



Holistic Personal public Eco-mobility



D5.3.3 Pilot Realization Report – Coventry. Third Version

Project Acronym	HoPE	
Project Title	Holistic Personal public Eco-mobility	
Project Number	621133	
Work Package	WP5 Pilot Execution, Monitoring and Evaluation	
Lead Beneficiary	INH	
Editor	Sunil Budhdeo	CCC
Reviewer	Sven Maerivoet	TML
Reviewer		
Dissemination Level	PU	
Contractual Delivery Date	30/04/2017 (M35)	
Actual Delivery Date	14/06/2017 (M37)	
Version	V0.6	

Purpose of the Deliverable

The current deliverable D5.3.3 “HoPE Pilot Realization Report – Coventry. Third Version” aims to report the activities carried out to evaluate the HoPE Mobile application developed for the Coventry pilot, along with the result of the 3rd and last evaluation cycle. The document follows the same structure of the previous versions of the D5.3 and it is divided in 3 parts. The first one describes the pilot activities undertaken during the overall evaluation process, including the internal testing of the HoPE Mobile application, the focus group execution and finally the dissemination to real users. The second part of the document presents and discusses the evaluation results extracted by the mentioned evaluation tools, whereas the third and last part of the document concludes the work done with a summary of results. It has to be mentioned that the most important chapters of the current deliverable are the ones dedicated to dissemination activities as well as the evaluation results and conclusions.

Document History

Version	Date	Comments
0.1	01/06/2017	ToC definition
0.2	01/06/2017	Revised ToC definition
0.3	02/06/2017	Second Revised ToC definition
0.4	07/06/2017	Input by CTI added
0.5	31/05/2017	Input by CCC added
0.6	14/06/2017	Proofread version

Deliverable manager

CCC – Sunil Budhdeo

List of Contributors

Sunil Budhdeo	CCC
Vlasios Kasapakis	CTI
Damianos Gavalas	CTI
Christos Zaroliagis	CTI
Grammati Pantziou	CTI
Kalliopi Giannakopoulou	CTI
Spyros Kontogiannis	CTI
Sven Maerivoet	TML
Griet De Ceuster	TML
Filip Vanhove	TML
Gitte Van Den Bergh	TML
Leen Verbist	TML
Veerle Vranckx	TML

List of Evaluators

Sven Maerivoet (TML)

Nature:

Report

Dissemination Level:

PU (public)

Table of Contents

About HoPE	5
Glossary	6
1. Introduction.....	7
1.1. Purpose of this document	7
1.2. Approach. How this deliverable will be addressed	7
1.3. Audience.....	7
2. Pilot activities.....	8
2.1. Internal testing & Focus Groups	10
2.2. Dissemination actions	11
2.3. Pilot execution plan.....	12
3. Pilot results.....	13
3.1. User evaluation results	13
3.1.1. TfWM Trip Planner.....	13
3.1.1.1. Google Play Statistics	13
3.1.1.2. Logging module results	15
3.1.1.3. User Survey results	16
4. Discussion	20
5. Conclusion	21

About HoPE

“A platform for secure payments and smart multimodal trip planning”

The main purpose of the HoPE project is to advance the role of public transportation systems through an open platform. This allows combining interoperable fare management with Intelligent Transport Systems (ITS). The overall platform is user-oriented, making them aware about public transport and eco-mobility. It provides users with a significant mix of services including info-mobility, trip planning, ticket reservation, fare calculation and mobile payments. As such, HoPE is a holistic system, focusing the attention on the 'bigger picture' and how all its parts are interconnected.

The HoPE platform implements secure and accessible payment procedures for fares, and provides travellers with smart trip planning. This adoption of smart trip planning has provided us with the opportunity to get intelligent advanced traveller metrics, which will be demonstrated during this report. These enhancements include key metrics associated with trips, e.g. fares, durations and emissions.

The HoPE platform was piloted and tested in three European cities (Coventry, West Midlands, UK; Athens, Greece; and Basque Country, Greece). The platform was applied to a wide set of local and regional transportation modes included buses, underground subway systems, overground railway lines, car-sharing services, bike sharing services, on demand transport and others forms that were available.

Glossary

IFM	Interoperable Fare Management
ITS	Intelligent Transport Systems
ATIS	Advanced Traveller Information Systems
West Midlands or West Mids	The region of the United Kingdom in which Coventry is situated
Swift	The West Midlands' regional card-based payment system
TfWM	Transport for West Midlands: the regional body with responsibility for public transport
CCC	Coventry City Council
HoPE	Holistic Personal Public Eco-mobility
DAU	Daily Active Users
MAU	Monthly Active Users
DMR	Daily Active Users / Monthly Active Users Ratio
APK	Android Package Kit
POI	Point of Interest

1. Introduction

1.1. Purpose of this document

The current document discusses the evaluation actions undertaken in the framework of Task 5.3, according to the pilot realisation plan defined in the framework of Task 5.1, along with the evaluation results, focusing on the 3rd and last evaluation cycle which started the 1st of March 2017 and finished the 31st of May 2017.

