INCLUSION Project

Deliverable D4.3 (Final version)

Innovation Pilot Lab Florence: implementation and results - Final version

Version: 1.0

Author(s): Giovanni Venanti, Erika Ferretti (BUSIT); Claudia Binazzi (ATAF)

Document Control Page

Title	Innovation Pilot Lab Florence: implementation and results – Final version
Editor	Giovanni Venanti, Erika Ferretti (BUSIT); Claudia Binazzi (ATAF)
Contributors	Andrea Lorenzini, Eleonora Ercoli, Giorgio Ambrosino (MEMEX)
Nature	R
Dissemination Level	PU
Version number	1.0
Planned Delivery Date	M34
Version date	01.10.2020
Abstract	This Deliverable presents the final results of Task 4.3 related to the implementation of the Pilot Lab activities in Florence Metropolitan Area. The deliverable aims to provide all relevant details about the implementation phase and major information and considerations related to the impact and process evaluation of the realised measures (fully detailed in the respective deliverable, namely D5.5 and D5.3). Towards the end of the document, the deliverable provides considerations on the main drivers, barriers and lessons learnt identified by Busitalia during the implementation of the INCLUSION measures in the two target pilot areas. Key transferability aspects are also reported, for a wider scalability or replication of the proposed approach.

Version	Date	Modified by	Comments
0.1	04.05.2020	MEMEX	Definition of the table of contents and guidelines of D4.2…D4.7
0.2	05.08.2020	BUSIT	First draft
0.3	14.08.2020	MEMEX	Comments and integrations on the first draft
0.4	28.08.2020	BUSIT	Second draft
0.5	03.09.2020	BUSIT	Final version for peer-review
0.6	14.09.2020	SOFT	Peer-reviewed version
0.7	30.09.2020	BUSIT	Final version for quality review
1.0	01.10.2020	SOFT	Quality review, final version

Contents

List of figures

List of tables

1 Introduction

Busitalia-ATAF Pilot was developed in two different peripheral areas within the Florence metropolitan conurbation. The first area is covered by two important bus lines, n° 30 and n° 35, connecting the city center with the north-west suburban municipality of Campi Bisenzio. This area is served by conventional public transport mainly used by people with a migratory background.

The second area is the rural municipality of San Piero a Sieve, located in northern boundaries of Florence Metropolitan area. This area is mainly served by railway lines and conventional public transport allowing the connection to the Florence city center and to other main destinations in the surrounding. Target users are here represented by commuters living in the rural area and in its boundaries.

The main objective of Busitalia-Ataf Pilot Lab has been to improve the accessibility of public transport services, especially for vulnerable users such as rural commuters and people with a migratory background. On PT lines 30 and 35 in Campi Bisenzio, the INCLUSION pilot has been focused on enhancing the inclusion and integration of vulnerable users through a co-participatory process. The developed activities aimed to upgrade the quality of information provided to users, as the existing App. Moreover, the route line 30 has been changed in order to facilitate the interconnection between bus and tram services.

In the rural area of San Piero a Sieve, the aim has been to develop an integrated transport offer, by refining the integration between the rail and bus transport services and promoting real time travel information about the service for rural commuters and dwellers.

Furthermore, Busitalia-Ataf aimed to improve the level of engagement of users in both pilot areas. This has been made by developing a crowdsourcing functionality on the App which allow users to provide feedback about the operated service.

The objective of the current deliverable is to describe the implementation phase results, as well as their analysis and evaluation. It provides insights on the main drivers, barriers and lessons learnt of the Florence Pilot Lab. The main considerations about the key stakeholders and their role and responsibilities in the pilot are also reported.

2 Recap of the Pilot Lab characteristics

2.1 Brief description of the pilots' areas

The innovation pilot lab was focused on two selected peripheral and rural areas of Florence metropolitan city.

The first pilot was developed in the area of Campi Bisenzio, a municipality located in the northern peripheral part of the metropolitan city counting a population of around 47.141 inhabitants, with a population density of 1.640 inhabitants/km[1]. Campi Bisenzio is the municipality with the highest number of foreign residents (20% of the total resident population[2]) in the Tuscany Region and it is mainly inhabited by migrants and low-income residents, who also represent the largest part of Public Transport users in the area.

Figure 1 - A view of Campi Bisenzio.
Source: https://www.ilturista.info/

The pilot in this area was focused on two conventional lines (with fixed routes and timetables) n° 30 and n° 35, connecting Campi Bisenzio with the centre of Florence and covering an area between 40 and 80 Km^2 with ≥ 500 inhabitants/Km^2 as population density.

Although people with a migrant background represent a large percentage of public transport users, in this peripheral area of Florence the mobility demand of such target group had never been analysed in depth before the INCLUSION project. Service planning and user information was based on the historical data about local population needs and requirements, which cannot take into account the latest decades mobility demand evolution. Due to this lack in demand analysis, the possibility to provide tailored solutions for easing accessibility to public transport users is

---

[1] https://www.tuttitalia.it/toscana/provincia-di-firenze/56-comuni/densita/
[2] https://www.tuttitalia.it/toscana/29-campi-bisenzio/statistiche/cittadini-stranieri-2019/

inclusion

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

prevented, especially for migrants. The service in Campi Bisenzio was the same as in other surrounding areas, which had completely different requirements and demand segments, in terms of definition, operation and management,

The second pilot action was focused on the rural area of San Piero a Sieve, located in the centre of Mugello, on the northern boundaries of the Florence metropolitan conurbation. San Piero a Sieve Municipality covers an area between 20 and 40 Km^2, has a population density between 50 and 100 inhabitants/Km^2 and a total population of around 4.300 inhabitants. San Piero a Sieve is similar to many other rural areas in Europe classified by a "downward spiral" phenomena due to a combination of declining population, withdrawal of social and business facilities, and service cutbacks. Therefore, the population in San Piero a Sieve area is highly dependent on private car, which is the main way of transport in the majority of trip, while other users may be dependent on other for lifts, being at risk of poverty or social exclusion. An efficient and accessible public transport system can, therefore, reduce this car-dependency and be particularly significant for San Piero a Sieve Area, where relevant commuting connections with the inner centre of Florence are developed.

Figure 2 - San Piero a Sieve rural area

Source: https://www.lestradeitalianepiubelle.it/firenze-sanpieroasieve/

2.2   Brief summary of the objectives of the Pilot Lab

The improvement of the accessibility of public transport services, especially for vulnerable user groups, has been the key objective of Busitalia-ATAF pilot.

The pilot action on the PT lines 30 and 35 in Campi Bisenzio aimed to enhance the inclusion and integration of people with a migrant background in the transport service provision. This has been achieved by proposing solutions to tackle with the difficulties that those vulnerable users may face while using public transport services for moving from the Campi Bisenzio Municipality toward the centre of Florence and viceversa. This was made in conjunction with the re-organisation of the line 30 route, to improve the intermodal connection between the bus and tram service.

The pilot on the rural area of San Piero a Sieve grappled with the challenge of providing reliable, efficient and integrated public transport services in a rural environment. The connectivity between

bus and rail services in the surrounding of San Piero railway station was improved. Moreover a multimodal travel information application was developed, characterized by bus and rail real time services information and availability towards rural commuters. Thus, this pilot is aimed at promoting the intermodal integration between the two services in order to provide to the users a valid private car alternative.

In parallel, Busitlia-Ataf aimed to improve the level of engagement of users in both pilot areas. This has been made by developing a crowdsourcing functionality on the App giving users the possibility to provide their feedback on the operated service.

2.3 Main outcomes of the design phase

The design phase began with an analysis of the main mobility requirements and users' needs in both pilot areas. For Campi Bisenzio pilot, the possibility of modifying the line 30 for better answering the mobility needs of migrants' users was merged with the tram network T2 extension towards the Airport of Peretola, wanted by Tuscany Region Authority and of Florence Metropolitan City. In particular, the latter operation was recognized by Ataf as a good opportunity for reorganizing the routes of the line 30: improvement of bus and tram transport network accessibility and connectivity, facilitating the interchange between the bus and tram services.

After internal focus groups and discussion, it was finally decided to bring the route of line 30 closer to the tram stop in both directions rather than completely changing the route.

Then, a pre-feasibility analysis with the development of specific surveys, users interviews and analysis of origin/destination travels was conducted. It was then decided to make a deeper analysis of the vulnerable target users' needs addressed by the pilots, i.e. people with a migrant background and low-income. For this purpose, it was agreed to develop a specific co-design participatory process. The goal was to direct engage and active involve migrant communities/associations members and representatives in order to define possible solutions/measures for increasing the identified target group accessibility to PT services.

As regards San Piero a Sieve area, Busitalia collaborated with the local Administration for changing the Public Transport service with the aim of allocating the bus lines terminal on the other side of the railway station, and ensuring direct access and easier transfer modality to further reduce the overall travel time. Therefore, the design phase led to a complete change of the bus routes around the railway station (details reported in section 3).

This reorganisation was carried out in parallel with the requalification, done by the S. Piero Municipality, of the train station infrastructures in terms of urbanistic and socio-economic deterioration.

It was additionally decided to further improve the transport hub by installing a smart info panel from which people can get the real transit time and other relevant PT information.

Finally, as a common action for both pilot areas, Busitalia/Ataf decided to upgrade the existing App Ataf 2.0. with new crowdsourcing functionalities for both the Campi Bisenzio and San Piero a Sieve areas. During the demonstration, as explained in the following chapter, the APP was completely

redesigned. It was also decided to improve the multimodal user information for passengers making bus to train connections by including the real time train information and the multimodal journey options on the app.

3 Pilot Lab implementation activities, timing and milestones

3.1 Actions at mobility service level

At the mobility service level, the Florence Pilot Lab developed two different measures. The first consisted of the redesign of line 30 in the Campi Bisenzio area. This action aimed to improve the accessibility to the city centre and facilitate the interchange between bus and tram services for people with a migrant background. The second involved the reorganisation of the San Piero a Sieve Transport hub to improve interchange for intermodal journeys into the city of Florence and, related to this, improving the quality of information made available to public transport users especially relating to connected journeys.

3.1.1 Improvement of the bus and tram transport connection with the re-organisation of the line no. 30 in Campi Bisenzio area

This measure involved the redesign of the route of bus line n° 30. In this way it is possible to better meet the needs and demands of the growing migrant community, living in the area surrounding the bus route, and to provide and facilitate a better direct connection from the bus to the tram line, that was opened on 23rd February 2019 connecting the edge of the area with Florence city center.

