 2013. Due to the amount of incoming asylum application requests, the Swedish Migration Agency has seen an unprecedented growth in the processing and handling times. The increase of people seeking refuge in Europe has caused strains on local societies and government authorities alike, prolonging the waiting times for residence permits and asylum. Shortening asylum seekers' waiting time and ensuring that the time spent waiting is well utilized are currently the two most pressing concerns for local, national and European government agencies alike", (The Welcome Card, 2018b).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Asylum seekers have an average waiting time of 12-21 months, during which they often struggle with social isolation due to a lack of information and tools to help them actively participate in society. Among these challenges is a lack of mobility; refugee homes are often located outside of the city centre and public transport ticket prices are often prohibitively high due to their limited personal daily allowance and no possibility to earn money during the lengthy waiting time.

Opportunities that contributed to the initiation of the project:

The Welcome Card was a finalist in a 2016 UNHCR design challenge.

Political context:

Migration agencies and local municipalities in many European countries have been struggling to effectively manage the huge influx of asylum seekers from around the world. Not only does the handling time for asylum applications in many EU countries far exceed the 6-month limit, but there has also been a lack of coordination and tools necessary to support asylum seekers' integration into society, particularly during this crucial waiting period. This has led to widespread political tensions at the local, national and European level regarding the refugee crisis.

7.12.4 Case history

Initiation phase:

The concept for The Welcome Card was conceived during a 12-hour workshop to tackle the refugee crisis through design. The developers visited several refugee homes and conducted interviews with residents.

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Pilot phase:

The Welcome Card is currently in the pilot phase, with ongoing testing and platform updates. The developers encourage the general public to test the platform and send them their feedback. They have also conducted a 6-week long collaboration with students and faculty of the University of Kentucky School of Art and Visual Studies to improve the platform design.

Scaling-up and replication phase:

The Welcome Card is working on being introduced the US immigration system. Presently they are in testing phases, working together with *Kentucky Refugee Ministries Lexington*.

7.12.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability)?

The creators of The Welcome Card conducted a 30-day test of 6 users (3 male, 3 female) of various ages and family configurations in Stockholm. Their aim was to measure the impact of access to public transport on the lives of asylum seekers. The participants logged the trips they took using a one-month pass of the entire Stockholm public transport network. Their conclusion was that accessing public transportation and experiencing communal living increased feelings of inclusion and promoted self-initiative.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

7.12.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

None

What are key conditions for the transfer of the key concept (or elements thereof)?

A knowledgeable design team, unequivocal support from the public sector in terms of both finance and allowing digital systems integration for TWC to receive classified information of who the seekers are etc.

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7.13 Wher app

7.13.1 Essence of the concept

Basic idea:

Wher is an interactive city map app designed to answer to the safety mobility needs of women. It has been created by crowd-sourcing safety information by 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 (see image 1 below). The app also allows one to leave comments and suggestions for others when using the map. Wher also integrates points of interests (POIs) on the map so that it can provide more than just safety information. Such POIs included bus stops with information of Public Transport services, pubs and clubs open at night, pink parking areas (parking bays reserved for women who need to leave a pass on the car), 24/7 shops, and offices of local women's associations. All this information can be used by women travelling in unfamiliar cities to provide knowledge of safe areas to travel within, thereby increasing their mobility, social opportunities and independent way of life.

Wher logo

Figure 98: Users of Wher can provide info on streets safety (the evaluation collected are processed and represented by colour). Comments and suggestions can be tagged for others to use to better navigate their city source: Wher, 2018 http://w-her.com/en/).

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Figure 99: Wher in-app previews (Source: Apple App Store, https://itunes.apple.com/de/app/wher/id1373678860?l=en&mt=8)

Intended beneficiaries:

The target users of the Wher app are represented mainly by women who use the app to travel abroad for work, education or tourism.

Two groups of younger women are targeted in particular, primarily those aged between 18 and 24 and the secondarily between 24 and 35 years old. Unintended beneficiaries of the app include women who are travelling to areas of their city that are unfamiliar to them, or who are unaware of areas whose safety may have changed. Additionally, all other groups who face street harassment and/or violence benefit from this app including those under the LGBTQ+ umbrella, those with disabilities or mobility impairments, and those who may face may hate crimes.

Techn(olog)ical aspects (hardware and software):

Wher app is available on Android and iOS devices. The app is based entirely on the implementation of crowdsourced information and tools such as "Open Data" published online. The app allows users access via Facebook login and it is connected to a "Wher Facebook Community Group" which is a "virtual" place where users can get to know each other and engage in discussions about three topics: female mobility; city for women; women travelling alone. Once logged into the app, users can create their own profile describing their travel needs and selecting the city they are interested in. This set up calibrates the app to provide specified information for a particular user's needs. The user is then able to access the city map and brief descriptions of different city areas with indications of safer ones. A user can focus on a specific area to see the level of safety of those particular streets, as well as the comments and evaluations left by the community of users.

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Information is organized by the time of day (day, evening, night) since safety changes temporally and with associated activities. I.e. a street may be safe during the day but less so during the night due to lack of lighting and/or the level of the crowding (i.e. high crowding around pubs or low crowding in deserted streets).

Safety perception information is based on (and recorded with) two objective parameters, lighting brightness and crowding, but other subjective parameters include general safety perception, emotions perceived when a user was there etc.

Information on Public Transport services and networks, mobility services, shops, and taxi information are gathered through Open Data portals published by third-party organizations.

Funding:

Wher app was developed using contributions from national sponsorship allocated for promising start-ups that foster social inclusion. This funding covered the development of the development of app's first version. Once the app was published (first on Android market, then on iOs) a business model was defined in order to guarantee the long-term sustainability of the initiative. The funding of APP new developments (improvement and updating) is now carried out offering "in-APP purchasing" services to be paid for by the end-users (see details in the business case description).

Business case:

The business model defined for the long-term sustainability of Wher app is based on the following notions:

- Data required to provide the app's information are generated or gathered by Open Data and the Wher Facebook Community. Crowd-sourced data ensures that data can be freely retrieved). Low costs of the app's production also ensure that its basic services can remain free (i.e. safety info and POIs).
- Due to its "social value", the app could receive support from public administrations which can engage with other stakeholders (i.e. the POIs that are listed in the app such as shops, PT providers, taxis etc.) so that new data could be provided.
- Added services or "in-app purchases" will be activated after establishing partnerships with private companies (i.e. shops, tourist services, hotels, restaurants, etc.) providing services targeted for women. Users can access and purchase these services within the app and potentially receive promotions and discounts for such services.

Main actors and their interests:

- The Wher start up team is responsible for design, development and management of the app.
- The community of women who provide their data (i.e. mapping of the POI, safety level, comments, etc.). The community also includes Wher Brand Ambassadors who support Wher once a new city is introduced to the app. Ambassadors support the developers in the first mapping of POIs and help guarantee a minimum level of information for the launch of the

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city. Ambassadors also act as Facebook community moderators for their individual cities and are in charge of engaging with the first community participants. Ambassadors enjoy the advantages of the app in the city that they discovered it, and help bring it to their home city.

- Local city authorities who support the initiative for its social value creation and engage with local stakeholders to provide more data (i.e. mobility operators, tourist operators and offices, shops, social centres, etc.) to the app.
- City stakeholder (i.e. mobility operators, tourist offices, etc.) which can provide data and services to be integrated in the app: data and services can be available through dedicated interfaces or Open Data
- Private companies (i.e. tourist operators, shops, etc.) sponsoring the app in the city offering their products/services with designated marketing and discount campaigns for Wher users.

Intellectual property aspects:

The intellectual property is owned by the Wher start-up which designed and developed the app.

7.13.2 Geographical context

Location in Europe, within country and region:

Wher has already mapped the cities of Turin, Milan, Rome, Bologna, Catania, Palermo, Naples and London and new cities are continuously added.

Topographic situation:

With respect to the cities included in the app, the focus is placed on metropolitan areas since they are more likely to be the interests and mobility needs of the target group.

Socio-economic context:

Women are identified as a vulnerable group and the social awareness of the security problems they can encounter while travelling in unfamiliar cities is generally increasing.

7.13.3 Context conditions

General context conditions before the start of the project:

Before Wher app was published, there weren't any applications specifically targeted to women providing the information they look for about travelling safely. Is this street fine to be on at night? Which journey should I take to go from A to B comfortably? Until now women would look for info from different sources and have to consolidate it on their own. Alternatively, they would have to trust their instincts or take a chance or collect information from other visitors or locals that they interact with in their own limited circle. Safety info could not be so valuable as generated by crowd-sourced contributors.

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Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

Society is aware of the need to increase the feeling of safety for vulnerable groups (in particular women) while travelling. The urgency is perceived by public authorities, the police, social organizations and it is now seen as a societal problem not just a problem of women.

When talking about the Wher app, the idea came to CEO Eleonora Gargiulo, during her stay in Lisbon. She told "Startup Italia" (Italian on-line magazine) that she stepped out from a bar one night and got the immediate impression that the street she stepped onto some hours before was no longer safe to use for returning home.

Opportunities that contributed to the initiation of the project:

The Wher app was firstly funded by the Politecnico University of Turin (where the current Wher promoters worked at that time). It was then selected by ***TIM #WCAP,*** a national programme for start-up developments promoted by a national telecommunication provider. In October 2017, the idea which was originally named "Freeda feel free around" was included in the SocialFare incubator. the first Italian incubator for initiatives on social innovation.

Political context:

Local city authorities are sensitive to the social problem addressed by Wher. This is demonstrated by a range of initiatives that they have facilitated including: pink parking zones, agreements with taxi associations to make door-to-door services for available for women and awareness raising campaigns etc.

Financial context:

The Wher app benefits from different funding modalities: public research funding, private sponsorship and the national incubator initiative award for social innovation projects. Together the funding allowed the idea to be fully developed from conception to a publishable product which included a research phase (carried out at a university laboratory) and the development of the first "prototype" app. Finally, the funding also made it possible to release and market the commercial product such that the app's functionality could be improved with later versions, once users began engaging with it (more details in the following section).

7.13.4 Case history

Initiation phase:

Wher was designed and developed in 2016 by a start-up company born in the Politecnico University of Turin. The promoters are: Eleonora Gargiulo, CEO and app designer responsible for the look-and-feel of using Wher; Andrea Valenzano, co-founder and IT Engineer who developed the prototype. The team was later enlarged to include a second IT developer (specializing in the improvement of front-end interface), a social media manager, and a Digital Strategy Manager. Most of the team consists of women.

The first mapped city was Turin as the start-up is located in this city.

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Pilot phase:

The Wher prototype was developed at the beginning of 2017. Once selected for the SocialFare incubator, the prototype was enhanced to a commercial product that was then published at the beginning of 2018. Improvements were identified during an incubation period which lasted 6 months after its release and related to end-user interface and optimization how the Facebook community groups are managed. The business model for commercialization was created in parallel to the improvements phase.

Roll-out phase:

The first version of the app was published at the beginning of 2018 on the Android market and then on Apple store few weeks thereafter. Initially only a few cities were included (Turin, Milan, Rome, Bologna) and the others were added in the following months of 2018. The business model was implemented and the app's promotion to public administrations began. The roll-out phase was steered primarily by brand ambassadors.

Scaling-up and replication phase:

New cities are continuously being added to the app as new ambassadors join the Wher team and increase relationships with local governments. There is a commitment to enhance the typology of info provided by the app. Furthermore, the scaling up phase will bring new functionalities that will be added in succeeding app versions. A "knowledge based" data mining tool able to get info about a city's safety via the web (such as news and articles on crimes, etc.) will be integrated with the crowd sourced perceptions provided by the community. Additionally, new services which the user will have the option of paying for will be launched such as tourist information, making hotel and other types of reservations, etc.).

7.13.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

The project has been considered successful given the continuing increase of new cities being included in the app as well as the growing number of downloads achieved. Wher has been downloaded by more than 5.000 users on Android. Furthermore, an average of 25% of the app's users also leave comments and/or app feedback. User engagement is considered by Wher's CEO as a good index to measure its usefulness to users and thus the project's success.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, this is demonstrated by self-reported comments provided in Wher Communities groups.

Rosalia: "*Not only is the app very well done, intuitive and fluid, but it is also a very useful tool. I feel more secure, it is a small life saver*".