1.2. Approach. How this deliverable will be addressed

This document is prepared for those transport operators and transport authorities, who are participating in the HoPE pilots and aims to provide them with an overview of the executed activities of the pilot realisation and inform them on the obtained so far evaluation results on the HoPE Mobile application, developed for Coventry during the 3rd evaluation cycle. Finally, the technical partners can utilise this document to understand possible improvements on the HoPE Mobile application.

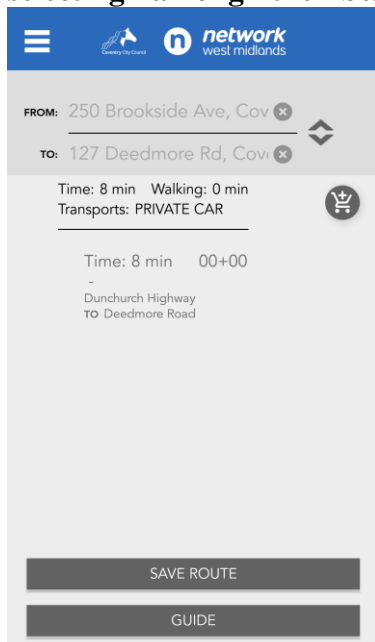
1.3. Audience

The intended audiences of this document are: (i) all the stakeholders of the HoPE project, so as to overview the piloting process and results towards the HoPE mobile applications and platform; (ii) the pilot operators who will use this document in order to understand the 3rd cycle evaluation results of the HoPE Mobile application developed for the Coventry pilot; and (iii) the technology providers in order to understand possible improvements on the abovementioned applications

2. Pilot activities

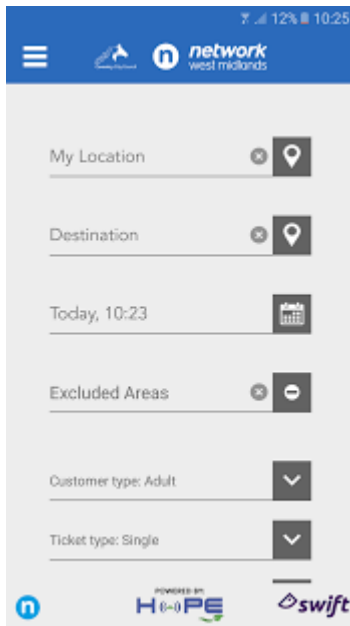
The pilot operations that take place during the evaluation of the HoPE mobile applications are separated in three (3) iterative cycles (with incremental technical functionalities). Detailed information on the planned evaluation actions which take place during the evaluation cycles are presented in D5.1.1. The previous version of this document (D5.3.2) presented in detail the evaluation actions and results for the area of Coventry during the 2nd evaluation cycle. This document shows the progress done during the 3rd evaluation cycle which started on March 1st 2017 and ended on May 31st 2017.

In detail, this document presents the evaluation results towards the TfWM Trip Planner application. TfWM Trip Planner allows users to plan their trips in West Midlands by selecting among the best available routes using private or public transport.

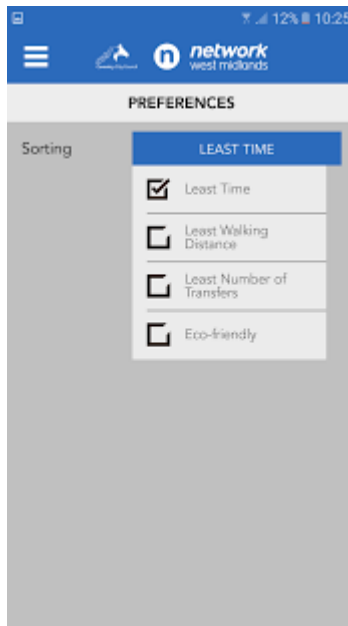


(g)

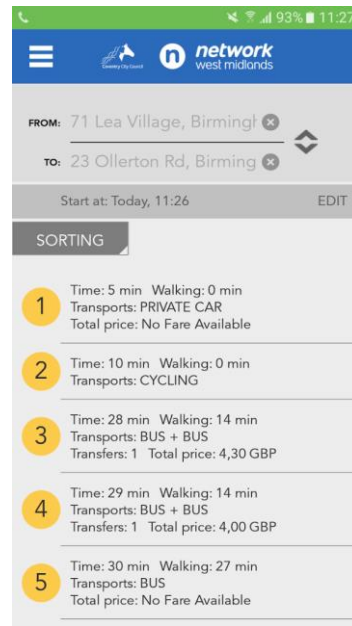
Figure 1 below briefly presents the TfWM Trip Planner application aspects. Detailed description of the TfWM application exist in D3.1.1 (and its next versions).