The measure was implemented during the first year and a half of the INCLUSION project with the improvement of the accessibility to the tramway T2. From October 2017 to June 2018, monthly meetings of the Technical Committee (composed by the Metropolitan City of Florence, Tuscany Region, Ataf, BUSItalia, the Municipalities of Campi Bisenzio and the surroundings ones) were held in order to discuss how to reorganize the bus services. The approval of the reorganization of the route n.30 arrived in June 2018: the reorganization consisted in realizing a new 700m sidetrack to the bus line with two new stops close to the tramway stop in order to provide direct connection to the tram service to enable fast onward journeys to Florence city center. This led to the development also of new timetables. The design of the new route and bus stops for the line n° 30 connecting it to the Tramway T2 was completed in January 2019 and the new route of line 30 officially inaugurated and in operation from February 2019. The following picture illustrates the situation before the implementation of the INCLUSION measure:

- The green line represents the old route of the bus line n°30;

- The yellow dashed line represents the T2 tram line;

- The dotted blue line represents the walking distance for interchanging between the bus and tram service. Two new bus stops were decided to be developed close to the tram stop.
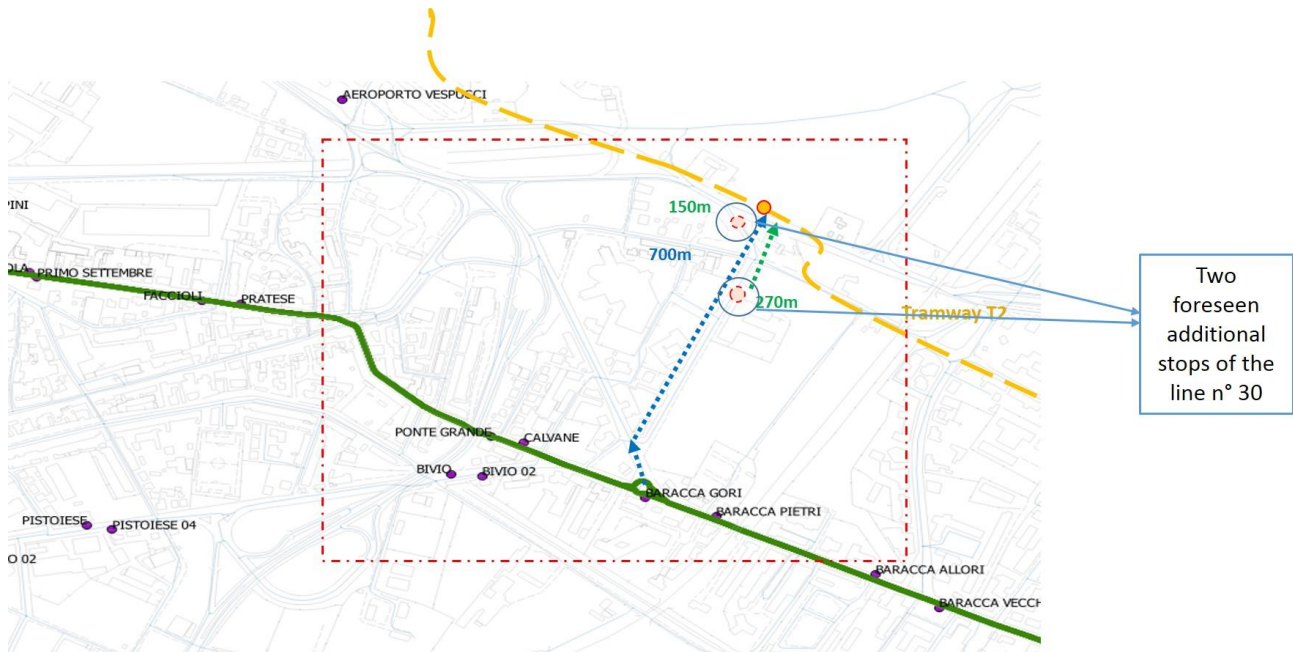
Figure 3 - Line n° 30 – Situation before the reorganisation of the route

Map source: elaboration from open data ISTAT and Tuscany Region

The redesign of bus line 30 was carried out in parallel to the finalisation of the tramway and brings the bus route closer to the tram stop in both directions.

The 'before' route for bus line 30, shown with the green line in Figure 3, passed 700m from the tramway. With the reorganisation, two new bus stops (one 150m from the tram stop and the other 270m) were identified in order to guarantee easier access to the tram service to enable fast onward journeys to Florence city centre, as shown in the figure below.
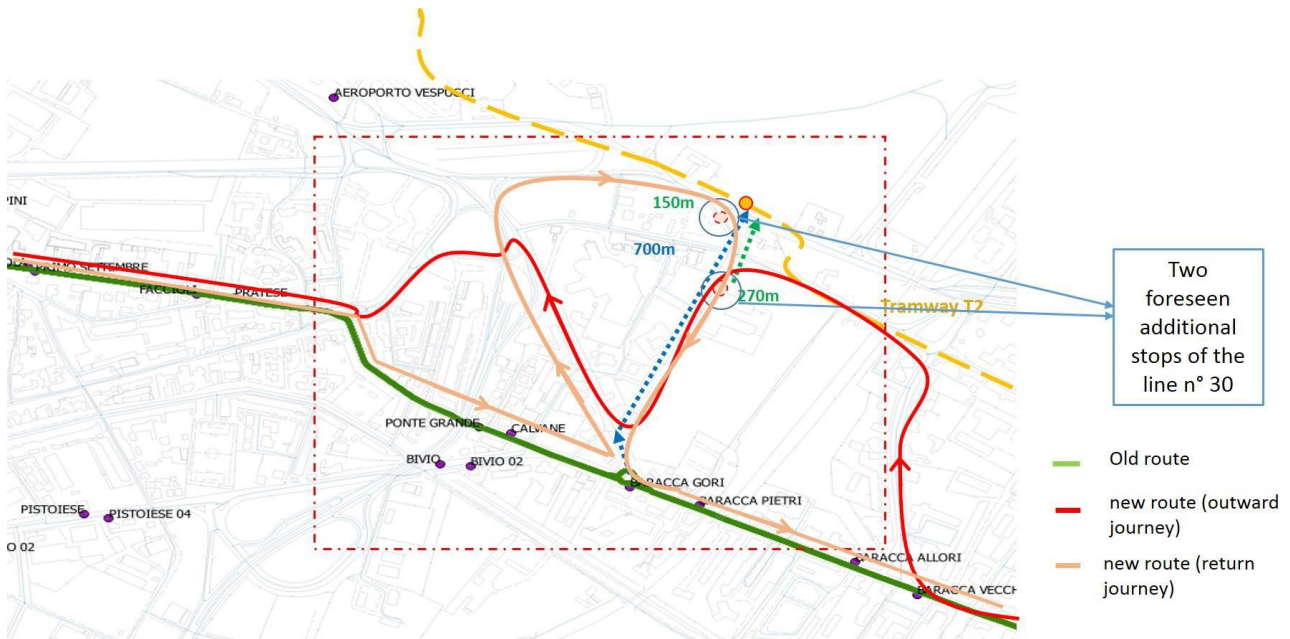
Figure 4 - Map illustrating the reorganisation of bus line 30 with connection to the new tramway T2 (yellow dashed line)

Map source elaboration from open data ISTAT and Tuscany Region

3.1.2   Measure change of the bus routes in the rural area of S. Piero

The measure in San Piero a Sieve area involved redesigning the bus routes and terminal around the railway station in San Piero a Sieve to improve interchange for intermodal journeys into the city of Florence and, related to this, improving the quality of information made available to public transport users especially relating to connected journeys.

The redesign of the bus routes involved changing bus routes around the railway station and moving two bus stops to provide direct access to the railway station.

In fact, before the re-organization, the train station was on the other side of bus stops and it was therefore necessary for those travelers making a connection from bus to train to use a railway underpass to reach the train platform or the contrary (bus terminal)

After the re-organization, all bus lines were unified to stop at a consolidated interchange hub located on the other side of the train line. This gave all bus lines direct access to the main entrance of railway station and significantly reduced the walk distance required to make a connection.

This measure helped improving the interconnection between bus and train and, at the same time, making the bus to bus connections much easier.

Figure 5 - Map illustrating bus line reorganization around San Piero a Sieve train station

Map source: Google Maps

3.2 Actions for ITS implementation and users' engagement

One of the key objectives of the Florence Pilot Lab has been to improve the quality and level of information about the transport service to vulnerable users. This has been made by different activities, involving the development of co-design workshops, the release of a new version of the Ataf app, and the integration of multimodal travel information services. The measures have been developed with different efforts in both pilot areas.

3.2.1 Improvement of users' information in Campi Bisenzio

Within this measure, in Campi Bisenzio area new on-board information panels were installed on two buses on lines 30/35. In total 30 new panels were installed with an average of 2 panels for buses of 12m length and 4 panels for buses of 18m length. Moreover, a new version of the info-mobility ATAF app with increased and enhanced functionalities was designed and launched in March 2020.

Considering that the main target group of the Campi Bisenzio pilot was represented by people with migratory background it was considered important to involve them directly in order to collect relevant insight for the improvement of users' information measure, in particular for the new version of the ATAF info-mobility app.

It was then decided to design and carry out a co-participatory and iterative process with the direct involvement of stakeholders' representatives and selected vulnerable users' category (i.e. people with a migrant background and low-income). Different activities were performed with the intention

inclusion

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

to get a deeper understanding of the users' needs, habits, difficulties and problems in using the PT service. The results led to the elaboration of a plan of possible future solutions and interventions aimed at improving the accessibility to the public transport service for people with migratory background.

The work was structured in several phases, as shown below.

- *Phase 0: "Coordination, mapping of the actors and participants' observation"*

The Phase 0 concerned the development of two types of activities that would have set the ground for the co-design process.

The first type of activity was related to a mapping of the most relevant local stakeholders and of the main Points of Interest (POI) for migrants along the PT lines 30 and 35. This desk based research allowed to identify a number of associations[3] that took part in some of the activities of the co-participatory process, such as in the 1st focus group and in the identification of the most suitable persons to participate in the laboratory activities.
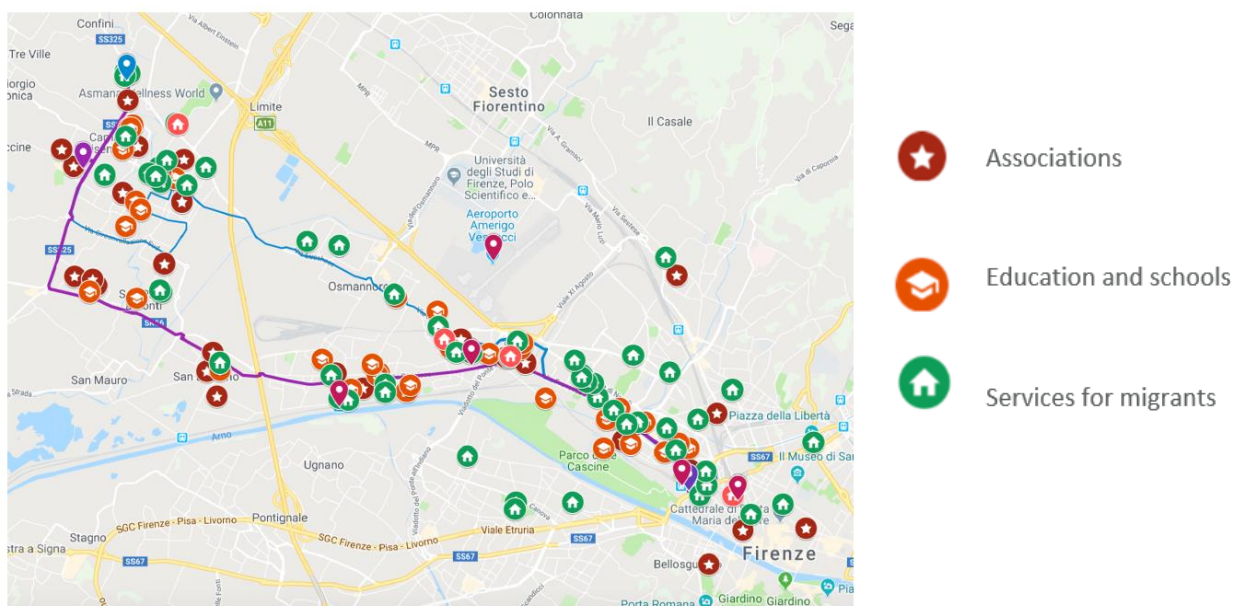
Figure 6 – Mapping of the POI for migrants along PT lines 30 and 35

Map source: Google Maps

The second type of activity inspired by the "participants' observation"[4] methodology entailed the direct observation of the behavior of two migrants before and during a journey on the buses of the

---

3 Relevant associations identified: Gli Anelli mancanti; Caritas Diocesana; Associazione Comunità Senegalese; Associazione Buddista dello Sri Lanka; Help center Firenze; CAS Campi; Sprar SDS Firenze nord Ovest ; Sprar Campi Bisenzio; cooperativa il Cenacolo; CNR- Ittig; Cooperative Albatros; ICSE&Co; Officine sociali, Movimento centrale Onlus

4 Common methodology adopted by anthropologists in their research

inclusion

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

lines 30 and 35 made in the afternoons of Wednesday 13th and Thursday 14th March 2019. Both participants had been selected with the support of the involved associations identified in the previous activity. The first user recently moved to Florence while the other had been living in the city for some years. None of the them was familiar with the PT lines 30 and 35 although they had an adequate level of knowledge of the Italian language.