Laura: "*Very useful when you are in a new area or to evaluate the best and safest route to take alone*".

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Stefania: *"Great way to share impressions on the cities experienced and visited by women".*

7.13.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The engagement of new cities in Wher app depends on the identification of Brand Ambassador(s) and/or on the involvement with local governments.

What are key conditions for the transfer of the key concept (or elements thereof)?

For a city to be added to the app, a high level of information must be publicly available at an appropriate spatial coverage of the city i.e. POIs, mobility and PT info, evaluation of streets safety, etc. These requirements can be ensured by the involvement of city stakeholders, brand ambassadors, and a good contribution from woman to share their knowledge and safety experiences to form a Wher community group.

7.13.7 Further reading on similar cases

Similar cases can be considered under two different perspectives: 1) initiatives improving safety feeling for women travelling, 2) initiatives based on the adoption of crowdsourcing tools/methods (implemented in a app).

1) "She Taxi": "She taxi" is a taxi service operating in Kerala, India. The basic concept is to offer a safe taxi service for all women, i.e. shared transport services, like conventional taxi, where the drivers and the passengers are female. More in general there are a wide range of initiatives targeted to increase the safety of the women travelling: taxi services operated by women for women, "door-to-door" taxi services where the driver accompanies the women to the door, etc. http://genderpark.gov.in/shetaxi.html

2) "TeleAtlas" an app developed by RATP, Public Transport Operator in Paris to provide targeted info on the accessibility of services/stations depending on user profile (disabled, mobility impaired, visual impaired, user not familiar with the network). It is also based on the collection of data through crowdsourcing.

https://www.ratp.fr/en/accessibility/audio-atlas-project-guide-yourself-more-easily-through-our-stations

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8 Design

8.1 Krakow - more accessible public transport stops

8.1.1 Essence of the concept

Basic idea:

The City of Krakow developed a scheme to modify or rebuild public transport stops in the city to make access safer and more comfortable for all of its customers. The scheme, coordinated by the City of Krakow, the Road Transport Management Board and the local public transport operator, also speeds up vehicle loading times. In particular, within the context of the AENEAS (Attaining Energy-Efficient Mobility in an Ageing Society) - a European project funded by the Intelligent Energy Europe (IEE) programme – the city implemented three different measures to make public transport safer and more accessible for older people:

- Development of an assistance service at major public transport interchanges
- Campaign targeted at children and young people to promote appropriate behaviour towards older people in public transport
- Marketing and information campaign about energy efficient transport for older people

High floor vehicles were indicated as a particular problem for disabled and older people, particularly in relation to the number of cars passing by the bus and tram stops. Getting on and off the public transport vehicle was difficult. A major bus/tram stop was reconstructed based on this input and a document was developed called the Security Action Plan. The Security Action Plan was formally the part of the EU initiative CIVITAS Caravel project and was basically describing the intended changes in the design of PT stops. Today, the reconstructed bus/tram stop serves as a model for other stops across the city and any bus or tram stop reconstruction undertaken must refer to the Plan. This combination has helped to establish a systematic approach to quality management in public transport accessibility.

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Figure 100: How to use the City Transport in Krakow? Guide to Urban Transportation System (Source: City of Krakow)

Intended beneficiaries:

Elderly people and people with disabilities

Techn(olog)ical aspects:

In recent years, the city of Krakow has also invested in more voice and visual real-time information concerning the tram and bus lines – for example real-time information about the waiting time for certain lines, but also loud voice information concerning the bus line number, which is currently stopped at the bus stop. This measure, although directed towards all public transport users, is very helpful especially for older persons and people with (visual) impairments.

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Figure 101: How to use the City Transport in Krakow? Guide to Urban Transportation System (Source: City of Krakow)

Funding (incl. fare structure):

For the majority of the "hard" measures the funding comes from the city budget and public transport operator budget (100% owned by the municipality). The described soft measures, including the assistance service for elderlies, where funded within the AENEAS Project (Intelligent Energy Europe Programme).

Main actors and their interests:

There were many actors involved – especially different departments of the municipality, public transport and roads authority and public transport operator (MPK S.A., Mobilis). For example, MPK S.A. was the host of a series of workshops for elderly people – giving the opportunity to test different features of modern low-floor trams directly in the depot. This was an additional opportunity for the main PT operator to improve their marketing and image issues, and to meet their older customers directly, in an organised way. This aspect was very appreciated by participants of the workshops.

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Figure 102: How to use the City Transport in Krakow? Guide to Urban Transportation System (Source: City of Krakow)

Location in Europe, within country and region:

The Municipality of Krakow is a district with 761,000 inhabitants. It is the second most populous city in Poland and the administrative capital of the Małopolskie voivodship. The city has great academic and business competencies, infrastructure, educational basis, innovation background, and entrepreneurial attitude.

Topographic situation:

The city's area of 326.8 square kilometres (0.1 percent of Poland's territory) spreads on both banks of the Vistula (Wisla) river, about 219 meters above the sea level on the Malopolska Uplands at the foot of the Carpathian Mountains.

Socio-economic context:

Concerning the age issues, Krakow is a so called "ageing – city". Number of people in pre-production age constituted 16.6%., production - 60.3% and post-production - 23.1% of the total population (2017 data). Economically unfavourable changes are perceived, involving a further decline in the working-age population for the benefit of people of post-working age (ageing the labour force).

8.1.2 Context conditions

General context conditions before the start of a project:

Krakow's public transport operator MPK owns 493 city buses (most of them are modern low-floor buses with engines fulfilling highest European emissions norms) and 424 tram wagons serving altogether 153 lines. There are about 350 million passengers transported per year. About 50 % of the tramway network of 84 km is separated from the road traffic.

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In Krakow, mainly in the city centre, tram stops are arranged in a way that passengers need to cross the car lane placed between pavement and tram tracks. This of course creates an uncomfortable solution for passengers and in some cases even dangerous situations or accidents. Moreover, despite continuous modernisation of the rolling stock of MPK (local public transport operator), still around 50% of trams or buses do not have low-floor entrances enabling passengers to enter and to leave a vehicle safely and comfortably. Therefore, particularly for the oldest PT passengers (group 76 to 100+) it is often a problem to enter or to leave a tram or bus in a safe and comfortable way. This might prevent them from travelling independently or even from travelling around the city at all. This measure fits into the overall transport policy of the City of Krakow (established by the City Council in 1993, and updated in 2007), aiming at improving quality and accessibility of public transport in Krakow. It is also important in view of the policy of the reduction of road accidents and number of victims.

Figure 103: Tram in Krakow (Photographer/Copyright: Maciej Michnej)

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

According to the focus group meetings and surveys among Krakow's citizens (when several additional questions were added only towards 50+ citizens), about 64% of elderly people recognised the local public transport system as friendly towards them and taking into account their needs (including disabled persons). But still about one-quarter of respondents do not perceive the system as good enough for them (concerning safety, security, punctuality, etc.). The most pressing problems pointed out were lack of low-floor vehicles (almost 70% of respondents), need for more safety and security measures in PT (51%) and the necessity of special signage for the seats that are meant for older/disabled persons in vehicles (38%). About 50% of respondents agreed that a special human assistance for them is needed at major PT stops in Krakow.

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Opportunities that contributed to the initiation of the project:

When the project started, there were almost no problems with availability of funds for soft measures towards older citizens (e.g. campaigns, meetings, providing assistance, changes in PT vehicles). At that time, there were many new developments ongoing in the whole transport system in Krakow, including modern ITS solutions (real time passenger information, VMS signs, voice information on stops and in buses, etc.). Measures and actions of this type were all very welcome, particularly when concerning the specific needs of elderly and disabled people.

Political context:

The role of public authorities in managing projects that promote health and active ageing may be of a dual nature. At the regional and national level, the role of the public administration becomes evident, i.e. specification of general, long-term strategies and development programmes in a given area. These are documents/ programmes specifying the broadly understood demographic structure conditions and needs within a given area as well as specifying the most important priorities which should be implemented within foreseen time frames. There is a relatively important role of politicians in shaping projects aimed at older people. This role is of major importance in the case of the aforesaid coordination activities performed by public administration institutions (in which case the city deals with their role from the initiation of a given program until its final settlement) becomes evident also in various forms and with various intensity, in the case of projects implemented directly by the public administration.

Some examples of strategic programmes in Poland in transport:

- *The 50+ driver project is implemented at the national level. Its goal is to enable persons aged 50+ to safely drive a car for as long as possible by creating possibilities of verification of a driver's skills, as well as retraining courses.*
- *The Senior Citizens Safe on the Road project, implemented at the regional level, is addressed to older pedestrians. The goal of the project was to carry out trainings for senior citizens, raising their awareness of how they should behave as a pedestrian to minimize the risk of becoming a victim in a traffic accident and to equip them with reflective elements to increase their visibility on the road.*
- *The AENEAS - Attaining Energy-Efficient Mobility in an Ageing Society project, implemented at the local level, facilitating older persons' effective use of public transport and use of related modern equipment.*

Financial context:

These projects, which are implemented by the public administration institutions, were financed at least partially from public funds. In general, there were two methods of financing:

- Funds from local/regional/national budget
- Funds from public administration institution which realize a project (sometimes with support from EU funds)

In both cases the amount and allocation of resources for the project is mostly determined by political decisions.

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8.1.3 Case history

Initiation phase:

The City of Krakow offers some facilities for older people as far as the public transport for elder generation is concerned. Firstly, people older than 70 are offered with free public transport (PT) tickets, whereas retired people are allowed to travel by PT with special discounts. Secondly, most of the trams and buses have low floor, so that older people are able to get on the vehicle in an easier and safer way. Moreover, trams in Krakow are equipped with additional handrails at the entrances. There are also special seats for elderly people, signed in a visible way. Krakow was invited to participate in the AENEAS Project in order to test new solutions and concentrate on better approach towards older passengers, including better analysis of their most important needs in using the public transport.

Figure 104: Elderly woman entering a bus with assistance from an aid in Krakow (Source: City of Krakow)

Pilot phase:

The main activities/concepts tested within the AENEAS project concerned launch of the assistance service at major public transport interchanges, working on safer public transport for older people, introducing marketing and information campaigns about energy efficient transport for older people (including workshops dedicated for older passengers) and production of the brochure "Transport in Kraków without mysteries"- the first of this kind in Krakow, especially intended and designed for elderly citizens.

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Figure 105: Public transport assistants in Krakow (Source: City of Krakow)

Do the local initiators consider the project a success? What are their success criteria?

Concerning the implemented measures and their character (mostly non-investment measures), the main success criteria was the satisfaction level of the elderly passengers of public transport in Krakow. Based on that, the project was deemed successful. Here are some main results and observations. Depending on the weather, approximately 20-30 persons were assisted by one AENEAS assistant per day (in total it gives ca. 100 persons vs. 50 planned):

- The help mainly concerned getting off and on the bus/tram, but some extra help was also given at bus/tram connections and to read time-tables
- The project raised attention from the general public.
- There was a demand to provide such service at more stops.
- The social aspect - some people knew assistants more personally, welcomed them each day and sometimes assistants got sweets as gesture of appreciation.
- Almost 300 older people were trained concerning the PT security and safety specifically when it comes to buy tickets in one of the relatively new ticket machines.
- Being aware of difficulties of reduced fitness when using public transport by older people, part of the training was also dedicated to the issue of safety and security in everyday mobility.
- Last but not least, seniors could also learn many interesting things about the equipment and new solutions applied in the new, low floor trams, such as the voice and visual stops announcement, ticket punchers or the mechanism of safe door closing.
- Women comprised 70% of the trainees
- Public transport in Krakow received high marks (4.3 on average out of 5) while car travel ranked considerably worse (2.2 on average)
- Precisely half of the trainees have a driving license, of which two-thirds own a car.

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- The trainings were assessed in three aspects (scale 0-5): Organization – 4.92, understanding – 4.86 , usefulness – 4.81.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The appreciation of the workshop contained in the questionnaires, and many spontaneous reactions during the course confirms the need to organize this type of practical training in the future. Seniors were happy with the way the trainings were conducted, tailored to their perceptive abilities. From their point of view, it was very important: slow and patient presentation by trainers, repeating when needed and clarifying any doubts. Seniors expressed satisfaction at the fact that in groups there were only older people so they do not feel pressure from the younger ones, which usually appears in groups of mixed age.