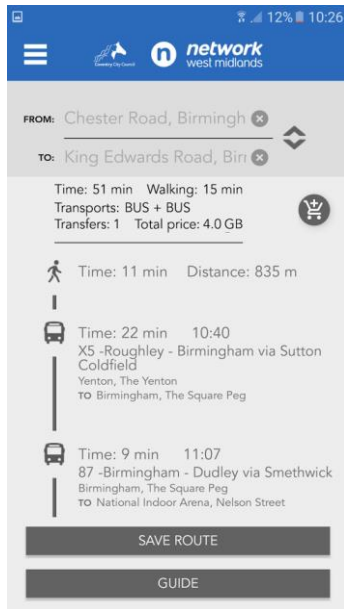
(a)



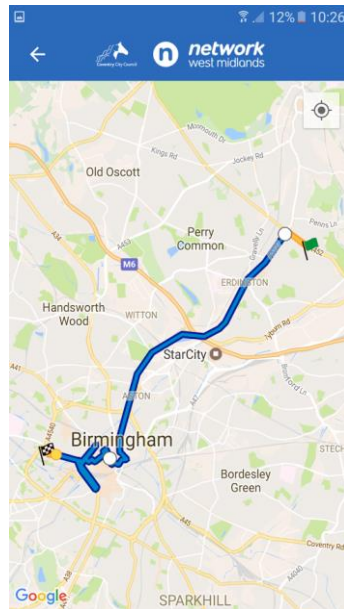
(b)



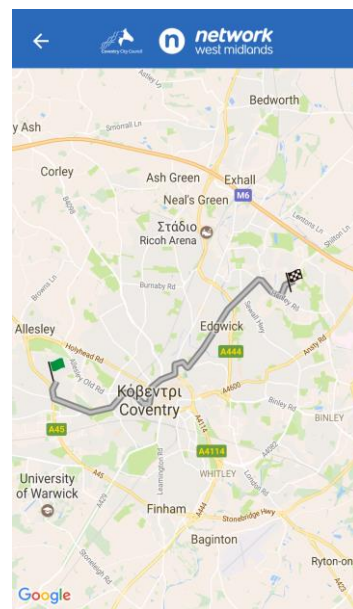
(c)



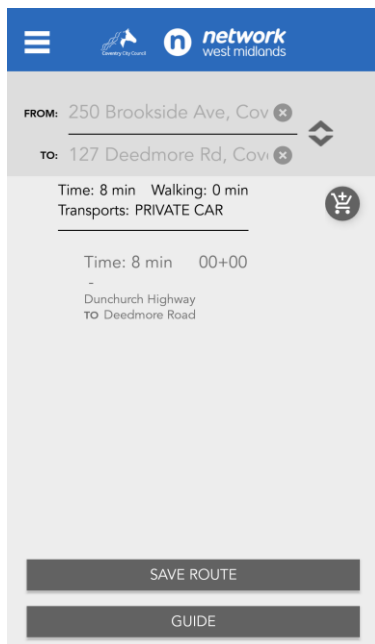
(d)



(e)



(f)



(g)

Figure 1: TfWM Trip Planner interfaces: (a) Trip preferences (e.g. origin, destination, date/time) setup; (b) Sorting preferences; (c) Available route plans presentation; (d) Route plan details; (e) Route plan map, (f) Walking Options and (g) Private Car Option

2.1. Internal testing & Focus Groups

Prior to the dissemination of the HoPE mobile applications to the public, a detailed internal testing phase took place where the consortium members tested the applications, revealing several issues later addressed by the technical partners. Also, the HoPE mobile applications were tested in detail by a focus group where a small group of experienced users participated. The focus groups results were also disseminated to the technical partners and the issues revealed were resolved. Being already internally tested and also tested by the focus groups the TfWM Trip Planner application was also internally tested prior to the 3rd evaluation cycle, with the process revealing a few minor bugs which were quickly addressed by the technical partners.

Here it must be noted that the TfWM Trip Planner internal testing and focus groups results are discussed in detail in the previous versions of this deliverable (D5.3.1, D5.3.2).