The main information of the two identified users are reported in the tables below.

Name: Masud
Nationality: Bangladesh
Age: 40
Profession: cook assistant
Arrival in Italy: 2014

Background: A political refugee, threatened by rival political party after clashes for the local elections in his city. Married with a daughter living in his origin country.
He works in the center of Florence and uses PT every day to go to work. He has a PT monthly subscription. He has a mobile phone that cannot surf the net.
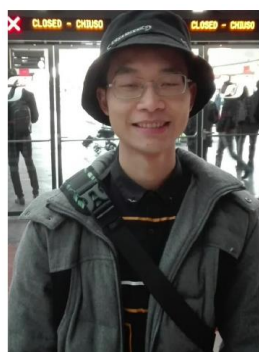
Name: Nicola (Xiaogang)
Nationality: China
Age: 26
Profession: Student / teacher
Arrival in Italy: March 2019

Background: He studies foreign languages at Chengdu University and he is specializing in Italian. He came to Italy for a year to participate in the program of teaching Chinese language promoted by the Confucius Institute in partnership with the University of Florence: he is holding Chinese lessons for Italian students. He lives alone and works in the city center. He mostly moves on foot but sometimes take the T1 (tram). He does not have a subscription but uses a 10-rides ticket. He uses his cell phone to communicate and find information

Table 3.1 - Main characteristics of the users involved

The two participants were asked to reach a destination located near the route of bus line 30, using PT services. The observation took place before the trip (at the bus stop), during the ride and at the arrival. This activity allowed to detect some specific issues faced by the users:

- While the rules on the use of travel tickets were clear for both (e.g. need to validate the ticket through automatic stamping machines and having the ticket available during the rides for checks), the possibility to buy the tickets online was unknown;

- both relied on Google Maps to identify the best combination of PT services to reach the destination and were not aware of the ATAF tools for route planning available on both ATAF web Site and on the ATAF App;

- information available at the bus stops or on board the bus was clear for both.
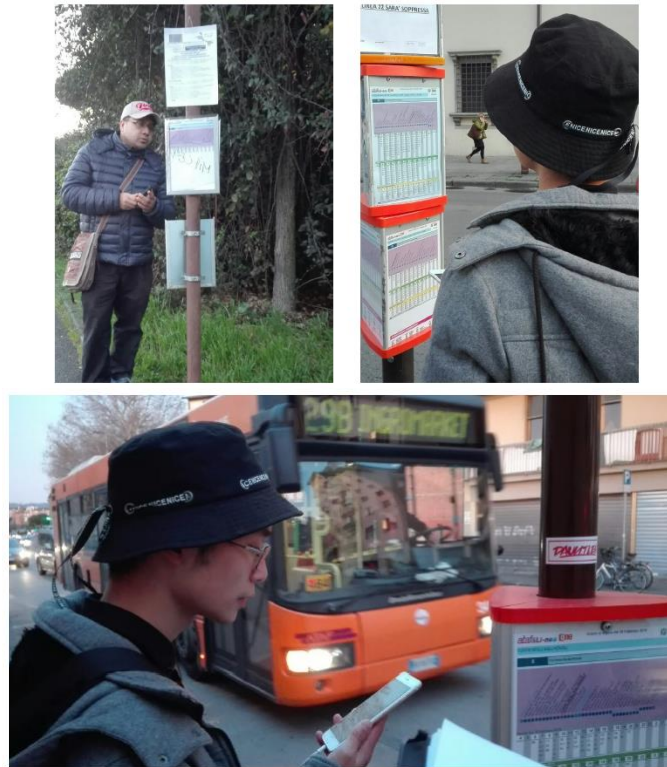
Figure 7 - Participants' observation activity

It was considered appropriate to support this type of observation with additional interviews with other users of different nationalities to better understand which aspects to focus attention on. Further interviews were conducted on the morning of Wednesday 13th March 2019. One critical issue that emerged from the interviews to Italian users was a negative perception of the large presence of foreigners on both lines n° 30 and n° 35 foreign users, stigmatized as those who "travel without a ticket" or "get drunk and make mess".

- *Phase 1 – Focus Group*

The Phase 1 - Focus Group concerned the organization of a meeting on the 03rd April 2019 with the participation of 15 stakeholders identified in the previous phase to discuss the outcomes of the participants observation activity and set the basis for the following co-design phase.

inclusion

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

Figure 8 – Focus Group April 2019

After a presentation of the INCLUSION project and of the Busitalia pilot activities, some concrete examples of measures implemented by public transport companies in different national, European and international contexts were presented with the aim of providing food for thought to identify possible and suitable solutions for better answer to the target users (migrants) needs and requirements when using the public transport.

It was confirmed by all participants that the presence of foreign people, migrants in particular is often negatively perceived and is associated to a concept of "degradation". Obviously fighting against prejudices is not the focus of the INCLUSION project but it was observed that a good information campaign on PT use conveying a message of integration and "inclusion" of migrants could have been an effective way to tackle with this problem. Another possibility could have been to organize small cultural initiatives on board the bus or at the bus stops to entertain passengers and, at the same time, raise awareness on suitable civic behaviour, following the example of some European good practices (https://www.lemonde.fr/economie/article/2019/04/13/des-metros-et-tramways-la-nuit-aparis_5449923_3234.html).

Some security interventions were also considered as useful, such as for example, enhancing the lighting of the most "dangerous" perceived bus stops and increase the presence of on-board controllers.

During the *phase "0"* it emerged that a widespread local habit to get detailed information on stops and routes was formulating direct questions to the driver, despite the clear ban of talking to the driver.

This "option" is perceived as a barrier for those who do not manage the language and who would prefer to have immediate access to simple and multilingual information tools. The simplification of the terminology used in the travel information sheets at the bus stops or on board the bus and the substitution of difficult terms with symbols/icons, for example, was identified as a useful solution to

inclusion

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

ease the understanding of the provided information on the transport service. In fact, although the information sheets displayed at the bus stops were designed to comply with government regulations on communication and transparency of information, it was recognized that the descriptive information was too long and complex, even for an Italian user with medium-low schooling. The substitution of difficult terminology with images and symbols could indeed facilitate a correct comprehension. Another difficulty is represented by the names of the bus stops which are very difficult to memorize and associate to a specific place especially if the users are not familiar with the city. The realization of specific paper maps (since not all target users have smart phone with internet access) with, for example, the indication of the main POIs through symbols to facilitate the localization of the bus stops is also considered as a potential solution to foster accessibility.

- *Phase 2 Service Co-Design.*

Within this phase, two "living" laboratories were organized with the direct involvement of about 15 target users. Both laboratories were conducted with a strongly user centered approach and with the support of facilitators. This approach was the key to success of both initiatives to allow the collection of relevant feedback on issues perceived as critical. Such issues confirmed the ones already identified during the previous two phases, for example: difficulty in appropriately understanding the bus service terms and conditions; understanding the correct behaviour to have on board the buses; correctly use the ATAF2.0 App functionalities.

The first laboratory took place on the 15th May 2019 and was conducted directly "on the field": the group worked on the physical touchpoint of the service, namely the bus stop and the vehicle.

The working group worked nearby a bus stop and a bus shelter of the Florence line 30 and on board one of the buses parked at the company's depots. Starting from the results of the activities foreseen in the previous phases (participant observation and focus group) participants discussion was focused on "the service touchpoints" (the bus stop, the shelter and the vehicle) and on any critical issues and/or possible improvement measures to be implemented in the provision of the service. Some of the previous findings were thus confirmed as indicated in the table below:

Identified Critical issues		
	At the bus stop and shelter	On board the bus
BEHAVIORS TO BE ADOPTED	At the stop there is no information for users on behaviors to follow when taking the bus (e.g. correct entrance door)	The meaning of the horizontal signals on the new buses (green arrows painted on the bus corridor to highlight the entrance/exit doors) and of some of the symbols (e.g. emergency exits) are not clearly understood
TERMS AND CONDITIONS OF TRANSPORT SERVICE	Transport conditions are mostly ignored (long contents of text and small font do not facilitate the reading of the information sheets with the travel conditions).	The information sheets on board the vehicles are not sufficiently clear and hardly understandable for the target users (in particular specific conditions for carrying luggage, animals and kids)

![inclusion logo]

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

PURCHASE OF TRAVEL TITLE	Many foreigners/migrants use a mobile operator (LYCA) which does not provide the Mobile Ticketing service so they are not able to purchase the travel ticket through the ATAF App	
VISIBILITY OF THE STOPS	The stops are hardly visible; they should be bigger and more evident.	It is not easy for migrants to memorize the name of the bus stops and to easily detect them, especially if the bus is overcrowded
ELECTRONIC DISPLAYS	The displays only show the bus arrivals expected within 30' and do not offer travel information beyond this window timeframe	
FEELING OF UNSAFETY		Discriminatory behaviours are widely detected by migrants both from bus drivers (rudeness, unavailability to provide sufficient information) and from Italian passengers A feeling of unsafety is also perceived by migrants. The use of security camera on the vehicle is recommended

Table 3.2 – Critical issues identified during 1ˢᵗ co-design laboratory

Figure 9 – First co-design laboratory at the bus shelter

Figure 10 - First Co-Design Workshop on board the bus

Participants instead declared to not find any difficulties in:

- consulting the table with the times of the rides;

- reading the route plan and understand the direction of the bus passing through the stop.

Participants also indicated a series of possible improvement that would have helped their comprehension of the information materials offered by Busitalia/ATAF These indications are summarised in the table below:

Possible Improvement		
	At the bus stop and shelter	On board the bus
Information sheets	A more synthetic illustrative information sheet reporting only main information, with a simpler format (i.e. use of capital letters font and impact colors such as red-green) and use of symbols/icons could help maximizing visibility and readability. Possibility of including a map of the interesting points identified by users both in the new ATAF App and in the new paper informative sheets	Enrich available information sheets for travelers with: - indicators for children age (as children need to have the ticket only starting from a certain age) - real time position of the vehicle - most important interesting city points, connected to each bus stop

inclusion

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

Electronic Displays		Use of cartoon videos is confirmed as a good tool to make users aware on the correct behaviors to have on bus. Some possible contents to be improved:
		- leave the seat to persons with reduced mobility (elderly, persons with disabilities or pregnant women)
		- speaking with lower voices and don't keep the music loud
		- increase the use of acoustic messages: they are useful to communicate bus stop names and to orientate users on the bus journey experience but they could also contain more information (for example on the local points of interest)

Table 3.3 – Identified Possible improvements

The second co-design laboratory took place on the 20th September 2019 in a center hosting refugees and asylum seekers and supporting their integration in the local community by offering Italian language lessons, specific courses for learning a work profession, bureaucratic, administrative and legal assistance. The laboratory took place during an Italian lesson and also involved the teacher of the Italian course who helped facilitating and moderating the whole activity. The focus this time was on the "virtual/digital touch points" of the service - in particular the ATAF App.

Following the outcomes of the activities conducted within the phase 0 and 1, a new demo version of the Ataf app was produced which tried to simplify the way in which the information was provided to the users. The aim of the laboratory was to validate the new demo version. The laboratory started with a questionnaire shared and discussed among participants. The questionnaire is reported as Annex I.