Figure 106: Tram stop in Krakow (Source: City of Krakow)

8.1.4 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

There were some aspects of the project measures, specifically depending on the lack of the most convenient PT infrastructure and developing rolling stock. Therefore, depending on the city, it shall be considered, what kind of help and approach shall be implemented (i.e. more focusing on the getting on/off the bus, finding the way or more on the general PT information). There are some specific issues concerning the organisation of workshops for older persons which shall be considered with attention (i.e. how to reach this age group, how long shall the training last, the degree of information assimilation, etc.).

What are key conditions for the transfer of the key concept (or elements thereof)?

The key conditions would cover issues like: local PT offer and infrastructure, what are the local possibilities to engage the older persons actively (i.e. what is the level of activity of specific NGOs, universities of third age, etc.), what is the level of car ownership/use among older citizens, what are

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the possibilities to engage schools (i.e. in order to conduct awareness raising campaign among younger generations).

Figure 107: Elderly people waiting for a bus in Krakow (Source: City of Krakow)

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8.2 Reading's 'Claret Spritzer' student bus

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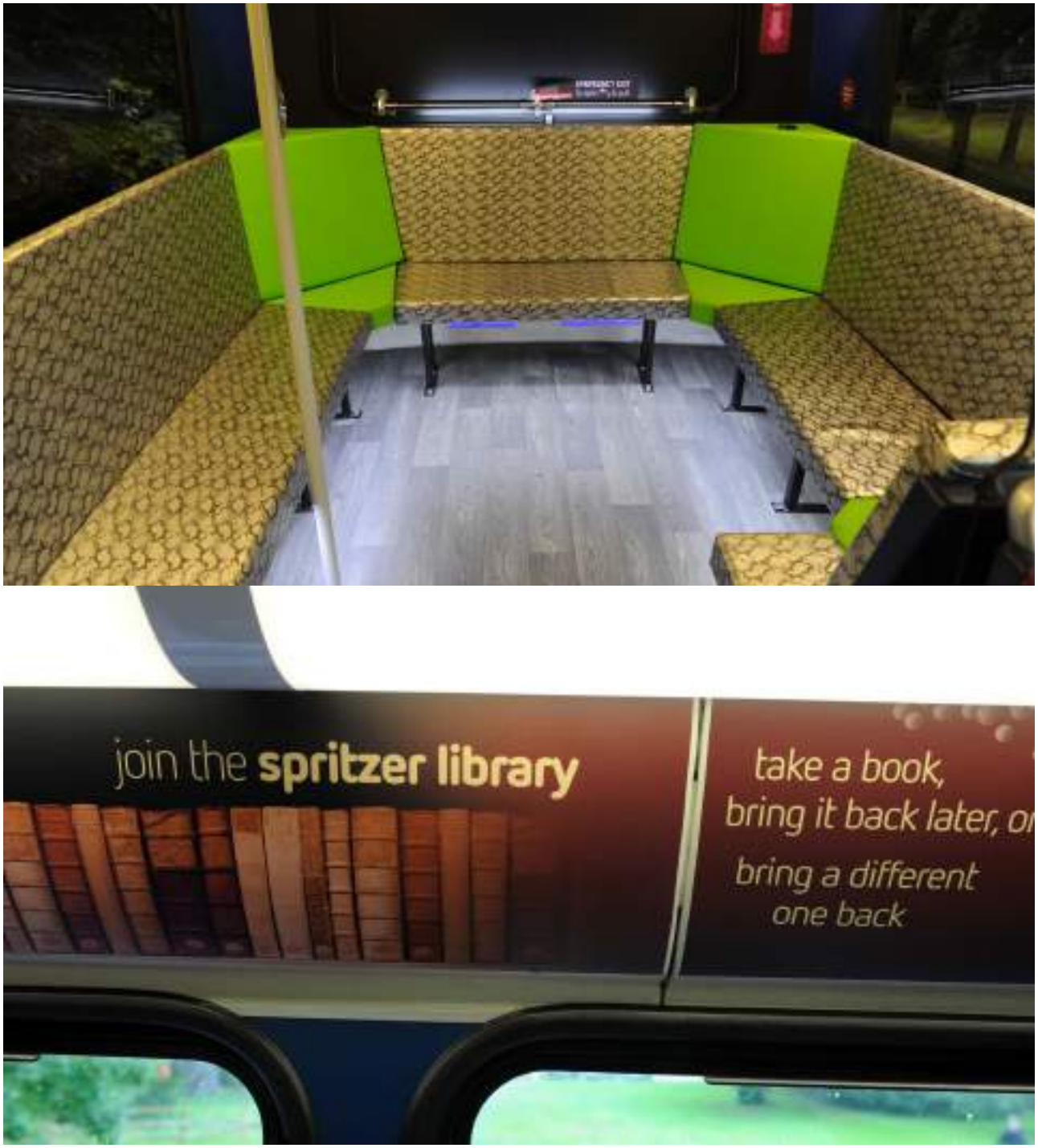

Figure 108: Reading's student bus (Fort 2015)

8.2.1 Essence of the concept

Basic idea:

Reading buses has designed a new bus called 'Claret Spritzer bus' for the students of Reading University. The bus has new concepts in bus interior design and layout and the students can find a play zone, micro-library, electronic and non-electronic entertainment, table games, WiFi, juke box, etc (Fort 2015).

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These new buses will provide a completely new on-board social experience for students traveling from and to the University of Reading (Figure 109).

Figure 109: Reading buses' route (Readingbuses 2019)

Intended beneficiaries:

Students from University of Reading. Also, staff and visitors of Reading University.

Techn(olog)ical aspects (hardware and software):

Free super-fast 4G WiFi, Bluetooth and cable connections. And also, the bus is fully equipped with USB chargers and contactless charging pads.

Funding:

The Reading Buses selected for these special routes were refurbished Scania Omnidecker buses (named Claret Spritzers). This operation was done in four buses and cost £20,000 each; it was funded by Reading Buses.

Business case:

Claret Spritzer buses operate on the same route as the Claret 21 bus route. Claret Spritzer services operate as extra journeys of the route and offer an extra value to these trips by providing an enhanced on-board experience for users to and from the University of Reading.

Main actors and their interests:

- Reading Buses: To attract more students, staff and visitors and to increase their bus experience
- Design Agency Best Impressions and vehicle re-furbishers South East Coachworks: To collaborate re-furbishing the buses
- University of Reading: Increase satisfaction of students

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- Students, staff and visitors: Enjoy their trips to and from the University

8.2.2 Geographical context

Location in Europa, within country and region:

Reading – Berkshire (UK).

Topographic situation:

The centre of Reading is on a low ridge between the River Thames and River Kennet, close to their confluences. In the last years, Reading has grown, and its suburbs have spread.

Socio-economic context:

Today Reading is a major commercial centre, with involvement in information technology and insurance. It is ranked as UK's top economic area for economic success and wellbeing, according to factors such as employment, health, income and skills.

8.2.3 Context conditions

General context conditions before the start of a project:

Before the starting of the project Reading University had the Claret 21 bus service. However, the company wanted to provide the "ultimate on-board social experience" for students on its buses as it tried out some new concepts in bus interior design and layout. Martijn Gilbert, Chief executive officer, said that the company wanted to trial something a bit different on board the buses serving the university. The company wants people to be enthused about buses around the university and encourage even more students, staff and visitors on board (Fort 2015).

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The idea of providing this new on-board experience for users of Claret services was a proof of concept of how customers find different approaches to the on-board experience and enhancement of their journeys.

The sense of urgency was the need to encourage students, staff and visitors to use bus services and experience new on-board experiences.

Opportunities that contributed to the initiation of the project:

Reading Buses needed to do some changes in their fleet and they found it as the perfect opportunity to trial something a bit different on board the buses operating the university extra journeys on the Claret 21a services (Hardy Luke 2015).

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It is a company which is always seeking to innovate and continually improve their services. They want people to be enthused about buses around the university and encourage even more students, staff and visitors on board.

Financial context:

The four buses were withdrawn from other routes and refurbished at a cost of £20,000 each to "give them a new lease of life". The Reading Bus Company paid for this refurbishment.

8.2.4 Case history

Initiation phase:

Before the Claret Spritzers buses, Claret 21 services were the ones which operated in the University. Reading's buses decided to refurbish 4 of these buses to provide a completely new on-board social experience for students traveling from and to the university of Reading.

Pilot phase:

Reading buses started operating offering a redesigned upper deck with a plush lounge area, games pod with a gaming tablet and desktop games, a table seating area and a micro-library with an honesty book exchange service. It has an upper deck and it also includes a juke box for customers sitting in the rear lounge seats who can connect via 4G WiFi, Bluetooth or cable. The bus is fully equipped with USB chargers and contactless charging pads (BBC News 2015).

Roll-out phase:

Claret Spritzers buses operate alongside the main Claret 21 service giving the university a bus up to every five minutes during the day as part of a 24/7 all-year round service between the town, university and Lower Earley.

8.2.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria (beyond financial stability):

Yes, and these buses will also help prove concepts that will shape the future of buses interior designs for other routes and maybe even the future of wider public transport design.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Yes, there are more buses (more frequency).

8.2.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

- The investment required to refurbish each bus is important and may not be affordable for every city.

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- Unequitable if the service is not implemented homogeneously in the entire service area.
- Unequitable if the service is just focused on one sector of the population (students)

What are key conditions for the transfer of the key concept (or elements thereof)?

- It's needed a high frequency of the regular service to be able to offer this other added-value buses
- High transport connectivity infrastructure throughout all the city is needed to allow the bus company to innovate and try something a bit different on board the buses serving the university
- It should be made clear to the users that the new service is not an "exclusive" service that gives privilege only to a few people

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8.3 Rennes wheelchair accessible public transport

Basic idea:

The city of Rennes and its surrounding municipalities consider it of key importance that every inhabitant of Rennes' metropolitan area (Rennes Métropole) has easy access to collective and public forms of transportation in the whole metropolitan area. For this purpose, all metro stations and the vast majority of bus stops in the region are barrier free. Information at stops and in vehicles is provided audible and visually. Through the use of a remote control or Bluetooth phone, visually impaired users have furthermore the possibility to receive audible service information on demand. The entire public transport network, which operates under the brand name 'Star' is thus accessible for citizens and visitors with impairments.

In addition, a service bundle referred to as 'Handistar' has been introduced, which is an on-demand door-to-door service available in all municipalities of Rennes Métropole for blind and physically impaired people holding a disability pass complimentary to the 'Star' public transport network. The services are carried out with specially equipped mini-busses that can be reserved between eight days or one hour before a desired trip. Since 1997, both 'Star' and 'Handistar' use the same graphical character and brand image.

Intended beneficiaries:

Disabled, visually impaired or deaf users.

Techn(olog)ical aspects:

Keolis Rennes works in cooperation with the Collective 35 Handicap Association and the Association Valentin Haüy to enable listening and downloading guides called "Paper" in vocalization.

Funding:

For the necessary adaptions to make the 'Star' public transport network barrier-free accessible, Rennes Métropole invested 19 million euros in recent years.

Main actors and their interests:

Renne Métropole is the public authority organising the public transport in the region through concessions. The improvements in transport for people with disabilities were implemented in cooperation with 'Collectif 35', a Handicap advocacy that combines more than 50 associations and disability interest groups and associations. Collective 35 provided suggestions on the types of necessary transport, and information solutions, which also led to the creation of the 'Handistar' service.

The administration of the Handistar service is delegated to the transport operator Société Kéolis Rennes and is operated by Société Rennaise de Transport et de Service (SRTS), a subsidiary of Keolis group. This service contract was tendered for a period of six years and stared in January 2018.

Keolis seeks to further improve the Handistar services through continuous cooperation with Collectif 35.

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8.3.1 Geographical context

Location in Europe, within country and region:

The City of Rennes is located in the east of Brittany, France's northwesternmost region.

Topographic situation:

Rennes is situated at the confluence of the two rivers Ille and Vilaine. The city's centre is built on a hillside, with elevation rising towards the north.

Socio-economic context:

Rennes has the largest concentration in ICT and digital firms in France after Paris and has experienced strong economic upturn for years.