2.2. Dissemination actions

Coventry City Council engaged multiple partners to work with on dissemination of the HoPE platform. We were initially challenged by staff handovers and a reduction in available personnel resources however we were still able to make some progress. The initial efforts for dissemination of the application were focussed internally. We requested that information about the app be released in the daily newsletter, sent out to all members of Coventry City Council and the wider West Midlands community. We provided the communications team with a brief and logos to enable them to distribute it on all channels available to them. We attended seminars and conferences promoting HoPE. At the same time, we utilised our personal networks, reaching out through social media and requesting assistance from organisations we'd previously had good professional relations with. This widened the potential user pool as it included people who did not work in transport and infrastructure, and extended to other professions and industries such as charities, marketing, and consulting. Connecting with charities enabled us to gain exposure with a greater diversity of potential users. One charity that agreed to disseminate the application worked exclusively with young people, the majority of whom were public transport users and likely to benefit from opportunities to create a modal shift. There was potential for exciting feedback from this user group, given that one of the charity's cohort focussed entirely on environmental issues. We raised great awareness of HoPE as many people had exposure to it, however this did not convert to download's we would have liked. Potential users noted the difficulty of finding the application in the android store and several intuitive keyword searches did not bring up the application. The West Midlands has a saturated market for travel planning apps and bigger brands, so we expect a large number of users to have dropped off at this point.

We then reached out to our colleagues at partner organisations and delivered requests to institutions like research departments at local universities, private sector colleagues, and other public transport bodies. We suspect some may have downloaded the application once, and reviewed it as a group activity limiting the measurable we needed for quantitative data. We were able to gain their consent to distribute and they encouraged their colleagues and reports to download the applications. Transport for West Midlands engaged heavily in testing and completing surveys providing very good feedback for our development.

We revisited internal support, following informal requests across departments we escalated to the internal body that manages the major teams within the transport and infrastructure department and requested further downloads. These requests were repeated and we noted that internal awareness of our development work could be higher. Colleagues were not always aware that we wanted feedback both good and bad, as the purpose of development projects is to create new technologies. Anecdotal evidence received supported this, people were less willing to provide feedback and use the application if their initial feedback wasn't as positive. Other informal feedback included that people were less willing to download an application if the ratings or comments on the android store were not high. The Play Store rating directly influenced people's decisions to download.

Towards the end of the second cycle we reached out and made direct contact with the presidents of local student unions and asked them to promote the application and encourage downloads amongst their students. Whilst the presidents were amenable to the dissemination proposals we had approached them towards the end of their second semesters. With upcoming holidays and exams, we were not expecting a high uptake however contacting local student unions was a new and successful endeavour for us and is something we will expand upon in the future – there are numerous higher and further education institutions within the West Midlands and going forward participant recruitment will have a higher focus for the work intelligent mobility does.

We learnt that our collective approach to participant recruitment wasn't as productive or effective as it needed to be, we were not retaining previously recruited participants for other research projects and were constantly having to sell new applications to get the buy-in that we need. The challenges that we faced in HoPE participant recruitment meant that we were not seeing the return on the investment of our time that we needed. The HoPE project served as evidence that an overhaul of our recruitment techniques was required and this is underway. We are working with behavioural psychology economists to master the most effective terminology, developing a co-ordinated communications strategy, researching effective incentivisation techniques, integrating with bigger public transport bodies in the West Midlands and aiming for a more effective recruitment strategy that will deliver the download and feedback we need.

2.3. Pilot execution plan

The pilot execution plan (e.g. recruitment of the participants, application distribution, survey completion after application usage etc.) remains the same as during the 2nd cycle, for which we refer to Deliverable D5.3.2.

3. Pilot results

3.1. User evaluation results

The dissemination of the HoPE mobile applications was carried through two different channels during the 2nd cycle. At first and for most of the 2nd cycle duration, the HoPE mobile applications were disseminated via TestFairy¹. However, the obligation of the users to download a separate Android Package Kit file² (.apk) and enable the Unknown Sources³ option to install the applications when using TestFairy, had an impact to the overall usage of the applications. Therefore, efforts were put by the consortium members and all the HoPE mobile applications were moved to the Google Play⁴. Google Play is rather widespread among Android users and is a trusted source to install applications, featuring easier application installation process. In the following sections, the evaluation results of the 3rd evaluation cycle towards the TfWM Trip Planner application are presented.

3.1.1. TfWM Trip Planner

3.1.1.1. Google Play Statistics

As already mentioned above, increased efforts by the consortium members resulted into moving the HoPE mobile applications from TestFairy to Google Play, easing their dissemination to the public. Figure 2 presents in detail the evolution of the total users (70 in total and 46 during the 3rd cycle) who installed the TfWM Trip Planner in their devices, along with the active device installs (38 in total and 25 during the 3rd cycle).