Despite a general knowledge of the existence of different information channels offered by the PT operator, the bus stop was indicated by all as the main reference point to retrieve information on the bus service. For this reason, at the beginning of the laboratory participants were asked to work on a paper map of the overall transport service in the Florence area. None of them was familiar with it though they recognise the importance of this type of tool in particular for routes planning and thus for increasing their confidence, orientation capacity and autonomy to move around the city.

However, the map itself presented several aspects to be improved to ease its comprehension: the absence of images and the too few references to the territory made it usable only by people with a medium/high knowledge of the city. Including for example reference to the main interesting points (such as city districts, hospital and health centres, police headquarters, prefecture,

Immigration office, municipal registry offices, court, post offices, employment centre, places of worship and public libraries) was considered as one of the main possible improvements to the map.

The second part of the laboratory was focused on the demo version of the ATAF App. Participants were asked to provide their feedback while browsing in the different pages and APP functionalities. The results were the following:

ATAF APP demo version – Home page

Picture of the home page not clear and not intuitively associated to Bus service

Survey Icon: the icon seemed more appropriate for a chat/messaging functionality
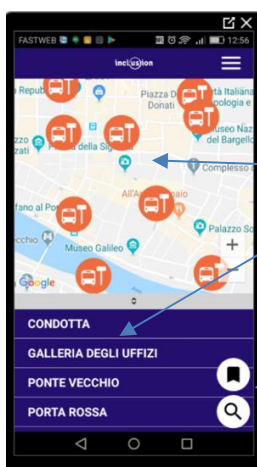
ATAF APP demo version – Bus Stops

The association between the bus stop icon and the below bus stop list ("Condotta") was not perceived

This icon which refers to the "Preferred" lines was not understandable
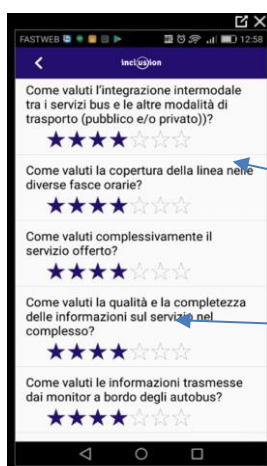
ATAF APP demo version – Feedback Survey

Too complex terminology that does not allow the questions comprehension

Preference of a satisfaction scale with "smile" symbols and not stars

Figure 11 – ATAF APP demo version

Figure 12 – 2nd Co-Design Workshop

- *- Phase 3 Final debriefing*

A final meeting with Busitalia managers and technicians was developed to discuss the results and the critical issues emerged in phases 0, 1 and 2 and evaluate any proposals of possible future solutions and interventions aimed at improving users' information for migrants. The results of these activities were presented to BUSITALIA and ATAF management team during a meeting held on the 29th November at ATAF premises.

The following points summarises the main results and feedback obtained by BUSITALIA-ATAF technicians on the proposed interventions:

- Improvement of the new demo version of the Ataf app. In particular, it was highlighted to completely re-design the homepage of the app in order to provide the users with the main information of the service: travel planner, ticket purchase and surrounding bus stops. Furthermore, it was proposed to simplify the language of the questionnaires to make them more understandable.

- Elaboration of another summary leaflet containing more specific information (such as how to purchase a ticket, the validation, duration, and validity of the ticket and how to behave at bus stops) and the use of simple and worldwide recognisable icons/symbols to maximise readability of data even for non-native users.

- Enhancement of the new urban transport map of bus and tram lines already including some generic key landmarks (for example, monuments, hospitals, parks) with the insertion of other key places around the city (e.g. Police Headquarters identified as extremely important places for foreign users to go to for their residence visas to be allowed to stay legally in Italy).

After the meeting, Busitalia/Ataf started to work on the redesign of the Ataf app, to include the comments received in the laboratory. In December 2019 and January 2020, the new functionalities were started to be developed. After some internal discussion within Ataf Company, it was decided to implement the new functionalities through a new technology provider rather than updating the existing app. This was made within the framework of the Regional Service Contract into which the Ataf company operates the transport services in Florence Metropolitan Area.

The (new) technology provider was asked to consider the outcomes and results of the focus groups made with migrants especially concerning easy-to-use interface and user-friendly graphics, and to include (the specification of and) the new functionalities that were planned for the Ataf app 2.0. The negotiation started in late 2019, but the final confirmation arrived only in February 2020.

As a result, from the 14th of February a new app (called 'Ataf' instead of than 'Ataf 2.0') was made available on both Google Play and Apple store and started to be promoted. This app aimed to fully replace the Ataf 2.0 app.

The following functionalities were included:

- Planning of the trips
  This functionality allows the users to find the quickest and most comfortable way to reach the chosen destination from the current location or from a specified address. Directly on the homepage, the users can enter the preferred destination on the map or by typing the place: the use of predictive writing simplifies and speeds up the identification of the place of interest and the "search for routes" tab displays the suggested travel solutions.

- Management of bookmarks and alerts on the service
  These new features make the search for travel solutions faster and ensure users are constantly updated on the lines and / or stops of interest. Stops, lines, destinations and even the most frequent journeys can be saved as bookmarks: selection is also possible through the interactive map. A warning system allows people traveling by bus to know in real time any changes to the service, interruptions, deviations, movement of stops and receive other useful information on lines or stops. The news on the service can be viewed at the time of consulting the route of interest by clicking on the specific icon or they can be notified to the person if the stop or line is included in their favourites.

- Step by step browsing
  With this functionality, the passenger is assisted in the path he has chosen to reach his destination. Once the route has been selected, through the "navigate" function, the person is guided to his destination: he is informed of how long to walk, which bus to take and, through a notification system, he is warned when the bus is getting off.

- Real time bus information
  The function displays the exact time of passage of a bus by selecting either the stop or the line of interest: the "stops" tab displays the closest stops in the list and allows the users to choose the stop of interest directly on the map, while the " lines "displays the schematic

routes of the buses and allows to know the bus passages along the entire route of the chosen line.

- Ticket purchase
  By zooming in on the interactive map, the user can view the authorized stores with information on opening hours.

Some screenshots of the new app are reported in the figures below.
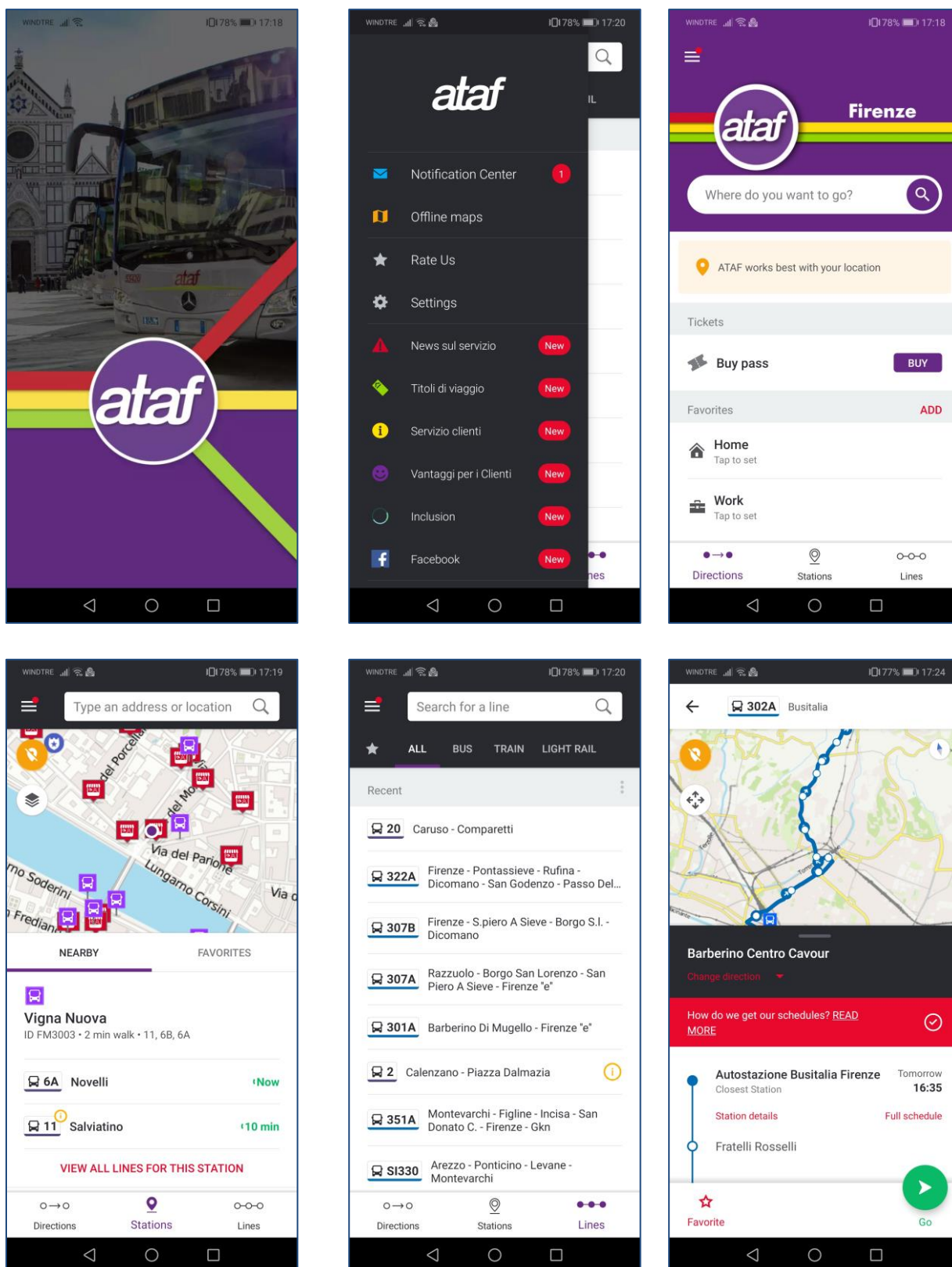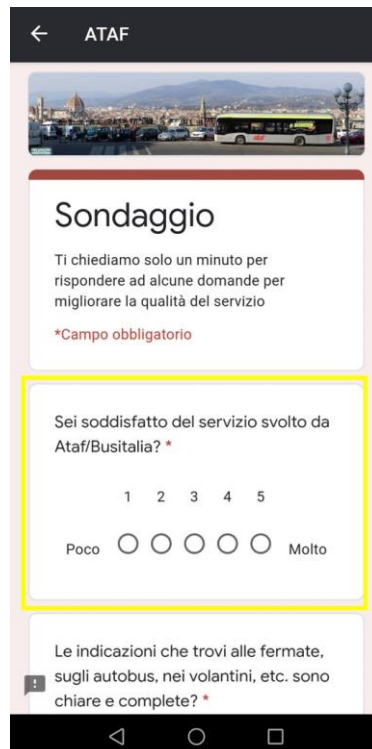
Figure 13 - Screenshots of the new Ataf app

The outcomes of the co-participatory process were also useful for the upgrading of the Busitalia/ATAF app with a new "crowdsourcing" functionality to assess and rate the quality of the operated service on the bus lines 30 and 35. This information is particularly useful for analysing possible improvements of the service and for obtaining a better understanding of users' requirements. Users' feedback functionality was designed and implemented with the aim to collect information on users' needs and mobility requirements. Specific pre-defined questionnaires were elaborated by ATAF and targeted mainly to the users of 30 and 35 lines. Through this functionality, users had the possibility to rate their level of satisfaction of the operated service, the quality of interconnection between the bus and the tram service, the information provided, etc.

The questionnaires for the app, written in simplified words, were ready to be implemented on the app in March 2020. However, due to the COVID-19 pandemic, Busitalia/Ataf decided to put the release of the update of the app (with the new functionality) on hold because of the difficult situation. In fact, it was highlighted that was not so appropriate to launch a survey when the service operated was severely reduced and users couldn't appreciate it.

The questionnaires were finally launched on the 8th of June, with a push notification. It was agreed that this period was the most appropriate time to launch them, since many activities were re-opened and the number of active users on the app was back to a fairly acceptable number.