Figure 110: City Hall of Rennes

8.3.2 Context conditions

General context conditions before the start of a project:

In the 1970s, public transport was still largely unsuitable for people disabilities, thus constituting an obstacle to their inclusion in society. In Rennes, an associative transport service for disabled people was created in 1976 on an experimental basis. In 1980, the city of Rennes became the organizing authority for transport and financed the entire deficit. The management of the service was entrusted by convention into an association that would provide transport to its members on request.

Sense of urgency; problems that were perceived as pressing:

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The drive to improve the offer of collective and public transport to target user groups was induced by disability advocacy Collectif 35, who considered the previous system, where disability associations organized transport service in a decentral manner was inefficient.

Opportunities that contributed to the initiation of the project:

The opening of Rennes' first metro line in 2002 provided an immense opportunity to create an overall barrier free public transport system. The general reorganization of public transport in the city and region induced by the metro opening allowed for the integration of the complimentary 'Handistar' service into the overall service and ticketing schemes of the 'Star' public transport network.

Financial context:

'Handistar' services are integrated into the ticketing scheme of the 'Star' public transport system and thus has the same tickets and fares as busses and metro. The system is thus highly subsidized by Rennes métropole.

8.3.3 Case history

Initiation phase:

After twenty years of operation of transport services for citizens with disabilities in cooperation with handicap associations, Rennes Métropole decided to delegate such provisions to small transport organisations in the region in 1996 to professionalize the service and increase quality.

Pilot phase:

In a first tender period of four years from 1996 to 1999 inclusive, the vehicle fleet was substantially enlarged to respond to increased demand. Software solutions were introduced to streamline the reservation process.

Scaling-up and replication phase (if applicable):

In 2000, a new concession was granted for a period of six years to STRS, the regional subsidiary of Keolis. During this concession, in 2002, operation of the metro started, which led to a reorganization of public transport and the integration of 'Handistar' into the service and ticketing schemes of the 'Star' public transport network.

The public service concessions to STRS (Keolis) were renewed in 2006, 2012 and recently in January 2018. The service has steadily grown in size and service level, continuously decreasing the need for external partners (e.g. taxis) for target group transportation in Rennes métropole.

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Figure 111: View of a metro at an over ground metro station in Rennes

8.3.4 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

The continued adaption and enlargement of the 'Handistar' service, even after 20 years of operation, show the success of the system.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

Thanks to the efforts of making the 'Star' public transport network overall barrier-free, a large number of citizens with disabilities are enabled to make unaccompanied, self-determined journeys and do so. On average 180 bus journeys and 250 journeys on metro are undertaken by people in wheelchairs per day.

For citizens unable to use the 'Star' network, 'Handistar' provides an adequate tool to stay mobile and be involved, according to incidental customer surveys amongst users of the system.

8.3.5 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The service provision of 'Handistar' is targeted to a group of users who are not able to travel independently due to their strong impairments. This very narrow targeting is possible due to the overall barrier-free public transport provision in Rennes Métropole, which enables users who do have a handicap but can cope with this handicap in barrier-free environments to do so and travel independently. When transferring a service like 'Handistar' into regions where the overall public transport is not yet barrier-free, a significantly larger number of citizens who would be eligible to or need of such a service could create difficulties.

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What are key conditions for the transfer of the key concept (or elements thereof)?:

A success factor of the system is the continuous, cooperative development of the service, where disability advocacy and service operator work jointly to increase quality and adaptability of the service.

8.3.6 Further reading on similar cases

Additional information on Handistar and the accessibility of the Star public transport system in Rennes Métropole can be retrieved from the following websites: handistar.fr; star.fr; metropole.rennes.fr

Figure 112: A Handistar bus stop with a passenger boarding a bus ***(Source: https://metropole.rennes.fr)***

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9 Planning

9.1 Gender mainstreaming in Vienna

9.1.1 Essence of the concept

Basic idea:

"Gender is used to describe the characteristics of women and men that are socially constructed, while sex refers to those that are biologically determined. People are born female or male, but learn to be girls and boys who grow into women and men. This learned behaviour makes up gender identity and determines gender roles" (World Health Organization, 2019).

Gender mainstreaming (GM) is a political strategy that tackles inequality between the binary genders by introducing a gender perspective in the content of different policy areas (Bettio & Sansonetti, 2015). It comprises actions taken to ensure that ways of life are based on equal conditions for both women and men.

While GM has been prominent in a few spheres – especially health care and gender pay gaps – the City of Vienna is dedicated to implementing it in all realms of public policy. This means that gender differences are also systematically taken into consideration in the areas of mobility, transportation and – because of its high relevance for these two fields: public space.

The process towards this current practice started in the 1980s with more systematic attention to the way in which men and women use public space and (transport) services according to their different needs, constraints, abilities and preferences. The importance of this has been underlined by the empirically supported fact, that woman and caregivers make nearly 50% more trips than men and non-care givers; they also accomplish their trips more often as pedestrians. Traditional traffic planning did not prioritise pedestrians and, as a consequence, has not done justice to women's mobility. Redressing traditional traffic planning with gender-sensitive traffic planning thus accounts for more complex trips and the reasons for travelling that woman and caregivers make. One such reason not previously considered in traditional planning, is the perception of safety and security which drastically influences the way in which women make their travel and route choices.

These insights were implemented in a number of pilot projects in different districts of Vienna to better facilitate pedestrian traffic and the design of safer public space. Later on, related experiences and lessons learned were increasingly incorporated into general principles, checklists, standards and routines related to all kinds of decision-making processes in Vienna.

Intended beneficiaries:

Gender-sensitive traffic planning aims to achieve equality for all genders, men, women but also lesbians, gay men, transgender men and women as well as people who do not fit into these binary

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categories. Beneficiaries also include a broad range of people, who also profit from related measures: Children, older people, disabled people, persons with walking aids, people pushing prams, etc.

Physical interventions:

Gender mainstreaming strategies for improved urban mobility are typically manifested in the following measures to improve pedestrian traffic:

- widening pavements,
- reprogramming traffic lights to give more time to pedestrians before car traffic resumes,
- increasing and improving pedestrian crossing facilities,
- installing lifts in public spaces where greater accessibility may be required,
- renovating pavement surfaces so that they are of better quality and are barrier-free,
- identifying and improving lighting in areas where pedestrians feel less safe,
- installing pram/wheelchair ramps at public staircases,
- redesigning public squares to facilitate easier walkability,
- redesigning and adding seating in public spaces,
- and finally, dividing road lanes to create space for bus stops so that people waiting at stops may be better protected from passing motorists and other pedestrians passing by.

The cumulative effect of these measures can be described as an improvement of the "network quality" along pedestrian routes. These measures may seem as standard improvements in the name of sustainable urban mobility, but their effects specifically impact women's mobility and are therefore gender-orientated.

Funding:

GM in Vienna is not a time limited project with a clearly delimited budget. However, GM efforts do cause expenses of course in the form of staff salary. The city's related commitment manifested at first in 1992 with the establishment of a dedicated unit for women's' affairs. This unit-initiated GM projects in various thematic areas, including planning and transport. Since 2005, the city has a "Dezernat Gender Mainstreaming" with three staff members.

In addition, the introduction of a concept called "Gender Budgeting" in 2005 followed the realisation that the City of Vienna needs to ensure that all 12 departments of the city administration need to pay attention to and account for the gender-specific impacts of their activities, especially of their spending decisions.

Business case:

The United Nations' Sustainable Development Goal #5 targets gender equality because women and girls represent half of the world's population and therefore half of its human and economic potential. Gender equality is critical not only for maintaining social cohesion, but also to build a sustainable and flourishing global economy where everyone has fair growth potentials. Attaining gender equity is thus more than a social justice pursuit; studies show the financial benefits of it in organisations too. Gender diversity correlates with profitability and value creation. Gender-diverse executive teams of organisations are likely to experience 15-21% above-average profitability than competing organisations (Hunt, Yee, Prince, & Dixon-Fyle, 2018). There is sound reason to believe that the top-

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down influence of GM in Vienna thus mimics the gender equality mechanisms and benefits of executive corporate teams and organisations. Surely, Vienna's GM efforts are part of the reason for the city's repeated high ranking in various global liveability rankings, thus increasing Vienna's attractivity for high skilled labour and business investment.

Main actors:

The city's Dezernat Gender Mainstreaming (DGM) – established in 2005 – is a very important actor who raises awareness, promotes inclusiveness and trains all other municipal departments in all gender related issues. The DGM, however, is not a hierarchically superior organisation with discretionary authority over other city departments; it considers itself more as a spider in a web, which reaches out to all other municipal units, including those responsible for urban planning, traffic and transport, housing, urban renewal, digital innovation, social affairs and many more.

Intellectual property aspects:

None. The City of Vienna have published guidelines free of charge and strongly encourages other cities to adopt GM practices.

9.1.2 Geographical context

Location:

Vienna is the largest city and capital of Austria. It is the 7th most populated city in Europe. It is located in the northeast of the country close to the borders with Hungary, Slovakia and the Czech Republic.

Socio-economic context:

Austria's GDP per capita and employment rate is high in relation to the rest of Europe (Famira-Mühlberger & Leoni 2013). Its positive economic ranking is partly due to its strong economic position before the 2008 financial crisis. Youth unemployment and the number of young people not in education, employment or training are also very low compared to other European countries.
Gender equality and the empowerment of women are major preconditions for economic growth and social development and even though unemployment is low, certain structural deficiencies have been apparent in Austria for some time, including a pronounced gender wage gap, particularly because women engage more in part time work than men.

9.1.3 Context conditions

Opportunities that contributed to the initiation of the project:

Vienna has a long tradition and self-image as a progressive, social-democratic city, which proved a fertile ground for GM ideas. It was the scene of a strong women's movement since the 1980s and saw women's politics first institutionalized in 1983 when Federal Chancellor Bruno Kreisky expanded his government with two state secretariats for women's issues. Later on, women were recognized as critical electorates in green parties too.

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9.1.4 Case history

The story told about the evolution of GM as a structural component of Viennese city politics starts with the exhibition „Who owns our public space – Everyday reality for women in the city" in 1991. It systematically examined the suitability of Vienna's public realm for girls and women in their everyday lives and received great public attention. The discussions sparked by this exhibition helped to raise awareness for some basic principles of gender-sensitive planning: Consideration for ordinary daily routine patterns, systematic recognition of the specific needs of different social groups (according to gender, age, social and cultural contexts), a differentiated analysis of existing data and detailed observations of people's lived reality.

In 1992, the administration of the City of Vienna established the Municipal Department 57: Vienna Women´s Affairs. Throughout the 1990, discussions in a number of fora, prominently so in the Council of Europe, facilitated a widely-spread realisation that gender mainstreaming can only succeed if it is considered and institutionally anchored as a horizontal issue, reaching across disciplines and departments.

In Vienna, this led to the establishment of the "Dezernat Gender Mainstreaming" in 2005, directly positioned at the heart of the administration. This top-down position makes it possible to centrally coordinate gender issues across the entire organisation. The DGM is a permanent three-person team that advises other departments on how to incorporate GM principles and practices into their current work programme. The team is responsible for training and enabling others to conduct GM activities within existing and future projects, rather than conducting separate GM activities by itself. However, from time to time the DGM does work in conjunction on other departmental projects if the scale requires it.

Departments across the City of Vienna have representatives within their teams that are dedicated to dealing with gender mainstreaming. For example, the statistics department has 2 people responsible for GM activities; the finance department has 3 people allocated to carrying out the tasks of Gender Budgeting including auditing; and the Urban Development and Urban Planning department has a pedestrian coordinator and pedestrian working group. Outside of the city administration, business groups are associated with city councils and councillors to also implement gender mainstreaming practices in the private sector. The routine consideration of gender practices at all levels of government has become mainstream. This creates continuity, longevity and independence from benevolent individuals and avoids the risk of GM being considered an add-on. Put positively, GM has become part of the city administration's DNA. However, GM has not created standards that are legally enforceable.

So far, over twenty mobility-related GM projects have been carried out by the Road Administration and Construction and Public Works Departments where the mobility needs of particular target-groups are identified and catered to using round tables, gender-specific pedestrian counts etc. Gender related issues have found their way initially into guidelines (e.g. "Guideline for a Safe City") and onwards into official checklists (e.g. "Factors of Subjective Perceptions of Safety"). The latter has led to the installation or improvement of 35,000 lights in Vienna in order to facilitate not only safe navigation at dark but also the recognition of faces of passers-by, which was found to be of particular importance for women, older people and children. Attention is also given to the careful design and

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positioning of footpaths, to the avoidance of "Angsträume" (spaces where people feel unsafe), the installation of ramps and lifts and all kinds of other infrastructural as well as micro-design aspects.