¹ <https://testfairy.com/>

² https://en.wikipedia.org/wiki/Android_application_package

³ <https://android.gadgetsacks.com/how-to/android-basics-enable-unknown-sources-sideload-apps-0161947/>

⁴ <https://play.google.com/store>

Figure 2 reveals the increased dissemination efforts which took place during the 3rd evaluation cycle to attract users to download the TfWM Trip Planner application. Also, Figure 2 shows that a high percentage of users (54%) who installed the TfWM Trip Planner application kept it in their smartphone devices for further use, revealing the promising application user acceptance and usefulness.

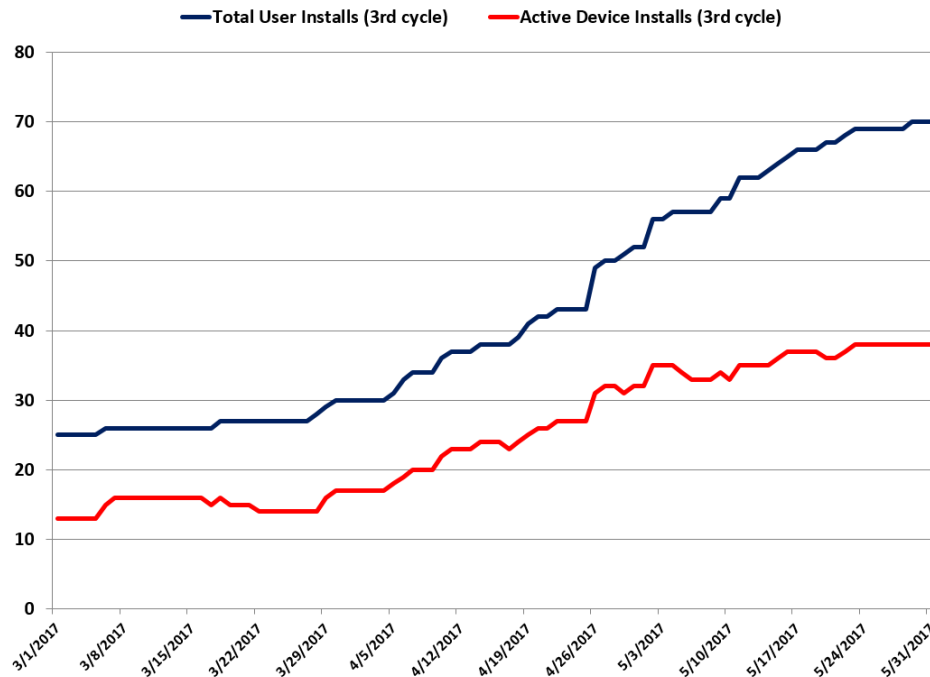


Figure 2: Evolution of Total User Installs (the total number of unique users who have ever installed this application on one or more of their devices) and Current installs from Google Play Statistics (the number of devices that have been active in the previous 30 days and on which the application is currently installed).

Moreover, Figure 3 shows the total user installs by country. Most of the users downloading the TfWM Trip Planner application had registered their smartphone devices in the United Kingdom, an expected result as the dissemination of the application targeted users in the above area. However, a number of users who had their smartphone devices registered in other countries used the application as well.

<input type="checkbox"/>	United Kingdom	21	70.0%
<input type="checkbox"/>	United States	4	13.3%
<input type="checkbox"/>	Italy	2	6.7%
<input type="checkbox"/>	Belgium	1	3.3%
<input type="checkbox"/>	Brazil	1	3.3%
<input type="checkbox"/>	Greece	1	3.3%

Figure 3: Total User Installs by country

3.1.1.2. Logging module results

Figure 4 presents the extracted from the logging module (developed for the recording of the user interaction with the HoPE mobile applications) popular origins and destinations the users set when using the TfWM Trip Planner application. Most of the origins and destinations are concentrated to the area of Coventry, with some also set in the area of Birmingham.