Figure 14 - Questionnaire functionality on the new version of the APP

It has to be noticed that during the lockdown period, Busitalia/Ataf planned to raise awareness about the INCLUSION project via the new app. In particular, a new button ("INCLUSION project") on the homepage of the new app was developed, that directly links to the official INCLUSION website.

3.2.2 Improvement of users' information in San Piero a Sieve

The ATAF app was also upgraded with new interactive functionality to improve the multimodal user information for passengers making bus to train connections.

This functionality was born from the idea of providing enhanced multimodal information for the rural dwellers of San Piero a Sieve. Indeed, the rail station of San Piero a Sieve plays a pivotal role for the surrounding rural areas, and therefore was acknowledge the importance of providing integrated information for those users which had to combine the bus and rail transport.

After consultation with the new technology provider, it was agreed to include the real time train information to the app and an improved identification of multimodal journey options. Functionality was also added to capture user feedback through the app in the form of an in-app feedback form/survey.

A screenshot of the rail timetable functionality is provided below.
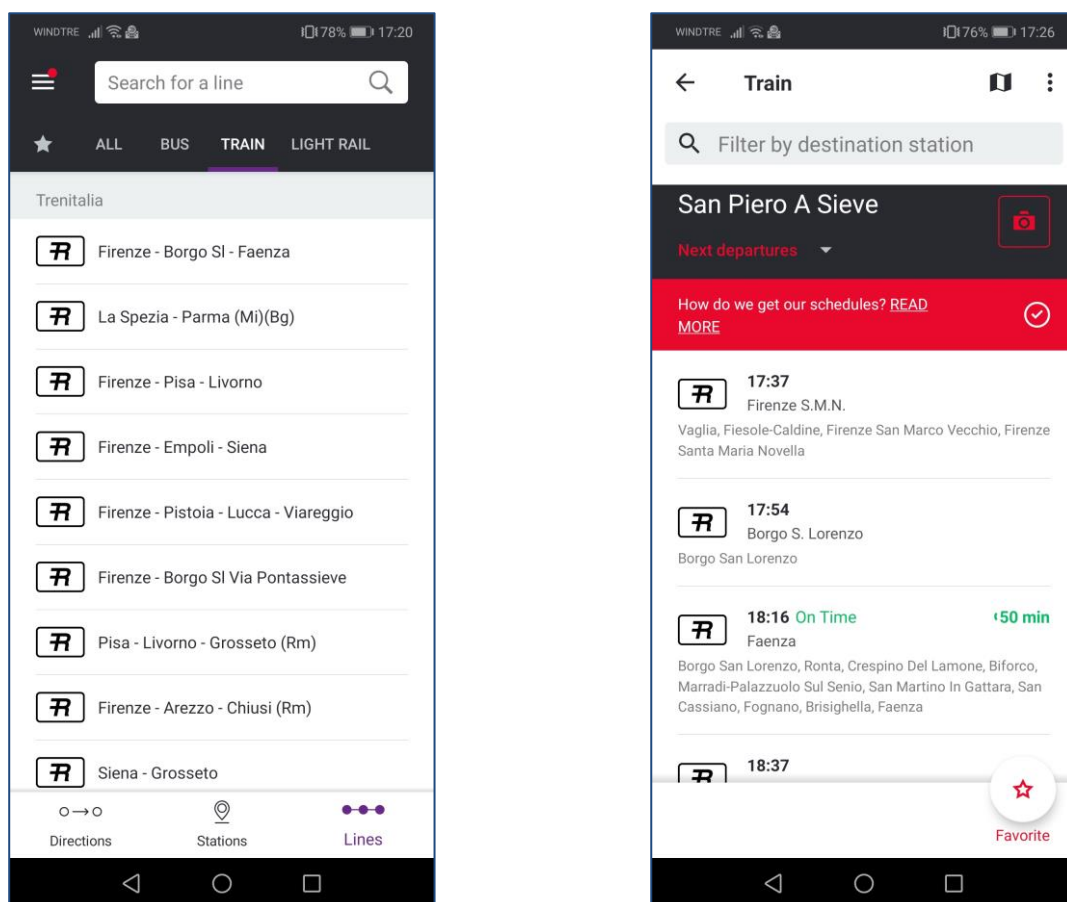
Figure 15 - Rail timetable functionality on the new version of the APP

4 Deviations from planning and corrective actions

Some difficulties arose during Inclusion measures implementation both in Campi Bisenzio and San Piero areas. Busitalia/Ataf managed to effectively solve all of them and reach successful results. In particular, the deviations from planned actions involved 1) the Nottetempo Demand Responsive Transport service and 2) some of the activities related to the improvement of users' information.

- *Drop out of the pilot measures concerning the Nottetempo service*

    o At the beginning of 2018, Busitalia/Ataf started the activities concerning the enhancement of the demand-responsive transport service ("Nottetempo") that was operating in some south and east peripheral areas of Florence. Preliminary surveys on specific bus routes (origin; destination; age; gender; …), as well as on the current users of the DRT service, were developed. The main results were then analysed, for understanding the current issues and the potential for improvements. However, as highlighted in the Aviemore Consortium meeting on 10 – 11th October 2018, the "Nottetempo" DRT service was decided not more to be considered as a test solution due to Busitalia/Ataf intention to dismiss the service. This was due to internal reasons of Ataf company, out of the INCLUSION Project. PT lines 30 and 35 were kept as the main focus of the Pilot Lab. Some of the planned activities concerning information improvement were decided to be kept including those for the official mobile App Ataf2.0 and the related new functions suitable to collect information on travel usage. Moreover, following the preliminary considerations made on the transport offer in the peripheral areas of Florence, it was decided to include another low demand area in the project. This was the rural area of San Piero a Sieve, which replaced those pilot areas where the Nottetempo was operated.

- *Introduction of new functionalities on existing App ATAF 2.0*

    o Within the Pilot evaluation, it has not been possible to isolate feedback from a specific target group (i.e. people with a migrant background) and obtain accurate answers only about this. Therefore, BUSITALIA decided to hold focus groups and a co-participatory process with a number of travellers with migratory background in order to understand user's habits and spot their difficulties in using transport service and understanding travel information. An estimation about the target users' feedback was then possible thanks to the data about the percentage of migrants users in the target lines.

    o Difficulty in developing and releasing in short time a new version of the ATAF app with the new functionalities. This difficulty was due to a number of different reasons:

- First of all, Busitalia/ATAF decided to implement the new crowdsourcing functionality considering the outcomes and results of the focus groups and laboratory with the migrants. A final decision about the development of this new functionality was made only in late 2019.

- Secondly, the difficulty in engaging a relevant number of migrants caused a postponement of the laboratory organisation. A solution found by Busitalia/ATAF was to hold the second service co-design meeting in the premises of a local association for refugees during an Italian lesson with the involvement of the Italian teacher as facilitator. A 10-bus ticket carnet was given as incentive to the participants and the laboratory finally took place in October 2019.

- Finally, Busitalia/ATAF decided to implement the new functionalities through a new technology provider rather than updating the existing app. The (new) technology provider was asked to consider the outcomes and results of the focus groups made with migrants especially concerning the possibility to have a easy-to-use interface and user-friendly graphics.

As a result, from the 14th of February 2020 a new app (called 'Ataf' rather than 'Ataf 2.0') was available on both Google Play and Apple store.

However, from March 2020 onwards with the advent of COVID-19 pandemic, Busitalia/ATAF had to face new and unexpected challenges. Priority actions to restructure the service were undertaken, due to the virus constraints during the lockdown and subsequent period. The service was completely restored again on the 18th May 2020, with bus capacity reduced due to the mandatory physical distancing. In this post-lockdown phase, Busitalia/ATAF managed to integrate the ATAF App with new crowdsourcing functionality for the assessment of the Public Transport services that have been included in the INCLUSION Florence pilot.

The functionality about the rail timetable was instead implemented with no issues with the possibility to have not only the scheduled-timetable but also the real time transit of the trains.

The new Ataf app was launched another time after the end of lockdown period and the first results in term of downloads and users are very relevant including the use of the feedbacks/evaluation functions.

5 Promotion and stakeholders' involvement

Inclusion project and the approach developed within the Florence Pilot Lab were presented in several events, both at local and international level. During June 2019, Inclusion project was presented in Groeningen at the 6th European Conference on Sustainable Urban Mobility Plans. The project was present with a stand and was presented in the session A3, '*Making cities more inclusive and accessible for all*', on Monday 17 June.

Inclusion was also present at the CIVITAS Forum in Graz, Austria, from 2-4 October 2019. A specific session focused on the Florence Pilot Lab titled, "*Transport for all: challenges, opportunities and new tools to improve mobility in rural and peri-urban areas*" was organised.

Figure 16 - The INCLUSION Project at the CIVITAS FORUM 2019

It is also worth mentioning the participation of Inclusion at the Workshop "*Innovation supporting SUMP: the MOTIVATE project and the public transport services*" and organized in Florence, on the 10th July 2019 under the framework of the Interreg MED project MOTIVATE[5].

The workshop was mainly targeted to representatives of PT operators, local municipalities and provinces of the Region and aimed to inform these stakeholders on the usefulness of crowdsourcing tool to collect relevant data for optimizing the transport offer. A total of nine local municipality representatives (Siena, Lucca, Livorno, Poggibonsi, Arezzo, Grosseto, Pomarance, Calci, Pisa) spanning from 5.600 to 160.000 inhabitants, and 4 PT operators attended the event.

Figure 17 - Workshop in Florence – July 2019

The event was organized with a series of presentations followed by a round-table discussion which saw the active participation of aldermen and city council members of transport departments of the municipalities of Lucca, Siena, Pisa Grosseto and the top management of Tiemme company. Inclusion project was presented by Busitalia/ATAF representatives, who also participated to the final discussion round table.

Figure 18 –Florence, July 10th 2019, Workshop Programme

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

6 Institutional, regulatory and financial issues

Busitalia/ATAF had several process evaluation interviews with RUPPRECHT CONSULT that provided useful hints to further guide the implementation activities and in particular to spot any potential aspects that could have been taken into account for the evaluation activity of the pilot measures. The full results of the evaluation process are reported in the deliverable D5.3 "*Process Evaluation Results*". The following chapter aims to provide an overview of key findings from the process evaluation activities, highlighting the most relevant aspects of the main barriers and drivers encountered and taken into account during the process evaluation interviews t with RUPPRECHT.

Concerning the re-design of the line n- 30 in the Campi Bisenzio pilot area, the main identified issue was at institutional level. In fact, right from the beginning of the pilot, it was underlined that the bus service of Ataf is operated in a strongly regulated framework. An approval from the Tuscany Region is required for making any changes in the existing routes; this sometime lead to a long bureaucratic process. The re-design of the line 30 was possible to implement once the local and regional authorities gave their approval. Local and regional authorities acted therefore as an enabler for editing the route and adding two new bus stops in a short time.

The good cooperation established between Busitalia and the local administration allowed also the requalification of the square and street furniture of San Piero railway station and the changes in the bus routes in the rural area of San Piero in a short time. The successful results obtained through this measure were also the results of an extensive and effective communication campaign developed with the aim of raising awareness to rural inhabitants about the reorganisation of the transport hub in San Piero.

As for the enhancement of the users' information, during the INCLUSION project it was possible to implement a crowdsourcing functionality in the new version of the ATAF APP for getting users' feedback on the operated service. This functionality was positively tested and contributed to improve the users' satisfaction level towards the quality of the information provided and thus on the overall service. However, a long bureaucratic internal approval process was also necessary to launch the new version of Busitalia/ATAF APP.