In short, considerations for the objective and subjective safety situation in planning processes has become standard and are being applied during planning processes for subway extensions, bus and tram stops, parks and public spaces. Related know-how has been acquired by staff in various departments and is available from the central Dezernat Gender Mainstreaming.

GM Pilot district Mariahilf

In 2001, the city council commissioned the *Centre for Everyday and Women's Planning and Construction* to develop a concept for a "Gender Model District". Several districts of Vienna expressed interest in testing GM in public spaces, but for capacity reasons only one "pilot district", Mariahilf, could be selected. GM measures were first systematically tested as a methodological approach in transport planning between 2002 and 2005 in the Mariahilf district of 1,48 km^2 with almost 30,000 inhabitants (Stadt Wien, no date)). Starting in 2002, residents helped to identify areas that could be improved based on the way that public spaces were used. The strategy was simple and relatively low cost, but its results allowed department-specific planning instruments and guidelines to be developed that could be used for gender mainstreaming in other planning fields. The implementation phase lasted until 2006 and included the construction of facilities to enable the safe pedestrian crossing at 60 intersections, more than 1 km of sidewalks were widened, the timing of 15 traffic lights was improved for pedestrians, physical barriers were removed at 14 public places, seating facilities were installed in a number of locations, the lighting of public spaces was improved, public places redesigned, handrails along stairs extended etc.

Figure 113: The district of Mariahilf where gender mainstreaming in urban mobility was implemented during 2002 – 2005. The success of which prompted a further 23 districts to undergo assessment for quality deficits in pedestrian networks (adapted from DI Elisabeth Irschik, 2008).

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GM was also incorporated as underlying principle in the Vienna Transport Master Plan 2003, which contains a detailed mobility chapter on paths and sidewalks. Its measures ensured that pedestrian infrastructure was equipped according to the type of mobility, purpose and gender. Among the quality standards introduced were the following criteria:

- specification of freely accessible passage width of at least two metres;
- the programming of light signal systems with a maximum of necessary walking speed of 1 m/sec across the intersection;
- statements on the value of sojourning in public spaces and provisioning for play and rest areas;
- the creation of car-free areas in sensitive areas like in shopping streets and squares.

9.1.5 Impact assessment

Do the local initiators consider the project a success?

The concept and policy approach of GM is considered a success by its initiators given its deep institutional integration in Vienna's administration. Particular success criteria include the ongoing GM activities and the continued usage of related tools and checklists. This includes the *Planning and Construction Guidelines*, the checklist *Factors of Subjective Perceptions of Safety* or the *Fairness Check*. Other success criteria relate to the monitoring and evaluation of individual GM activities. A brief guideline for gathering, interpreting and using data for gender-related indicators is provided by the DGM.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

A city-wide questionnaire is conducted every three years involving 8000 randomly sampled participants. The questionnaire focusses on quality of life and subjective perceptions. Since GM has been introduced, a measurable improvement of perceived safety in the city during transit could be detected. For example, between 2008 and 2013, the perception of safety in the city among women increased from 64 % to 70 % (Stadt Wien, 2015, p. 27) Although this might merely be a correlation and proof of any causal link, the intended beneficiaries have also self-reported much support for and enthusiasm at the city's inclusivity efforts. Such feedback is collected informally during stakeholder engagements of individual GM projects.

9.1.6 Transferability considerations

What are key conditions for the transfer of the key concept?

The goal of GM is not to reinvent the wheel of planning but to better incorporate gender perspectives into existing procedures. GM should thus be introduced not as an external department, but into each area of expertise by training experts to take into account gender roles and impacts into their normal work processes. Therefore, self-reflection is required to identify what an individual or team are experts on, where gender knowledge gaps lie, and how they may incorporate GM into their routine practices.

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There are no unsurmountable obstacles to a similar systematic pursuit of gender equality as in Vienna. Followers should pay attention to the following basic recommendations:

1. Integrate GM principles system-wide (not one department next to many others);
2. Mobilise knowledgeable facilitators and political allies who can assist in the transition of the new approach with administrative and experiential support;
3. Organise adequate data collection and observation of the needs of different genders;
4. Differentiate between situations when it is best to ask people what they want and when it is best to ask them what they do, so that their mobility and spatial planning needs may be derived and incorporated into existing activities and projects;
5. Identify and harness synergies with the needs of other marginalised groups (e.g. ethnic minorities, disabled, young or old people, LGBQT groups;
6. Be aware of the limitations to enact administrative change, including limits of time and funding. Try to counteract such problems with creativity and endurance;
7. Find and motivate leaders who can execute a top-down approach.

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9.2 KOLLA (Kollektivtrafik för alla) project

9.2.1 Essence of the concept

Basic idea:

KOLLA – Public Transport for all, was a six-year project started in 2005 with the aim of improving the accessibility of public transport in the City of Gothenburg. The basic idea behind the project consisted in influencing the travel behaviour and attitudes of people with reduced mobility to travel more with the conventional public transportation services rather than moving around the city with the special/dedicated transport services (i.e. taxi or wheelchair buses specifically operating for the people owning special travel permits), which are much costlier to operate and maintain. To achieve this goal, the City of Gothenburg, in particular the Department for Special Services (Göteborgs Stad Färdtjänsten) and the Traffic Department, in collaboration with the Regional Public Transport Operator (Västtrafik) from 2005 started to implement a number of different measures/subprojects for improving the inclusivity and accessibility of the public transportation system of Gothenburg. These measures included among others: improvement of the physical accessibility of PT stops and pedestrian paths, operation of clean vehicles (i.e. bus and trams), extension (in terms of coverage, fleet dimension and call centre capability) of the Flexline (Flexlinjen) Flexible Transport Services. Moreover, the following support measures have been carried out: customisation of the disability travel permits (with detailed indications on the individual physical problems and mobility needs), training of all the people working at the different levels of Public Transport, for improving their understanding of the needs of disabled and elderly groups and how to meet their needs. The collaboration with a set of relevant stakeholders such as the national organisations for people with disabilities, visually impaired or elderly has been one of the key success factors, as well as the efforts made in raising awareness about the measures implemented for improving the accessibility. The Project, recognised as one of the best practice examples of inclusive mobility at National and European level, helped the city of Gothenburg win an award (Access City Award 2014) in 2014 for Europe's best accessibility project.

Intended beneficiaries:

The KOLLA Project has had as primary target the Gothenburg citizens with any difficulties in using the conventional public transportation services. These include people with little physical disabilities, people in wheelchairs, blind people, elderly, etc. In particular, one of the main targets of the project had been people who hold a personal travel permit due to their disability condition, which allowed a number of journeys by taxi cab and wheelchair-accessible mini buses at a subsidized price. Indirect beneficiaries are also tourists, who have appreciated the improvement in PT and consequently now use the PT services more often.

Techn(olog)ical aspects:

An analysis of the conditions of pedestrian paths and public spaces and the related accessibility issues was conducted before starting with KOLLA measures. The pedestrian paths selected were digitally photographed, measured and added to mapping software owned by Gothenburg city. About 6,500 'easily remedied' obstacles were inventoried, each one provided with a unique ID code

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and put into a desktop computer for processing. The data were verified by specific software that automatically generated the related action report. The report, containing photos and information on each obstacle, was delivered to the Gothenburg officers of the Department for Special Services for assessment.

Funding:

The KOLLA Project was financed mainly by the City of Gothenburg. Västtrafik (the Regional Public Transport Operator) and the Traffic Department contributed with a budget of € 34.5 M to improve the accessibility of the street environment and PT stops. In addition, Västtrafik, reserved a dedicated budget of € 4.7 M to cover the costs for adjusting and renovating ramps (€ 1.4 M), improvement of bus stops and signs (€1.7 M) and real-time signs at stops (€1.6 M). The City of Gothenburg, finally, purchased 40 low-floor trams at a cost of approximately € 75 M (75% of this budget was financed through state grants).

A new tariff system was planned to be introduced as part of the project, but the Department for Special Transport rejected the proposal, citing fears that the system was 'too segregating'.

In addition, it is important to note that the traffic supply plan assumed that the project would result in large reductions in the number of special transport services and consequently great savings for the City of Gothenburg. Actually, the number of special transport services did not decrease to the extent that the original estimation assumed and the financing of the project was re-evaluated in the course of the project (and consequently a part of the planned measures was delayed or not completed at the rate that they were originally planned).

Main actors and their interests:

The KOLLA project was a collaborative project run by two departments of the City of Gothenburg: The Department for Special Services and the Traffic Department, and the Regional Public Transport Operator (Västtrafik). In the project, the Park and Nature Department and the Swedish Road Administration also played an important role.

The Gothenburg Department for Special Services and the KOLLA management team, which included officers of the Special Service and the Traffic Department, of Västtrafik and the project managers of the different sub-projects, guided the project's strategic development. In particular, Gothenburg Department for Special Services had project manager responsibility and the major financial responsibility for the project; the Traffic Department had major responsibilities in relation to investments in infrastructure (such as renovation of bus and tram stops); Västtrafik was responsible for the training of drivers, technicians and other personnel, adaptation of vehicles and redefinition of the Flexline services.

Within the KOLLA project, continuous involvement and discussions were conducted with relevant users' organizations. The conversations took place primarily through the board's user council of the Department of Special Transport Services, where delegates of different user organizations were represented. In particular, the board council had representatives from the Participation Handling Force and Freedom of Movement (Delaktighet Handlingskraft och Rörelsefrihet (DHR)), the Disability Organizations' Cooperative Bodies (Handikapporganisationernas samarbetsorgan (HSO), the Pensioners' National Organization (Pensionärernas riksorganisation (PRO plus SPF), the Swedish

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Confederation of Swedish Industries (Synskadades riksförbund (SRF), and the Young Disabled and the Young Visible-impaired West Associations.

9.2.2 Geographical context

Location in Europe, within country and region:

The KOLLA Project was developed in the City of Gothenburg. Gothenburg, situated in the Southern part of Sweden, is the capital of Västra Götaland county. With a population of around 500,000 inhabitants, is the second most populous city in Sweden after Stockholm and the fifth most populous in Northern Europe. Considering the metropolitan conurbation, the inhabitants are about 940,000.

Topographic situation:

Gothenburg is located on the west coast of southern Sweden at the mouth of the Göta älv river, which crosses the city and shapes the orographic right the island of Hisingen, fifth-largest island of Sweden, which is connected to the other part of the city by two bridges and an underpass. The city located roughly halfway between Oslo and Copenhagen, capitals of Norway and Denmark respectively, thanks to the mitigating effect of the Gulf Stream, has a rather mild climate in respect to the other Northern European cities.

Socio-economic context:

Thanks to its geographical position, Gothenburg is the largest and most important port in the Scandinavian regions and trade and ship traffic have always produced wealth for the city; the second pillar on which the city's economy rests has always been the manufacturing industry: some of Scandinavia's major industrial groups such as AB Volvo, SKF and other well-known technology companies such as Esab and Hasselblad AB originate and their headquarters in Gothenburg.
It is estimated that by 2035 Gothenburg will have 150,000 more residents and 80,000 more jobs, and the city will be the core of a labour market region with 1.7 million inhabitants.

9.2.3 Context conditions

General context conditions before the start of a project:

During the late 1990s and early 2000s, the City of Gothenburg faced a marked increase in the number of trips taken by persons with different disabilities, also as consequence of a demographic development characterised by an aging population. In the same period, the operational costs of the special transport service increased substantially with the immediate consequence that the service revenue was not enough to compensate the demand volume and operation costs. For a number of years, the Special Transport Service Authority had problems for reaching a budget in equilibrium. The administration thus started to think about how the travel service should handle an increasing number of travellers keeping steady the operation costs.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

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As previously announced, during the period from 1996 to 2004, the Department for Special Transport Service reported a negative balance every year (except three years when extra allocation of municipal grants contributed to a positive result). There were thus strong incentives to launch the KOLLA project. The Traffic Supply Plan, in particular, showed the positive economic consequences of increasing the accessibility of public transportation. In the case of a cost comparison between the different types of transport, the operational cost of a trip with a flex-line bus (the public flexible transport service) was 7 times higher than the cost of a trip with conventional public transport. For a special transport service by taxi, the operational cost was 14 times higher and for wheelchairs 21 times higher. By transferring the citizens from travelling with expensive solutions such dedicated services to travel with the conventional public transport, introducing a public transport system accessible for all, the economic conditions could be restored and, at the same time, the conditions for an equal society could be created.