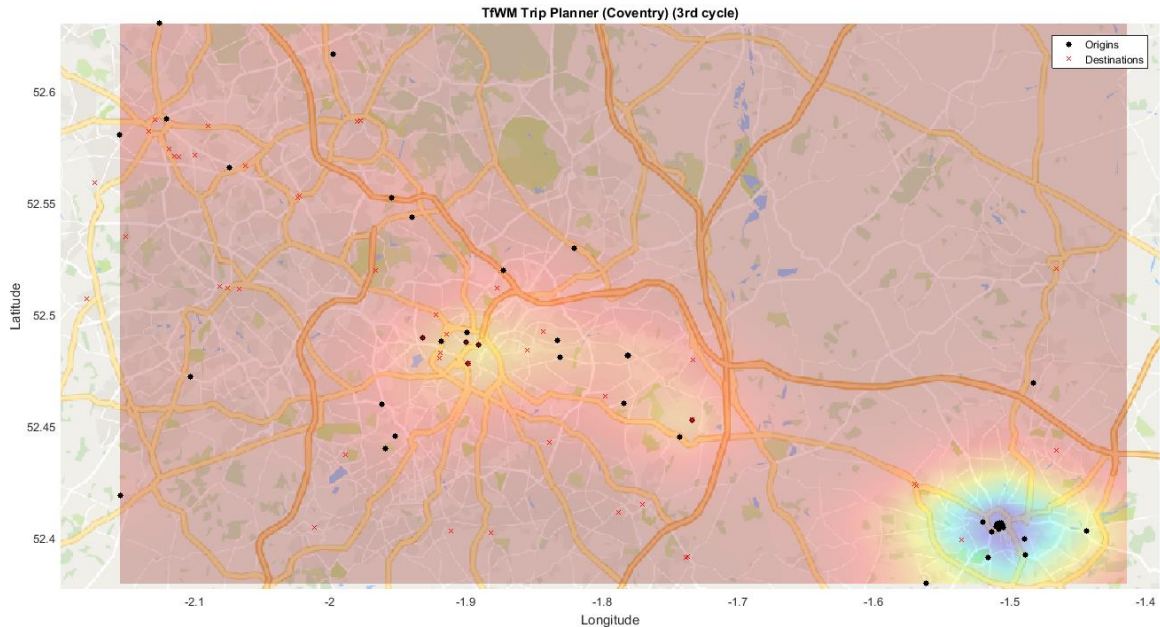


Figure 4: Popular Origins and Destinations of TfWM Trip Planner application

Finally, Figure 5 below reveals that most of the users started using the TfWM Trip Planner application during morning hours, probably when leaving home, until early in the evening, while the application usage dropped during night hours.

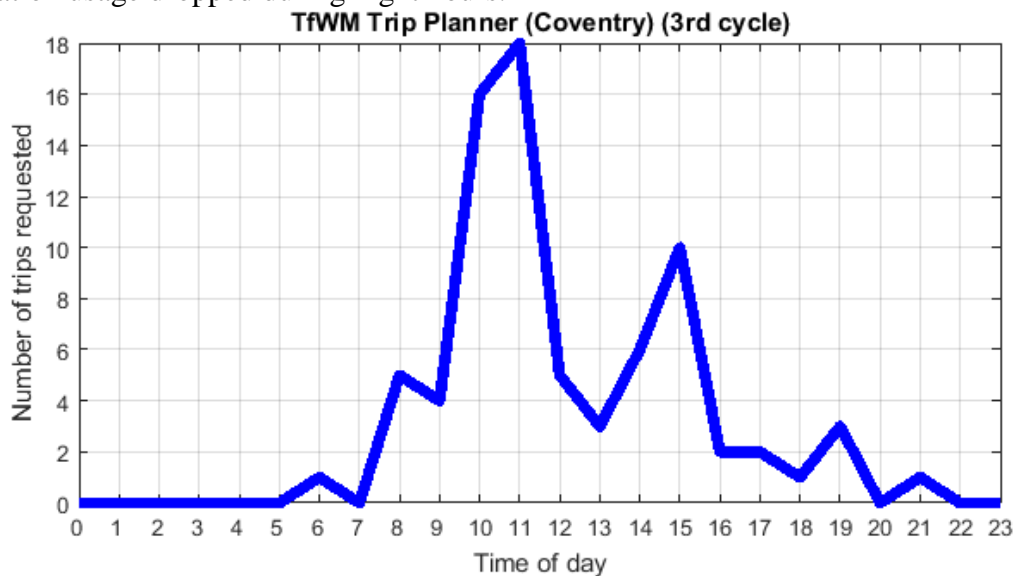


Figure 5: Number of trips requested by time of the day

3.1.1.3. User Survey results

In the 3rd evaluation cycle a total of 31 surveys, embedded in the TfWM Trip Planner application, were completed. Figure 6 shows the user satisfaction based on the routes plans provided by the TfWM Trip Planner application, where almost all users (~94%) stated that they were satisfied with the route plans, while a small number of users (6%) were neutral. This results shows the high-quality of the route plans provided by the TfWM Trip Planner application.

I have been satisfied with the route plans provided by the application.