A further crowdsourcing functionality that Busitalia/Ataf would like to investigate concerns the possibility for users to provide the operator with information about any issues encountered when travelling (such as dysfunction of ticketing machine, issues in the bus stops, etc.) or possible improvements in the operated service. This aspect could be further investigated to understand what steps could be followed for developing the new specific functionality on the Ataf app and for addressing the complexity in managing the system and high level of back-office involvement for analysing and giving answers to problems raised.

From a cultural point of view, many issues had indeed to be faced. The first and most important one was the difficulty emerged in the involvement of people with a migrant background, mainly because of the socio-political tensions around this issue at the moment of working. Cooperating with volunteer associations helped to bridge the gap and build up a trusting relationship with this

target vulnerable category and was therefore pivotal for the success of the focus groups, interviews and laboratories that were organised with them.

One of the outcomes of the focus groups and interviews developed with the migrant community in Campi Bisenzio area was related to the issue of safety (and the feeling of security) on board and at the bus stops. It emerged that the presence of migrant users on public transport was sometime perceived in itself as an indicator of service degradation and possible source of risk from the native residents. This type of interpretation can be caused by some kind of prejudice in the general population on which it is necessary develop a cultural work. A possible task that Busitalia/Ataf could investigate is the development of a company's information campaigns dedicated to the dissemination of correct information to unhinge this type of bias. In parallel, some staff behaviours may further decrease the perception of insecurity attributable to the presence of migrant users. In this regard, it emerged that the attitude of drivers and ticket inspectors in communicating during checks or in providing information to this type of user also strongly affects the perception of safety of other users. Therefore, a training campaign could be developed for improving driver's behaviour toward migrant users.

7 Main results of the pilot

7.1 Evaluation activities and target indicators

Before the demonstration phase started, concrete objectives and quantified targets were identified for each of the measures foreseen in the two pilot areas developed by Busitalia/ATAF. The aim was to reach these targets during the demonstration phase through different channels.

The data related to all measures were collected through "before' and 'after' passengers counting on typical workdays and through "before" and "after" surveys conducted by the bus operator (ATAF).

7.1.1 Campi Bisenzio Area

The main objective of the measures implemented in Campi Bisenzio was to improve access to public transport for migrants, the main PT users of this remote and deprived urban area. The first measure in this area concerned the reorganisation of bus line 30/35.

For this measure, the following outcomes were identified:

- <u>Outcome indicator 1</u>: Change in no of trips by bus on line 30 by migrants.

  The analysis and comparison between the after and post data revealed an almost doubling of passenger numbers in the morning peak period:

  o the before data revealed that in a typical workday morning peak (07.30-09.00) there were 382 passengers on bus line 30 and 26.2% of those surveyed were of a migrant background (100 migrant passengers in morning peak).

  o During the after survey the total passengers in a typical workday morning peak (07.30-09.00) was 683 with 26.9% of these migrants (184 migrant passengers in morning peak).

  This represents an 84% increase in bus trips by migrants following the redesign of the line 30/35 bus route.

- <u>Outcome indicator 2</u>: Proportion of migrants who are making bus to tram connections for work, services or leisure purpose.

  The analysis and comparison between the after and post data highlighted a better connection between the bus and tram services:

  o before the redesign the walking distance from the nearest bus stop to tramway bus stop was 700m (approximately a 9-minute walk).

  o Following the redesign, the walking distance from the nearest bus stop to tramway bus stop is 270 m (3-minute walk) in one direction and 150m (2-minute walk) in the

other. Almost half of migrant trips in the morning peak now involve some form of connection (35% to tram and 18% to other bus services) at the new bus stops.

- Outcome indicator 3: Satisfaction with the public transport offer of users of line 30.

   Following the redesign, the survey responses indicate an increase in overall satisfaction with the public transport service. Overall satisfaction with the public transport offer in Campi Bisenzio was sought at three points in time. Firstly, before the service redesign was implemented, secondly after redesign was in place but before improvements to information provision were introduced and thirdly after the new enhanced information was available through the in-bus info panels and the new ATAF app launch.

   o Following the redesign, the survey responses indicated a change in proportion very satisfied with the PT offer from 4% to 11% and from 19% to 28% for those claiming to be satisfied.

   o After the provision of enhanced information there was a further, but smaller, improvement to 15% very satisfied and 26% satisfied.

Moreover, two additional bus stops of line n° 30 were installed and the walking distance from the nearest bus stop to tramway bus stop was reduced from 700 mt. (9 minutes walk) to 270 mt. (3 minutes' walk) in one direction and 150 mt. (2 minutes' walk) in the other.

It can be concluded that this measure successfully reached all the foreseen objectives and identified target indicators.

The measure related to the installation of on-board monitors for passenger information on lines 30 and 35 aiming at improving the quality of the user information of the service for migrants was also successfully implemented. 30 new panels were installed. The target indicator of users' satisfaction level with the quality of information was assessed during the first co-design laboratory: cartoon videos displayed on the on-board panels were found particularly effective to correctly convey information in a clear and understandable way. Moreover, it emerged that the use of this tool could be further enhanced to provide more information on the correct behaviour to have on board the bus (e.g. leave the seat to persons with reduced mobility (elderly, persons with disabilities or pregnant women) or speak with low voices, get in the bus at the front door and get off at the central/rear door, etc.).

The measure related to the introduction of new functionalities on new App ATAF for getting users' feedback in lines 30 and 35 for migrants was aimed at getting a better understanding of the migrants' needs, enhancing the involvement of migrants and improving the appreciation of the bus service on lines 30 and 35. The measure was implemented and, overall, reached good results. In fact, the co-design participatory process was very useful to actively involve the migrants' community and to get a better understanding of their needs and issues faced while using the PT. The results were used to improve the functionalities of the APP.

inclusion

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

7.1.2 San Piero a Sieve Area

Concerning the San Piero a Sieve rural area, the main objectives of the implemented measures were to improve the connectivity between different bus lines and the intramodality between bus and rail services, as well as improving the quality of the user information on the bus and rail services in the rural area of S. Piero to rural commuters.

For this measure the following outcomes were identified:

- Outcome indicator 1: Increase in the number of user of PT service in rural area of S.Piero.

  Based on the passenger counts during morning, afternoon and evening peak in a typical workday, there was a 7.7% increase in passengers after the reorganisation of the bus routes. Looking at the number of trips involving a connection, the proportion of bus users connecting to the train increased from 5% to 7%, while those connecting between buses increased from 6% to 13%. This represents an overall increase in passengers making a connection of 82%.

- Outcome indicator 2: Increase in number of trips involving transport connection to train service due to redesign of bus routes.

  Comparing the data collected before the measure implementation with the "after data" it can be concluded that the measure managed to successfully reach the above indicated outcomes

- Output indicator 1: Reduction in travel time for the connection between two different bus lines and between bus and rail service.

  Unifying the bus stops for all bus lines at the entrance to the train station has made inter bus connections much easier: 54% of bus trips use line 302 which previously stopped 300m from the train station, while 46% of bus trips use line 303 which previously stopped at the wrong side of the train line to access the railway station. The reorganisation resulted in a connection time saving of 4 minutes for line 302 passengers and 30 seconds for line 303 passengers (assuming pedestrian speed of 1.25 m/s). This represents an average connection time saving of 143 seconds for bus to trains passengers and 240 seconds for bus to bus connections.

- Outcome indicator 2: Increase of satisfaction level with ease of making connection.

  When passengers were asked about their satisfaction with the ease of making a connection 7% stated they were very satisfied. When looking at which passengers were 'very satisfied', 95% of those making bus to train connections stated they were 'very satisfied' with their ease of making connections in the after survey (compared to 45% in the before survey). This suggests the service redesign has been the main driver for the increase in satisfaction and that those who actually make connections are very positive about the changes.

In a nutshell, the redesign resulted in:

inclusion

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

i. an almost 8% increase in bus trips;

ii. the proportion of passengers on line 302/303 making connected journeys increased from 11% to 20%;

iii. the number of passengers stating they were satisfied or very satisfied with the PT services in general in the area increased by over 15%.

Overall, for both the route redesign changes and enhanced ATAF information app launch (including intermodal information and train real time information) there was a good increase in general satisfaction about public transport service.

The enhanced ATAF app with new functionalities to improve the multimodal user information for passengers making bus to train connections was launched in June 2020 and the feedback received through the in-app survey revealed a marked improvement in satisfaction with the quality of information. In terms of users' satisfaction level with the quality of the information provided, it has been possible to distinguish between the impacts due to the change in service design and those impacts due to the improvement of user information thanks to three different surveys developed.

When asked about satisfaction with the quality of passenger information available the survey before the service redesign was implemented showed 10% 'very satisfied' and 37% 'satisfied' with the information available. A second survey after the redesign, but before the enhancement of the information app, showed very similar responses with 11% 'very satisfied' and 37% 'satisfied' with the information available. The enhanced ATAF app was launched in June 2020 and the feedback received through the in-app survey revealed a marked improvement in satisfaction with the quality of information with 50% 'very satisfied' and 34% 'satisfied' with the information available.

As a result, the stated increase in satisfaction with quality of information (+36% change in proportion of passengers satisfied or very satisfied equating to a 75% increase in passengers who are satisfied or very satisfied compared to November 2019) highlights that the enhanced information available through the new ATAF app has resulted in an increase in the satisfaction levels of the passengers. These data have to be viewed with some degree of caution due that the survey was carried out in June 2020 (so-called "stage III in Italy in relation with the COVID-19) and therefore those travelling by public transport and using the App may not have represented the full range of travellers during normal circumstances. However, despite the delays and the difficult period related to Covid-19, within 8 days of the official launch of the new ATAF app nearly 2960 total in-app questionnaires were completed across the Florence region (295 related to the Area of Campi Bisenzio and 64 related to S.Piero a Sieve area).

7.2 Pilot Lab vs INCLUSIVITY goals

Accessibility

The first aim of all INCLUSION measures within the Florence pilot lab was to provide a better access to Public Transport services for specific identified target users in the two peripheral areas of Campi

Bisenzio and San Piero a Sieve. This has been achieved through IT interventions, including the release of a new version of the info-mobility APP with crowdsourcing functionality for getting users' feedback and with real time information about the bus and trains timetables, installation of on-board information panels in the buses of Campi Bisenzio area, and installation of a smart pole in the San Piero a Sieve railway station. The co-design participatory process helped Busitalia/ATAF in understanding how to elaborate more accessible information materials for reaching a simpler and more effective communication. In particular, cartoon videos displayed on the newly installed on-board panels on buses of the lines 30/35 were particularly appreciated as able to convey clear messages. Good praise was also showed toward the easy-to-use interface and user-friendly graphics of the new Ataf App.

Convenience and Efficiency

The redesign of PT services in both areas allowed to increase the intermodal connections between buses and tram (in Campi Bisenzio) and buses and trains (in San Piero) thanks to the decreased travel time and walking distance between the different transport modes. This contributed to providing users with an efficient way of changing the mean of transport.

Empowerment

The direct involvement of a group of target users representatives for testing a demo version of the new app proved to be a successful step in the process of APP restyling and overall improvement of user information. This suites perfectly with the principle of empowerment: put more effort into creating conversations, involving the users and making them come up with solutions in the process rather than creating solutions for them.

Empathy

The newly implemented functionality of the feedback survey through the new ATAF app was appreciated a lot by migrants as it gives them the possibility to anonymously express their opinions on the bus service, thus increasing their feeling of integration and motivation to correctly use the bus service.

ACCESSIBLE

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

AFFORDABLE

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

CONVENIENT

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

EFFICIENT

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

EMPOWERING

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

EMPATHETHIC

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

GENDER EQUITABLE

Gender equitable transport systems are designed to treat people of all genders and orientations fairly according to their respective needs, which may require equal treatment or treatment that is different but equivalent2. These include mobility solutions that enable women and LGBTQ+ users to have equitable access to transport services that meet their daily needs. Measures that improve and facilitate intermodality, accessibility and safety are primary considerations for gender equity.