Opportunities that contributed to the initiation of the project:

At national level, the Swedish government started to think about a new transport policy for creating an inclusive society and ensuring people with disabilities (of any kind) the same travel opportunities of the other citizens. In particular, in the year 2000 the Swedish government came to an agreement to make the transport system accessible for all. This decision and the plan 'From Patient to Citizen: A national Action Plan for Disability Policy' stipulates that public transport should be accessible for people with disabilities in the year 2010. In addition, the Swedish National Board of Housing, Building and Planning's regulations, HIN 1, published in 2003, dealt with "*Removal of easily-remediable obstacles in areas of public access and in in public spaces*".

In parallel, in 2003, a specific group of the City of Gothenburg was committed to analysing how the transport system could be made more accessible for people with reduced mobility (and less expensive for the Administration). It resulted in the plan "Investigation Traffic Supply Plan 2005-2010, Public Transport - also for the disabled (Utredning Trafikförsörjningsplan 2005-2010, Kollektivtrafik – även för funktionshindrade), that stipulated that public transport should be accessible for people with disabilities by the year 2010. The traffic office has thus made an interpretation of the national regulations mentioned above and developed a specific action plan in accordance with the general advice available linked to the regulations.

The Traffic Supply Plan finally resulted in the definition of the KOLLA macro-objectives, that can be summarised in three main one:

- Everyone should be able to access and use the public transport services
- 98% of Gothenburg's citizens should be able to go with the conventional fixed-route public transport services
- The distinction between dedicated transport services and conventional public transport should not exist.

Political context:

Initially, the Department for Special Transport Services had to devote a great deal of time for ensuring that the project received a realistic funding and partly to anchoring the purpose of the project among the city's politicians and relevant user organizations. It can be seen to some extent as a result of no formal decision being made as regards the project approval and thus there was some doubt as to

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whether the project had a political foundation or not. In particular, the Department pedagogically tried to explain that the people with reduced mobility would not be forced into the conventional public transport services and that the improvement in the transport accessibility would rather give the users more travel opportunities. Gradually, it became increasingly clear that the benefits of a more accessible and inclusive transport environment did not only benefit the city's users with special transport needs, but also meant an improvement for all users in the public transport system. In particular, it was noted that with the project measures, the public transport became more attractive to tourist: this has been an important aspect that encouraged the good perception of the project.

Financial context:

Although the Department for Special Transport Services and the Traffic Department did not receive an official assignment to carry out the KOLLA project, they received an unofficial approval when the financial plan for the year 2005 had been emanated by the Municipal Authority, reporting a dedicated budget for the KOLLA Project.
When the project budget had been provided by the Department for Special Transport Service, the Traffic Department and Västtrafik, it came out that the decrease in the operational costs of the special transport services, that accessibility adjustment would lead to, was expected to finance the project. In particular basing on the previsions made, which later turned out to be too optimistic and simplistic, there were expectations that the project would in the long term be self-financed through cost reductions. It turned out that the reduction in the number of trips did not occur at the rate calculated.

9.2.4 Case history

Initiation phase:

In April 2004, Bo I Jonsson (the Director of the Travel Service Department) and Malte Segerdahl, chairman of the same Department, informed the local administration about the traffic supply plan and its visions. However, no formal decision to initiate the KOLLA project and implement the measures in the plan was never taken up in either the City Council or the municipal government. The issue was, however, dealt with in the municipal council's bureau where the accessibility adjustments advocated in the traffic supply plan were discussed. One year later, the unofficial approval was given by the fact that in the financial plan emanated by the administration reserved a dedicated budget for the KOLLA Project. First of all, a steering and management group has been set up, which included the Department for Special Services and of Traffic and the representatives of Västtrafik and Gothenburg's Railways. The role of the steering group was primarily to allocate responsibility for the various sub-projects to each administration. The Department for Special Services and the Traffic Department also had to yearly agree on the overall budget of the project and to set the overall framework for how investment and operating funds would be distributed among the various sub-projects. In parallel, before implementing the different measures for improving the PT accessibility, the city of Gothenburg performed an 'obstacle inventory' to identify the areas, streets and PT stops accessibility issues. In particular, the study consisted in selecting at least one pedestrian path in each residential area that would lead to each adapted bus stop, particularly one that had good conditions for people with reduced mobility in terms of width and gradient.

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Pilot phase:

The KOLLA Project didn't have a proper pilot phase. In 2005, once the different sub-projects were identified and the related funding allocated, the measures for improving the accessibility of the public transport systems started to be implemented. The only pilot phase was carried out on the bus line n. 31 and tram line number 6. In these two lines, the aim was to provide a "fully accessible" transport service, i.e. by low floor vehicles, with automatic on-board announcement, all stops accessible, and PT staff on board (for at least one third of the vehicles) which could support people while changing between different vehicles for pass to another line. Actually, this pilot did not have the desired effects, largely due to the fact that the pilot projects were initiated before the vehicles and bus stops were fully adapted. The demand for assistance and hosts was much lower than expected, and that pilot was therefore closed early.

Roll-out phase:

The KOLLA Project consisted of a large number of sub-projects, different in scope and measures, that can be subdivided in 5 main areas of intervention:

1. Infrastructure – Stops and pedestrian paths
   In relation to the infrastructure, the KOLLA project aimed to improve the accessibility of all the tram stops, all the main bus stops and the 70 largest bus stops; in parallel, the project improved the walkways related to these stops by actions of what is called in the Swedish National Board of Housing, Building and Planning's legal requirements " removing of *easily-remediable obstacles* " within 200 meters from the stops.
   Examples of these kind of measures implemented in the project are reported in the pictures below.

Figure 114: Higher Platform for facilitating boarding and deboarding (Source: http://www.eltis.org/discover/case-studies/improving-accessibility-transport-goteborg-sweden)

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Figure 115: Pedestrian paths and platform edge marked with clear contrast (Source: Landskapsgruppen AB, Emma Johansson eller Roland Ahlgren där ej annat anges)

Figure 116: Improvement of adjacent pedestrian crossing and walkways and elimination of small obstacles on the pathways (Source: Landskapsgruppen AB, Emma Johansson eller Roland Ahlgren där ej annat anges)

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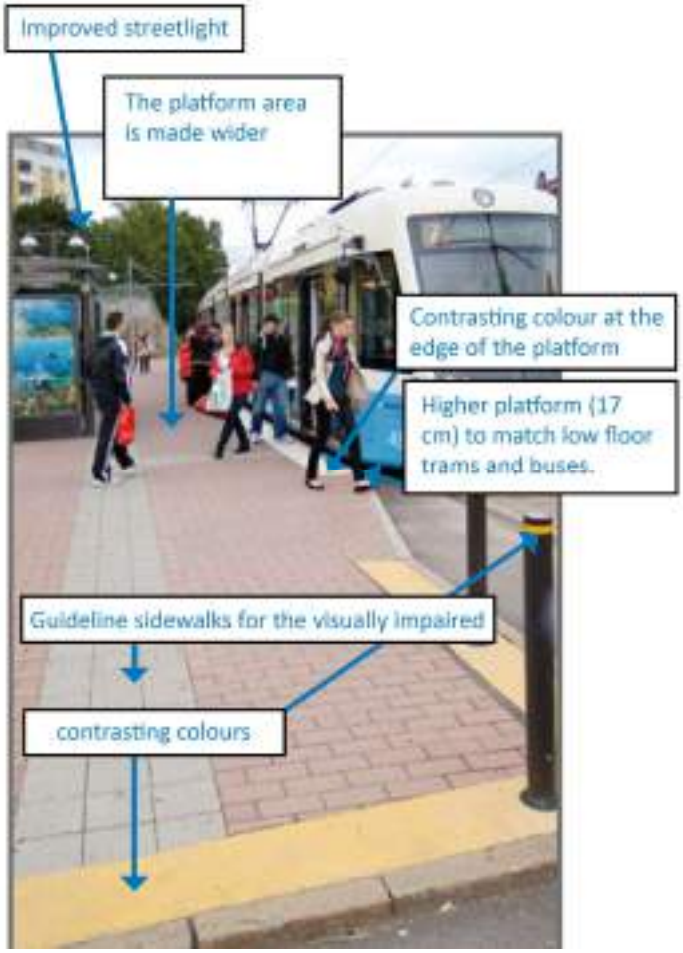

Figure 117: Example of a "fully accessible" PT stop (Source: Peter Svenson, Stig Hedström, Lillemor Bulukin)

2. Flexiline service

   The Flexiline is the flexible transport service of the City of Gothenburg for travellers who, for various reasons, find it difficult to travel with conventional public transport.

   Within the KOLLA project, the aim was to expand the geographic coverage of Flexiline to all districts in Gothenburg to ensure the access to PT transport to all the citizens. According to the traffic supply plan, all the residents should have been able to travel with the Flexiline, and the price of a Flexiline journey should have been the same of the conventional PT service. It has to be notices that even before the KOLLA project started there was a plan for expanding the Flexiline, thus with the KOLLA project it was decided to mainly follow the existing plan. The Flexline has been available since autumn 2009 in all districts in Gothenburg. Today there are 20 lines compared to 8 when KOLLA started.

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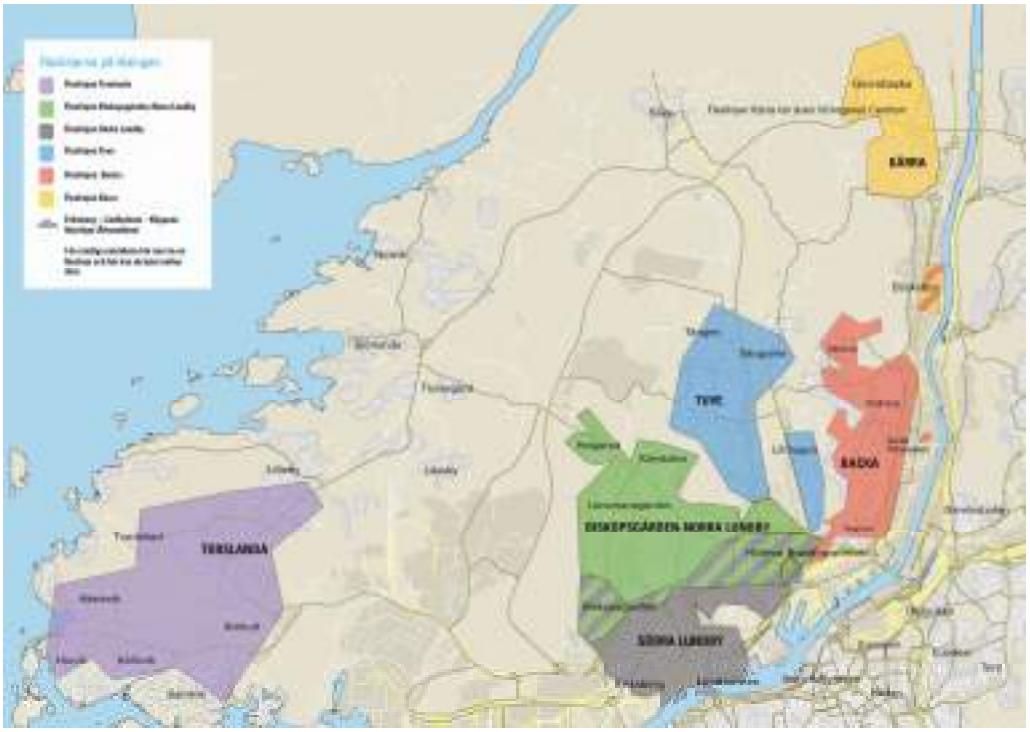

Figure 118: Map of the Flexiline lines in Hisingen (Source: https://goteborg.se/wps/portal?uri=gbglnk%3aGBG.Inv)