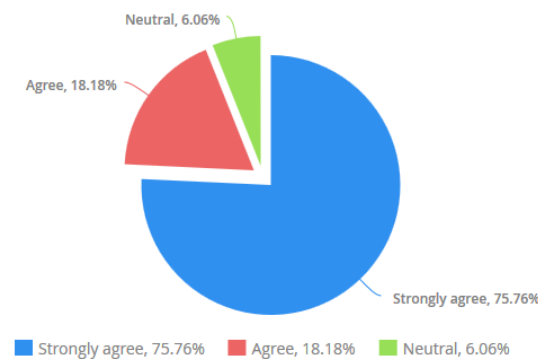


Figure 6: User satisfaction

Also promising were the results on the usability of the TfWM Trip Planner application. As Figure 7 reveals most of the users (~94%) agreed on the fact that the process for requesting a route plan using the TfWM Trip Planner application was easy, while only a small number of users (3%) found the abovementioned process hard to follow. Also, a small number of users (3%) was neutral toward this application aspect.

The process for requesting a route plan has been straightforward.

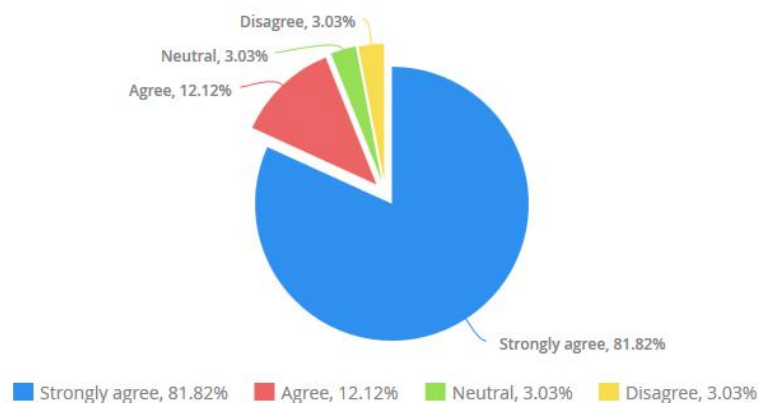


Figure 7: TfWM Trip Planner usability

One of the most interesting results of the evaluation of the TfWM Trip Planner application was the user opinion towards the application impact on their transport habits. As shown in Figure 8, most of the users (94%) stated that they changed their transport mode after using the TfWM Trip Planner application with only 6% of the users disagreeing with that statement.

The use of the application motivated me to alter my transport mode.

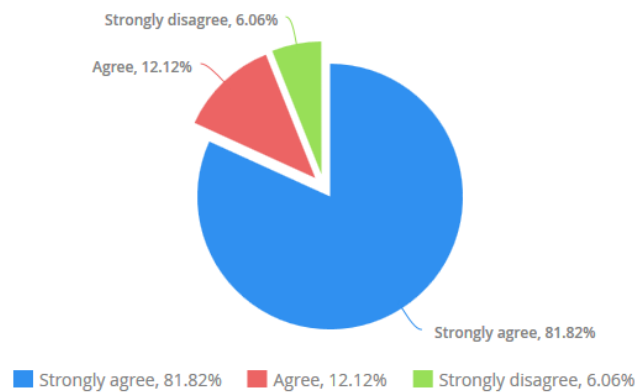


Figure 8: TfWM Trip Planner impact on transport mode

As already mentioned, Figure 8 shows that the users of the TfWM Trip Planner application declared that they altered their transport mode after using the application. Another promising result towards the same direction is revealed by Figure 9, where 84% of the users agreed that using the TfWM Trip Planner application motivated them to use public transport, with a small percent (6%) disagreeing and also a small percent of the total users (9%) being neutral towards this issue. This evaluation result is rather valuable, showing the potential that the provision of applications such as the TfWM Trip Planner has towards motivating users to alter their transport mode and use public transport.

I used public transport because of this application.

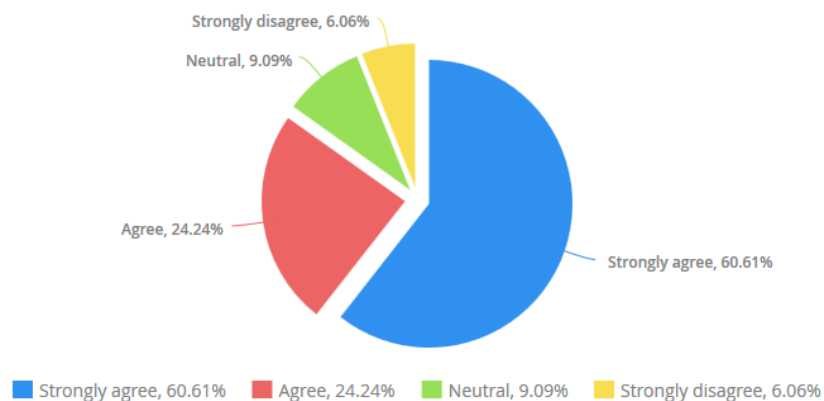


Figure 9: TfWM Trip Planner impact on user transport habits

Continuing, Figure 10 clearly shows that the functionality of the TfWM Trip Planner application to provide route plans considering several criteria selected by the users (e.g. fastest route, least number of changes) is widely accepted by the users, with ~91% of them recognizing its usefulness.