SAFE

Mobility services that increase the perceived and actual safety of all vulnerable users by preventing accidents, theft, violence and harassment. Related interventions include hard measures (e.g. lighting, spatial layout, station and vehicle design, signage, emergency buttons, etc.) as well as soft measures such as human surveillance, communication, staff training and public awareness campaigns.
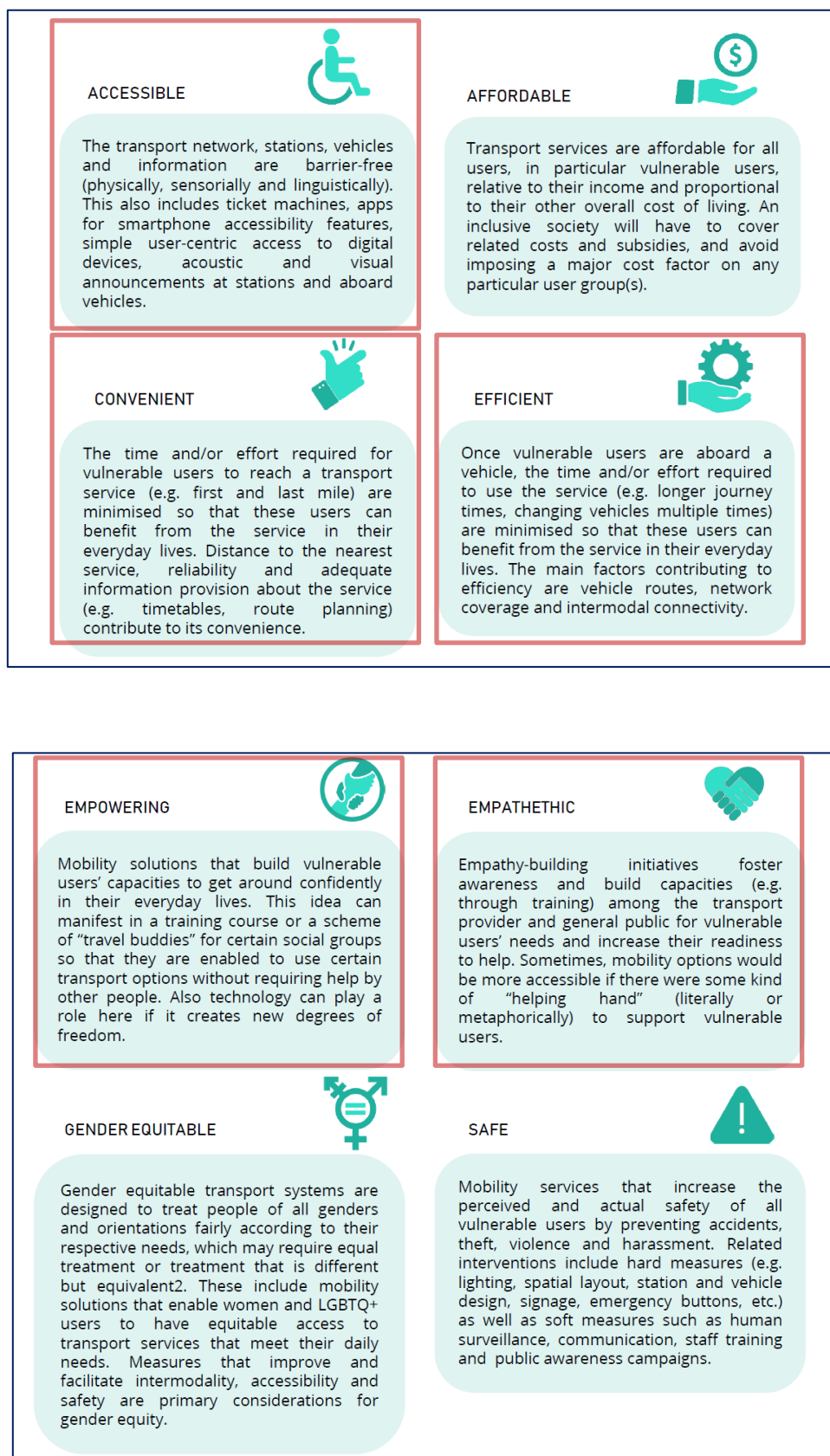
Figure 19 – INCLUSION – Inclusivity goals

7.3 Lessons learnt

From the measures developed throughout the project in the Campi Bisenzio area, it emerged how it is relevant to spend time and effort to understand the need of the user/demand. Not all areas have the same users; not all users have the same requirements. The INCLUSION measures were especially valuable for Busitalia/ATAF since they manage to provide useful insights related to the needs of an important category of Public Transport users (migrants) that would not have been identified otherwise. The simplification of the communication and information material, with the use of simpler Italian words without any other translation in other languages, fewer texts, and a higher number of symbols were identified as main drivers for a provision of clear and correct information to vulnerable users.

Migrants' engagement and users-co-design participatory processes have been quite a critical and not easy activity to organize. The involvement of a volunteer association, to be the intermediate with the migrant community, was a key factor in the process. It allowed to create a dialogue and building up trust relationships with this vulnerable user category (migrants attach importance to people they know from their direct environment (family, friends). Users' association can facilitate contact with the target users and produce a "multiplying effect" for the promotion and communication of the activities towards other target users. It might have been useful to dedicate a long time for this process to be effective, e.g. to go through several feedback and revision loops. The co-creation was more a validation exercise, rather than 100% co-creation from the start.

It would have been good to involve also residents in the design of the app. Several "cultural" considerations that are out of the scope of the Inclusion project were in any case raised during the participatory processes (in particular, the overarching issue about safety both at the bus stop and onboard and the migrants feeling of being marginalized by other Italian passengers and also by drivers).

The testing procedure of the demo version of the ATAF app through the direct involvement of a group of target users representatives, rather than just the contacts with the design and contracting company, proved to be a successful step in the process of the APP restyling and overall improvement. The newly implemented functionality of the feedback survey through the new ATAF app was appreciated a lot by migrants as it gives them the possibility to anonymously express their opinions about the bus service. Also, because people with a migrant background may not be so confident in the written local language, this Pilot Lab highlighted that it is more helpful to give them a check-list with predefined sentences. Further efforts need to be made for involving the target group in being a part of something bigger, giving them a voice, and improving their empowerment. This increases their feeling of integration and willingness to use the bus service properly.

During the participatory process, it also came out the importance of providing communication and information through several tools, not only digital ones. Although most of the involved participants owned a smartphone, it sometimes can happen that users didn't have access to mobile data. The most important aspect is to provide real-time information, both online and offline. The communication should mainly focus on the feeling of efficiency, ease-of-use, as well as being fast and cheap.

Overall, the pilot measures in the Campi Bisenzio areas showed positive and promising results. The increase in the number of passengers, the better tram and bus connection, and the improvement

of users' satisfaction toward the service are outcomes that confirm that with smart and practical solutions (i.e. the reduction of the time for migrants to reach the bus stop or to change the means of transport or how the information are made available for the users) it is possible to have a more convenient and efficient service that better meet the needs of the users and that therefore can improve the accessibility to associations, services or workplaces located in the urban centre. From the operator perspective, these measures led to an increase in the number of passengers (and related revenues), which is certainly a good reason for replicating the measures to other lines.

The reorganisation of bus routes and transport hub in the rural area of San Piero a Sieve aimed to improve the intermodal connections between buses and trains and between buses of different lines by decreasing the travel time and the walking distance between the different stops. The good outcomes of the pilot in San Piero a Sieve highlighted how the provision of convenient and efficient public transport services in rural areas is particularly important for ensuring good accessibility to the surrounding urban areas. Moreover, besides improving the inclusivity of the transport system in rural areas, measures such as the one implemented in San Piero can contribute to decreasing the high dependency from the private car from users. In different European rural areas, people without a personal vehicle are usually at risk of poverty or social exclusion, especially because the public transport offer is the only way for moving, except cars. Transport services oriented to villages and rural areas are usually unprofitable, thus they have been gradually reduced over time or abandoned to themselves, both in response to reduced activity in rural areas and as part of the recent austerity measures. In this scenario, the provision of efficient and reliable services can be determinant for keeping social lives and giving equal opportunities for rural inhabitants.

In terms of recommendations, this pilot showed that the integration of different services is an essential factor, especially for those rural areas crossed by an important railway line. The possibility of shifting from bus to rail in a short time encourages the users to travel with public transport services and give them further opportunities for joining social lives. Multimodal solutions where the last-mile part of the trip is covered by the conventional bus or active modes and the longer part by the train can be promising in different rural areas across Europe. This is particularly relevant if efforts are spent on ensuring good connections among services.

The integration of rail timetables in the new version of the Ataf app highlighted how the provision of accurate and reliable information on the different tools available (in this case, on the specific transport app) is important for encouraging rural commuters in getting towards urban areas with public transport. At the same time, it gives the possibility to users to plan their trips based on a transport service more affordable and efficient, thanks to the real-time information about the bus service combined with the rail timetable.

The strength point of the adoption of crowdsourcing tools for data collection compared to traditional tools (e.g. "on-site" surveys) is represented by the low efforts required to launch the data campaign. In the specific case, the questionnaires developed in the new version of the Ataf app have provided Busitalia/Ataf with a good number of surveys in a short period. However, with crowdsourcing functionalities, it is always important to take care of the context in which the data are collected. Some vulnerable users, such as the elderly, may not have confidence with the technology, so the results may ignore their feedback. In this regard, it is important to refer the data with the main characteristics of the user, asking the basic social information.

8 Assessment

8.1 Benefits of the actions developed

The improvement of users' information measure implemented in Campi Bisenzio and San Piero a Sieve concerned the release of a new version of the info-mobility ATAF APP more targeted to the needs of vulnerable users' groups (migrants and commuters). Despite the delays in the launch of the new ATAF app and the difficult period related to Covid-19, the satisfaction with the quality of information increased substantially once the new ATAF app with improved intermodal information and real-time train information was launched, thus underlying the importance of providing this type of information to users.

The new functionality to collect crowdsourced users' feedback on the operated service could help, instead, identify possible gaps in the service offered or other specific users' requirements that need to be further explored. This is a low-cost functionality that could allow the PT operator to obtain useful indications on the trips and the mobility demand, for example:

- target the analysis using different parameters, such as, for example, seasonality (winter vs summer), day (working days vs weekdays);

- collect further details on specific users' requirements, thereby saving money and efforts to carry out these surveys through traditional means.

The whole process undertaken by Busitalia/ATAF to collect relevant data on the requirements of the identified vulnerable target groups allowed the company to:

o get useful insights and lessons on the process of involvement of vulnerable target groups (migrants).
o Understand how to properly address the communication campaigns and how to elaborate more effective information materials on the PT service

Concerning the financial aspects related to the ATAF app, the following key aspects should be underlined:

- the cost of the App software development and yearly maintenance is covered by ATAF and paid to the software provider with which ATAF has a direct contract.

- the App contents daily management is performed by ATAF staff.

These two main costs are included in the contract that ATAF signed with the Local Authorities for the overall PT services.

The App has some specific "benefits" including the possibility to improve decision making based on analysis of the collected data (from the feedback on the quality of the services to the identification of origin/destination matrix for supporting the service planning revision).

inclusion

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

The possibility to raise revenues through payment from users to access some specific ATAF app functions /services was not considered as the service provided by the App is considered as an integrated part of the service. Instead, the possibility to sell some specific "views/analysis" of the collected data is still under consideration by the ATAF management board.

8.2 Key transferability issues

The redesign of the bus line 30, developed in conjunction with the improved information for migrants, was a part of a process that aimed to identify and listen to the voice of those who are usually more excluded from the public transport system, i.e. of the people with a migrant background. The development of the measures resulted in better accessibility of the public transport services in the peri-urban area of Campi Bisenzio, close to Florence, with good outcomes in terms of an increased number of passengers and satisfaction with public transport service.