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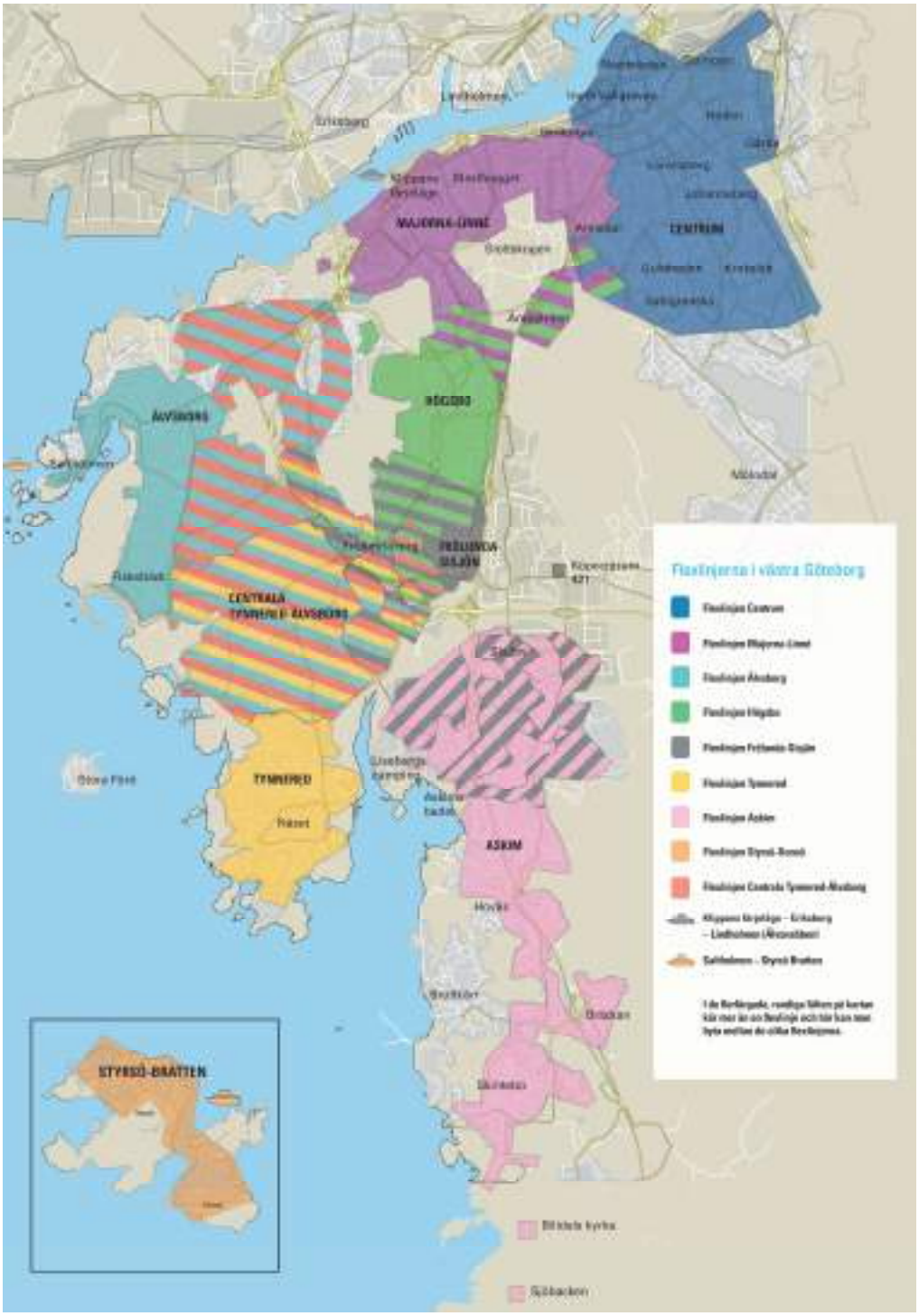

Figure 119: Map of the Flexiline lines in the southern Gothenburg (Source: https://goteborg.se/wps/portal?uri=gbglnk%3aGBG.Inv)

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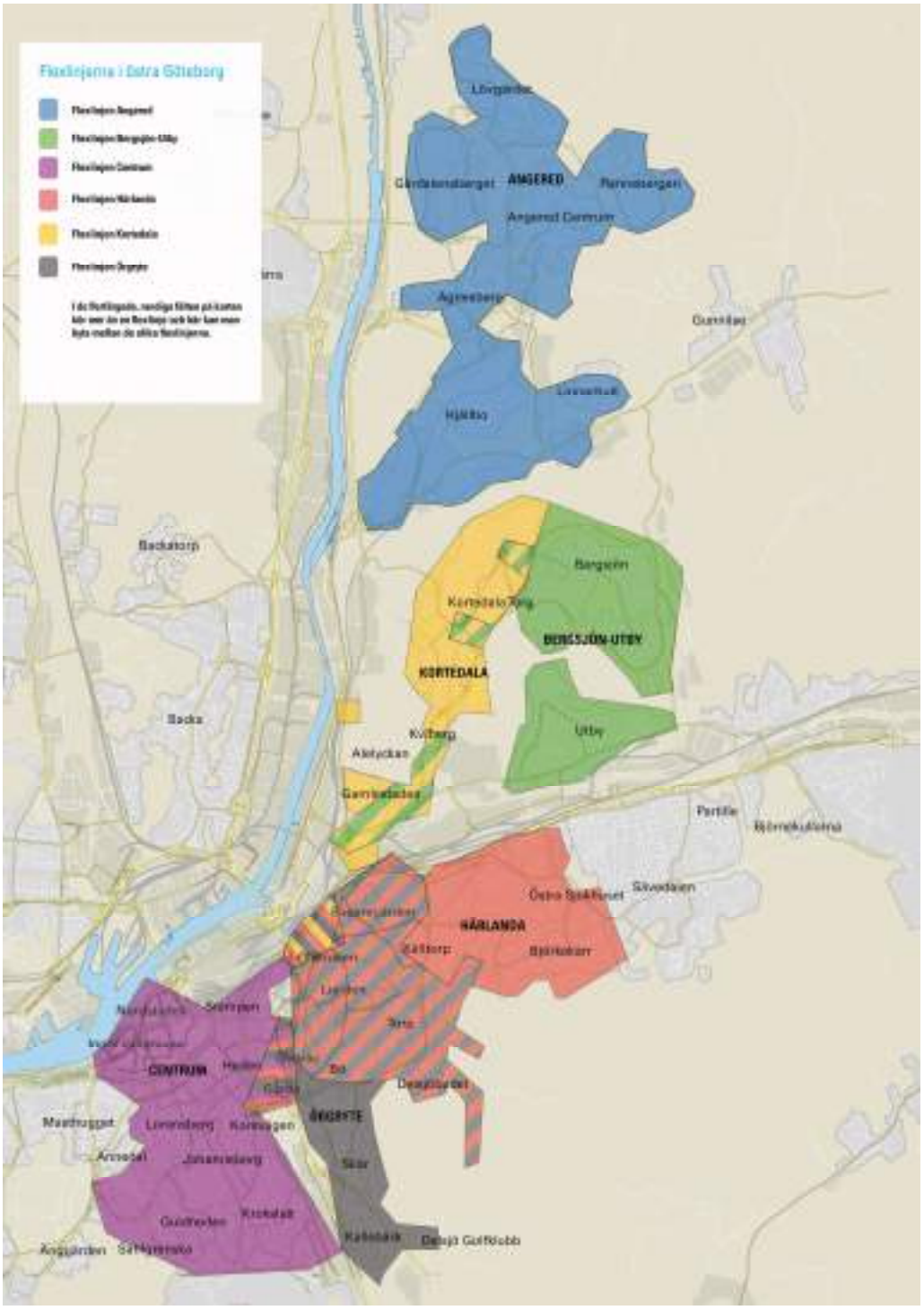

Figure 120: Map of the Flexiline lines in the northern Gothenburg (Source: https://goteborg.se/wps/portal?uri=gbglnk%3aGBG.Inv)

3. Vehicle accessibility

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Three main measures were implemented to improve the accessibility of the vehicles: replacement of older vehicles with newer low-floor vehicles, installation of access ramps (to help the entry and exit of people in wheelchairs) and improved provision of travel information.

As regards the low-floor vehicles, the share of buses with low floor in 2005 was 86%, whereas five years later it reached 100%. The share of trams with low floor was 51% in 2005 and in 2010 it reached 64%. The main reason why the percentage increase of low-floor trams was lower compared to buses is that the tram services, in those years, had been greatly increased as Gothenburg aimed to double public transport by 2020, which meant that the old high-floor trams were not been able to be scrapped.

Figure 121: Low floor vehicles (Source: Landskapsgruppen AB, Emma Johansson eller Roland Ahlgren där ej annat anges)

As regards the access ramps, since June 2010 all low-floor trams have electric wheelchair ramps and wheelchair space. The user has to press two different buttons to use the ramp. All buses have step-free access and a manual ramp.

Figure 122: Electric and manual ramp for helping people in wheelchairs (Source: Peter Svenson, Stig Hedström, Lillemor Bulukin)

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Voice announcements at the PT stops and onboard were requested by user organizations who pointed out that it was a basic condition for their members to be able to travel independently. Announcements on buses, trams and stops make it easier for the visually impaired, for example, to get the necessary information about where they are and what vehicle they should go on. At the bus and tram stops, information about the line number of the coming tram or bus and the destination of the vehicle should be announced with speakers. On the vehicles, information about the next stop must automatically came from the speakers and on digital signs. Over the course of the project, a clear improvement took place in this area and by 2010, around 90% of vehicles had automatic voice announcements.

4. Special travel permits

   One of the key issues in the KOLLA project has been the travel permits. The traffic supply plan describes the need for more individually adapted travel service permits in order to be able to implement the visions of the project. This would be achieved through an adapted IT support, in-depth collaboration with the users, and new implementing regulations.
   However, these objectives were not realized, mainly because the project considered that such an application could be contrary to current legislation. In addition, another factor that made it difficult to obtain differentiated permits was the difficulty in developing the IT support. The idea was to develop an advanced software that allows the travellers to be referred to the kind of vehicle that best suited (economically and also considering the need of each individual) that day. The reference would depend on factors such as infrastructure, weather, topography and more. Anyway, the software resulted difficult to be realised and was not developed.
   With the aim of making the STS permits more customised, the inhabitants were divided into three types of users. Those who on their own are able to travel by bus and tram under certain conditions, those who are able to go with the help of a fellow traveller, and those who have a medical condition that let them choose how to travel.
   During the project period, the total number of permits has decreased, especially for passenger cars. The trend from 2005 through 2010 is reported below.

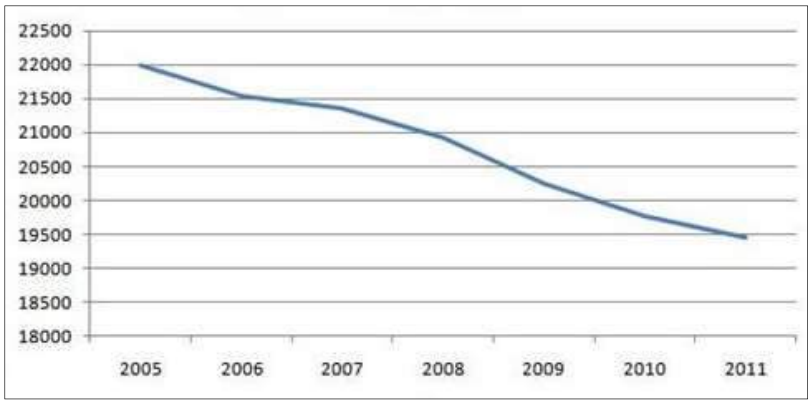

Table 8: Trend of the number of special travel permits over the course of the KOLLA project

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5. Staff training

   This sub-project aimed to lead the PT staff to gain a greater understanding of the need of the mobility impaired people and to encourage the staff in spending more effort in helping people with special mobility needs. Since January 2006, approximately 2,700 people who work at the Department for Special Service, the Gothenburg Railways, the Traffic Department and Västtrafik have undergone training courses. These trainings have been carried out by instructors from the Gothenburg Railways in collaboration with representatives from the user organizations. About 300 training session, different in terms of scope and design, depending on which staff category participated, have been developed. In particular, three types of training have been carried out:

   - One-day training for staff with close customer contact such as drivers, inspectors, traffic information officers and staff at the travel service's office. In total, approximately 2,000 people participated at these courses.
   - Half-day training for technical personnel (mainly back-office personnel). About 300 people have participated.
   - Half-day training in seminars for other staff, staff at managerial positions or traffic planners. About 400 people have participated.