Busitalia/Ataf aims to pursue this process based on focus group and co-design in different peri-urban and suburban areas close to Florence, to improve the accessibility and inclusivity of other lines. The pilot tested on line 30 had a good potential of replicability to other areas where, for example, low-income people live. With further two or three ad-hoc focus (e.g. in the southern or eastern part of Florence Metropolitan Area) there could be the possibility to generalize the lessons learned and develop a broader strategy for improving the user information of the overall transport system of Busitalia/Ataf and improving the connections among different PT lines (both bus and tram).

Clearly, for the transferability of any success measures from one area to another, it is necessary to understand not only the context (dimensions, figures, typology, user, etc) but also the policy framework. This is an obvious consideration that too often is not taken into account causing the failure of transferability. For example, the re-design of line 30 was possible to implement once the local and regional authorities gave their approval. These decision-making bodies were mainly convinced due to this measure's alignment with their goal to increase ridership, thereby increasing fare revenue. It is therefore likely that similar measures implemented in other rural and deprived urban areas that benefit vulnerable user groups could boost their chances of receiving funding and approval from local and regional authorities by promoting their business case (i.e. better service attracts more riders and therefore increased fare revenue) towards these decision-making bodies..

In terms of crowdsourcing tools, during the INCLUSION project it was possible to implement the crowdsourcing functionality for getting users' feedback on the operated service. This functionality was successfully developed and tested. It contributed to improve the users' satisfaction level towards the quality of the information provided and thus on the overall service. A further crowdsourcing functionality that Busitalia/Ataf would like to investigate concerns the possibility to users to provide the operator with information about any issues encountered when travelling (such as dysfunction of ticketing machine, issues in the bus stops, etc.) or possible improvements in the operated service. This aspect could be further investigated to understand what steps could be followed for developing the new specific functionality on the Ataf app and for addressing the

complexity in managing the system and high level of back-office involvement for analysing and giving answers to problems raised.

The measure related to the reorganization of bus routes and the transport hub in the rural area of San Piero a Sieve aimed to improve the "physical" integration between the bus and rail services. Further efforts will be spent on improving also the "virtual" integration. Busitalia aims to continue in this direction by identifying the dataset to be aggregated/integrated for the provision of dynamic multi-operator information at bus stops and info channels (especially the Ataf App, but also on the Ataf website journey planner). This would deal with the identification of rail data owner and provider, the ITS system providing the data, the process for generating and updating the data, and how the data is transferred to the Ataf app. Discussions would take place with Trenitalia (i.e. the main rail operator in Tuscany Region) for having a preliminary exchange of views and opinions.

These measures contributed to improving the service provision for rural commuters. Further efforts could be spent on understanding whether there are some additional transport or mobility needs that some other vulnerable users (such as elderly or people with reduced mobility) in San Piero a Sieve still have. The possibility of integrating a shared mobility service based on community-based transport service bus-(or car) based could be investigated and piloted. This would allow a better last-mile connection between the rail station and the dispersed dwelling. It would be substantially innovative in the Tuscany Region due that no similar models are currently operated.

9 Conclusions

The Florence metropolitan area Pilot Lab focuses on two distinct areas within the metropolitan region of Florence: a deprived suburban area north of Florence that has a large population of people with a migrant background, and the rural area of San Piero a Sieve, from which many people commute into Florence for work and school. The implemented measures can be clustered into:

Actions at mobility service level:

    I.   Reorganisation of bus line 30 for migrants in the area of Campi Bisenzio;

    II.   Reorganisation of bus routes and transport hub in the rural area of San Piero a Sieve.

Actions at ITS level

    III.   Installation of on-board monitors for passenger information on lines 30 & 35 for migrants in the area of Campi Bisenzio;

    IV.   Installation of smart pole in the rural area of San Piero a Sieve;

    V.   Introduction of new functionalities in ATAF 2.0 app:

        a. Getting users' feedback on lines 30 & 35 for migrants;

        b. Getting users' feedback in the rural area of San Piero a Sieve for rural commuters

        c. Improving multimodal user information in the San Piero a Sieve area.

The main objective of the Campi Bisenzio pilot lab was to improve access to public transport in the area close to line 30/35 for migrants and provide a better direct connection from the bus to the recently opened tram line with the implementation of two additional bus stops and thus increased ease of access to associations, services or workplaces. Metropolitan Florence Authority ("Città Metropolitana") and especially the Tuscany Region influenced the implementation of these measures, as they had the power to approve or deny their demonstration.

Overall, this measure proved to be successful. It reached almost all impact indicators foreseen at the beginning of the project, showing an 84% increase in the number of trips by migrants, an increase of the proportion of migrants who are making bus to tram connections, and an increase of the satisfaction level towards the Public Transport offers. Co-design workshops and focus groups involving all stakeholders and relevant associations, acting as moderator with the migrant's communities, were viewed as an essential component of the success of this measure. This pilot helped Busitalia/ATAF gathering the relevant missing information on the needs and requirements of the migrant community who represent one of the largest target users of PT in the area of Campi Bisenzio. Given the success of the measure, Busitalia/AFAT aims to pursue this process based on focus group and co-design in other suburban and peri-urban areas close to Florence. These activities would allow improving the accessibility and inclusivity of similar lines in areas where low-income and vulnerable people live.

Moreover, the installation of on-board monitors for passenger information and the development of a new version of the ATAF app with a crowdsourcing functionality to directly collect users' feedback on the operated service was a successful step for the overall improvement of users' information. The new ATAF app offers a low-cost means of helping identify possible gaps in the service offer or other specific users' requirements. The crowdsourcing functionality was also helpful during the recovery from Covid-19 as it allowed passengers to report instances where safety and hygiene protocols are not being adhered to and notify providers and authorities where more capacity is required.

The main objectives of the San Piero a Sieve pilot lab were to improve the connectivity between different bus lines, the intramodality between bus and rail services, and to improve the quality of the user information on the bus and rail services in the rural area of S. Piero to rural commuters. As for the re-organization of the bus line n° 30, also the re-organization of San Piero railway hub and PT lines in the area could not have been realized without the approval of the Tuscany Region.

BusItalia measured the success of its objectives in terms of i) an increase of 7,7% in the number of user of PT service in the rural area; ii) improved connectivity between different bus lines; and iii) the inter-modality between bus and rail service for rural commuters, with an increase of 82% of passengers who make a connection (bus to bus; or bus to train) and improved satisfaction with the PT service.
In the end, Florence pilot lab showed that the integration of different services, the investment in understanding users' needs with co-participatory processes, and the improvement of users' information are all essential factors to improve the overall accessibility of PT service.

The INCLUSION consortium

@H2020_INCLUSION
#H2020INCLUSION

For further information please visit www.h2020-inclusion.eu

Annex: Questionnaire shared during the co-design laboratory

Gentilissimo lettore, Cara lettrice,

Grazie per il tempo che stai dedicando nel leggere il presente documento.

INCLUSION – *Towards more accessible and inclusive mobility solutions in European prioritised areas* – è un progetto Europeo iniziato in Ottobre 2017 che vede il coinvolgimento di partner provenienti da 7 Paesi del'Unione Europea (Germania, Regno Unito, Francia, Spagna, Italia, Belgio e Ungheria) e che mira a comprendere i bisogni di mobilità degli utenti e sperimentare soluzioni di mobilità inclusiva che rispondano a tali esigenze.

Busitalia/Ataf, partner di progetto, sta progettando una serie di interventi per l'area Metropolitana di Firenze per migliorare la qualità delle informazioni del servizio di trasporto pubblico e incrementarne l'accessibilità.

Con questo documento, si mira a svolgere un'indagine per raccogliere feedback da parte dell'utenza sul servizio offerto e sulle informazioni fornite relative al servizio di trasporto pubblico.

Ringraziandola della sua cortesia, la invitiamo, gentilmente, alla massima attenzione nella compilazione del questionario.

PRIVACY *Il questionario è totalmente* **anonimo**. *La informiamo che tutte le informazioni fornite verranno trattate in forma aggregata e strettamente riservata solo per finalità statistiche nel rispetto del "Codice della privacy" (GDPR UE 2016/679)*

Cordialmente

Lo staff di Busitalia/Ataf

inclusion

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

Potrebbe esprimere un giudizio attribuendo un punteggio da 1 (giudizio molto negativo) a 10 (giudizio molto positivo) ai seguenti aspetti del servizio?

Valutazione Linee

1. Come valuti, complessivamente, il servizio di trasporto pubblico?

Per niente soddisfatto   Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

2. La distanza che devi percorrere tra il punto di inizio del tuo viaggio e la fermata di salita più prossima ti soddisfa?

Per niente soddisfatto   Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

3. Come valuti l'interscambio tra le linee del servizio bus?

Per niente soddisfatto   Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

4. Quale linea/quali linee utilizzi con maggiore frequenza?

All'inizio del 2019, Busitalia ha effettuato un intervento di riorganizzazione della linea 30 per migliorare l'interscambio tra il servizio di autobus e la tramvia.

5. A seguito di tale intervento, hai iniziato ad utilizzare/utilizzato di più la tramvia?
   SI / NO

6. Pensi che la riorganizzazione della linea 30 abbia facilitato l'accesso alla tramvia?

   Per niente   Pienamente

1	2	3	4	5	6	7	8	9	10

   Se sì, per quale motivo _____

7. In seguito alla riorganizzazione, la linea è maggiormente rispondente ai tuoi bisogni di mobilità?

   Per niente   Pienamente

1	2	3	4	5	6	7	8	9	10

   Se sì, per quale motivo _____
8. Come valuti la copertura della linea nelle diverse fasce orarie?

Per niente soddisfatto   Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

Informazione all'utenza

9. Come valuti la qualità e la completezza delle informazioni sul servizio nel complesso?

Per niente soddisfatto   Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

10. Come valuti le informazioni trasmesse dai monitor a bordo degli autobus?

Per niente soddisfatto   Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

11. Le informazioni sono comprensibili?

Per niente   Pienamente

1	2	3	4	5	6	7	8	9	10

12. Le informazioni sono utili?

Per niente   Molto

1	2	3	4	5	6	7	8	9	10

13. Come le miglioreresti? _____

14. Hai delle proposte di miglioramento e/o nuove idee e soluzioni riguardo a:
- Informazioni che ricevi alle fermate:

- Informazioni che ricevi a bordo autobus:

Valutazione App demo INCLUSION

1) Come valuti l'aspetto grafico dell'APP?

inclusion

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

Per niente soddisfatto · · · · · · · · · · Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

2) Le funzionalità sono comprensibili?

Per niente · · · · · · · · · · Pienamente

1	2	3	4	5	6	7	8	9	10

3) Come le miglioreresti?

_____

_____

4) I questionari sono utili?

Per niente · · · · · · · · · · Molto

1	2	3	4	5	6	7	8	9	10

5) Pensi che la Funzionalità Orari Treni sia utile?

Per niente · · · · · · · · · · Pienamente

1	2	3	4	5	6	7	8	9	10

6) Quale funzionalità pensi sia più utile?

_____

Valutazione APP ATAF 2.0

Hai mai usato l'APP ATAF 2.0?   SI/NO

Se sì rispondi alle seguenti domande:

- Come valuti le prestazioni dell'APP (velocità, affidabilità ecc)?

Per niente soddisfatto · · · · · · · · · · Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

5. Come valuti l'usabilità e la facilità di interazione?

Per niente soddisfatto · · · · · · · · · · Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10

7. Quanto l'APP ha migliorato la tua esperienza nell'accesso al servizio bus?

Per niente soddisfatto · · · · · · · · · · Pienamente soddisfatto

1	2	3	4	5	6	7	8	9	10