Figure 123: Gothenburg PT staff (Source: Peter Svenson, Stig Hedström, Lillemor Bulukin)

Scaling-up and replication phase:

After the end of the project, the City of Gothenburg continued to work to increase the accessibility of the PT system for people with disabilities. A proposal was made for setting up a political steering group and an official group with representatives of interested parties to further drive the development of a more inclusive transport environment. Some vision goals for the collaboration were:

- Continuous review and rebuilding of stops and walking paths, including those stops that require larger resources.
- Continuous driver and staff training
- 100% low floor vehicles in public transport.
- Coordinated payment system in public transport.
- Increased coordination in the communication efforts to further stimulate the transfer of travellers to public transport and to Flex Line service.

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9.2.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

The KOLLA project contributed with a broad set of measures to support and unpack an individual's ability and willingness to independently move in society with public transport services. The main benefits are that people with reduced mobility, and all the citizens of Gothenburg, are now able to move more freely throughout the city.

The effects of the measures implemented within KOLLA, which range from more accessible vehicles and stops to an expanded flex-line service and individual support in the form of training or escorting, are tangible. The special transport service permits are assessed more individually, considering the kind of vehicles a person is able to travel with. The Flexline operates in all the areas of Gothenburg. Finally, Flexlinjen has become free for pensioners with special mobility needs and other public transport services have become free for all pensioners in Gothenburg.

In many ways, KOLLA has directly (and indirectly) improved the individual's ability to move around in the city and in the society. The accessibility improvements are summarised in the table below.

	Before KOLLA Project	After KOLLA Project
Number of travel service permits	22 000	19 450
Travel service permit	Not individually adapted	Personalized
Number of special travel services trips	717 000	538 000
Accessible stops	40% of the tram stops 10% of the other major bus stops	90% of the tram stops 100% of the other major bus stops
Low floor and/or ramps	50% of the trams and 86% of the buses have low floors	62% of the trams and 100% of the buses have low floors and ramp
Automatic on board voice announcements	50% of the vehicles have automatic voice announcement	90% of vehicles have automatic voice announcements
Number of flex line	8	20
Number of Flexlinjen trips	58 000 (in 2005)	158 000 (in 2010)

Table 9: Overview of accessibility improvements due to the KOLLA Project

Within the KOLLA project, there has been a continuous dialogue with user organizations, especially in relation to the organisation of training courses. This resulted in the development of a broad network and well-functioning forms of collaboration. This has been basically a positive result of the fact that the policy instrument, i.e. the traffic supply plan, and the KOLLA project addressed the accessibility issues of public transport based on a variety and different approaches and perspectives.

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At the end of the project, an extensive network of contacts has been created between the users' organizations, the planning authority and the PT operator.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The KOLLA measures contributed to improving the sense of community and inclusion in the Gothenburg citizens and helped people with any kind of special mobility needs to understand that it is possible to travel with PT like everyone else despite disabilities.
From a traveller's point of view, KOLLA has meant significant changes. The permits have been individually adapted, the Flexline has been expanded and the accessibility to public transport has been strengthened. Despite some concerns among the user organizations that KOLLA means a reduction in the possibility to use the special transport services, surveys show great customer satisfaction with both the travel experience and the licensing process. Also, the staff training has been positively perceived: a recent passenger survey showed that satisfaction with how drivers treat passengers and drive is now at 92 per cent – a 5 per cent rise since the surveys started in 2008.
The established user councils have resulted in improved and deepened forms of cooperation and that there is now a clear forum where travellers can express their views and where new accessibility adjustments can be communicated. After the termination of the project, the travel service administration has continued to work with the users in a newly established council for disability issues.
The traveller's surveys carried out within the framework of the KOLLA project have led to the collaborative organizations having a clearer picture of the difficulties that mobility-impaired travellers experience when traveling with public transport.

9.2.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

One of the key constraints for replicating the project approach and measures could be the lack of resources. The KOLLA project had a total budget of around € 30 M, without considering the renewal of the fleet, and in cities of around 500 000 inhabitants it is always not easy to allocate such a budget.

What are key conditions for the transfer of the key concept (or elements thereof)?

The key conditions for the transfer of the key concept of the KOLLA project can be summarised in the following:

- Consider the transport accessibility in its broad context. The KOLLA project has been unique in that the project has taken a holistic approach to the accessibility issues focusing on both adaptations of the infrastructure and on soft issues such as the drivers' training, improvement of user information as marketing and communication
- Awareness raising measures on travellers: during the KOLLA project, several sub-projects have in various ways worked for informing and influencing people to use more the conventional public transport services. In particular, several initiatives have been carried out aimed at helping insecure travellers to try out fixed route public transport or Flexlinjen. For example, in 2006 an initiative called "Travel training" has been developed addressing the citizens of Gothenburg who, for various reasons, feel insecure or have difficulties travelling

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with public transport. The goal was to help people to be able to travel on their own and thereby increase their mobility providing a traveling companion as travel coach which could, assist the individual while making the first trips by tram, bus or ferry, or teach how to get on board with a walker, how to buy a ticket, etc.

- Establish the network. Within the KOLLA project, continuous discussions have been conducted with the users' organizations to discuss measures and take in opinions. A dedicated travel service board's user council was set up, where representatives of the user organizations and the project managers were joined. The involvement of such associations constituted the basis for keeping a foot on the ground and for carried out the most effective measures to tackle the accessibility issues and answer to user needs.

9.2.7 Further reading on similar cases

Toulouse (France): Improving the accessibility of public transport

Toulouse's public transport authority Tisséo around 2007 carried out a set of measures with the aim of assessing the overall accessibility of the public transport network, proposing a range of measures to improve accessibility in line with the national legislation on accessibility for disabled persons, and defining concrete objectives (in terms of vehicle accessibility, station access, modal change, dedicated services etc.) to ensure high-level accessibility to the entire public transport network.

https://civitas.eu/measure/improving-accessibility-public-transport

SIMON EU Project

SIMON was a demonstration project, with four large scale pilots in Madrid, Lisbon, Parma and Reading aiming at promoting the independent living and societal participation of mobility impaired people in the context of public parking areas and multiple transport modes, through the adoption of specific navigation information and access-rights management solutions.

http://simon-project.eu/

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9.3 Wiener Linien Barrier free mobility

9.3.1 Essence of the concept

Basic idea:

Wiener Linien - the public transport operator in Vienna - is seen as a forerunner in making public transport accessible to all users. The facilities and components that make Vienna's public transport accessible are the barrier-free fleet of buses, metros and trams, as well as the design of stations, the passenger information and the orientation systems. The barrier-free Viennese public transport system is mainly made of four different components and relative measures:

- the ultra-low floor trams, buses and underground trains and the colour contrasts used in the vehicles; the tactile guidance system;
- the Poptis (Pre-On-Post-Trip Information System) guidance system developed in cooperation with the organisation for the blind make it possible for the blind and visually impaired individuals to receive updated news and other relevant information through the text-to-speech website which reads out the text automatically;
- the accessibility apps such as the so-called "qando" (passenger information) that has a screen reader for visually impaired people.
- The 865 Ticketing machines in metro are also accessible for wheelchairs users. The user interfaces include QR codes which can also be used for the blinds. Trainings are also foreseen for the whole personnel who works for Wiener Linien in order to be prepared when assisting people in wheelchairs during boarding and alighting from vehicles.

Figure 124: Accessible ticket machines for wheelchair users

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Figure 125: Vienna's metro ultra-low floor vehicles

Intended beneficiaries:

The main beneficiaries of the Wiener Linien accessibility plan are people with reduced mobility, blind and visually impaired people.

Techn(olog)ical aspects:

All metro stations in Vienna are 100% accessible and every second tram approaching the stop is accessible. To know if the tram approaching is accessible for visual impaired and people on wheelchair it is sufficient to read the real-time information panel where the information is provided.

Funding:

The average cost of multisensory info-points is 50,000 euros.

Main actors and their interests:

The public transport operator.

9.3.2 Geographical context

Location in Europe, within country and region:

Vienna is the capital of the Austrian Republic, of which it constitutes a federal state in itself. It is divided in 21 districts or city districts (Bezirke) and has 1.842.000 inhabitants - more than a quarter

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of the entire population of Austria (2.6 million within the metropolitan area). It is the 7th largest city by population within city limits in the European Union.

Topographic situation:

Vienna is situated at an average height of 170 m. a.s.l., at the foot of the wooded hills of the Wiener Wald, on the right bank of the Danube and at the border between the Vienna basin to the south and the Marchfeld plain to the north. Vienna has a continental climate, with cool winters (January 0 °C), moderately hot summers (July 19,6 °C) and not much rain (619 mm per year).

Socio-economic context:

Vienna is the most important cultural, economic, and political centre of Austria. About a quarter of the national workforce works in Vienna and its surrounding area, and about a third of the GDP is produced in its district. Thanks to its position at the convergence of important roads, railways, rivers and airways, Vienna is a conspicuous commercial emporium and industrial and financial centre: the industries, which are concentrated in particular in the suburbs of Florisdorf, Stadlau, Simmering, Favoriten and Liesing, are active in the food sectors, textile, metalworker, chemical, electrotechnical, steel, clothing, graphic-editorial. Craftsmanship is also flourishing, specialising in the production of porcelain, jewellery, glassware and musical instruments. However, it is the tertiary sector that employs the majority of the workforce, and in particular the activities related to public administration. Vienna is the permanent seat of important international organisations such as the United Nations Industrial Development Organization - UNIDO; the International Atomic Energy Agency – IAEA; and the Organization of the Petroleum Exporting Countries – OPEC. Tourism attracts over two million travellers a year. Over the last few decades, there has been an increasing influx of foreign workers into the labour market.

9.3.3 Context conditions

General context conditions before the start of a project:

Already 20 years ago, Wiener Linien started working on the accessibility of the network together with The Austrian Association in Support of the Blind and Visually Impaired.

Sense of urgency; problems that were perceived as pressing (by whom?), in particular (any risks of) exclusion for certain citizen groups:

The cooperation between Wiener Linien and other associations has led to an increased awareness for the needs of people with restricted mobility (PRM).

Opportunities that contributed to the initiation of the project:

The Austrian national law played a key role in this regard.

Political context:

The political will was and the support from the city of Vienna was key to make the project a success.

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Financial context:

9.3.4 Case history

Initiation phase:

The whole process of making Vienna's public transport full accessible, was preceded by several projects where the Austrian operator worked closely on the accessibility themes together with disability associations from the very beginning so as to be able to fully understand all needs of customers and to deliver the best service to everyone.

Pilot phase:

The first step was the development of tactile guidance in metro stations. The collaboration with disability associations continued through the POPTIS (Pre-On-Post-Trip-Information-System) project mentioned above. It guarantees orientation for blind and visually-impaired people both within and right next to the metro station. Other projects that paved the way were "Ways4me", a barrier-free application for mobile devices and one called "AIM4IT". This last consists of an app which warns the user if the transport is disrupted. They receive an information and also alternative routes recommendations on their telephones via a text-to-speech channel.

9.3.5 Impact assessment

Do the local initiators consider the project a success? What are their success criteria?

Ensure a fully accessible transport for all was considered a key goal to achieve for Vienna's public transport operator.

Do the intended beneficiaries perceive the project as effective measure to tackle their risk of exclusion?

The large number of projects conducted together with blind and visually impaired users of the public transport system in Vienna has led to an improvement of their mobility, and participation in social life.

9.3.6 Transferability considerations

Are any context conditions particularly case specific, which might limit transferability?

The are no context conditions that can hamper the replicability. The transformation of an (almost) fully accessible public transport system for all, is a long-hterm process and it requires the collaboration of all local stakeholder and continues dialogue with the disability associations to ensure the right adaption to the local context.

What are key conditions for the transfer of the key concept (or elements thereof)?

Good cooperation with the national association for blind people (Hilfsgemeinschaft) was key to ensure the full success of the project. The successful collaboration between the public transport

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operators and the associations representing passengers with special needs is key. But also the political and financial support from the city.

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