The option to get route planning with respect to several criteria (fastest, least number of transfers, etc) has been useful.

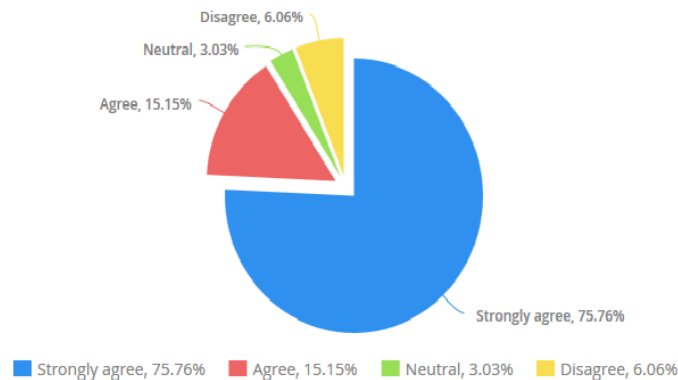


Figure 10: TfWM Trip Planner options usefulness

Moreover, Figure 11 reveals that most of the users (~91%) agreed that the TfWM Trip Planner application provided them with high quality and accurate route plans, with only 6% of the users being neutral towards this aspect of the application.

The information provided by the application has been accurate.

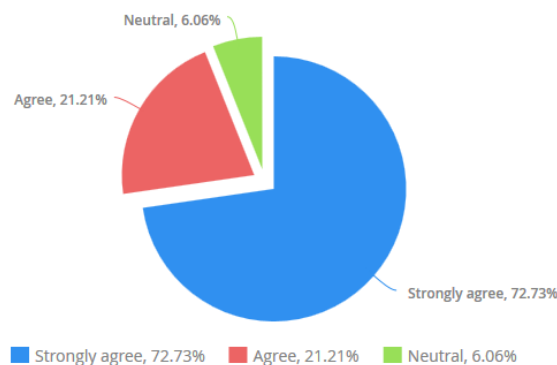


Figure 11: TfA Trip Planner route information accuracy

Finally, being able to see the total fare of a route plan provided by the TfWM Trip Planner application, was a useful functionality according to the user opinion, with all users (100%) finding it useful. Detailed results on the above-mentioned functionality are presented in Figure 12.

Did you find it useful to see the fare?

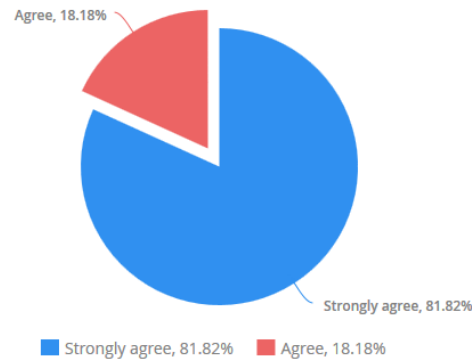


Figure 12: TfA Trip Planner fare functionality usefulness

4. Discussion

During the 3rd evaluation cycle the TfWM Trip Planner application went through an internal testing process where the consortium members tested the applications. A few minor bugs were revealed during this process and were quickly addressed later by the technical partners.

The TfWM Trip Planner application was disseminated using Google Play to ease the user access to the application. Overall the evaluation process of the abovementioned applications was conducted rather seamlessly and provided a unified framework which covers the aspects of the applications, from the early stages of development, over its dissemination, and finally to their evaluation by real users. This framework also allowed the involved participants to closely follow the applications evolution towards its final product form.

The statistics extracted from the Google Play platform reveal that the TfWM Trip Planner application has already attracted several users, with a potential to attract even more in the future. Also promising is the high percentage of users who kept the application installed in their smartphone devices for further user, indicating its user acceptance and usefulness.

The user surveys towards the TfWM Trip Planner showed that the application was easy to use and provided accurate and high quality route plans. Also, the TfWM Trip Planner application proved to be rather useful to the users who appreciated its functionalities and were satisfied by the application usage. However, one of the most important evaluation result was the impact of the TfWM Trip Planner application towards the transport habits of the users. As the evaluation results showed many of the users were motivated to alter their transport mode and most importantly they were motivated to use public transport. Finally, the evaluation of the TfWM Trip Planner and the usage of the logging module developed to record user interaction with the HoPE mobile applications revealed the user habits towards the usage of the application during the day, also revealing the areas the users prefer to start and end their trips.

5. Conclusion

This deliverable includes a presentation of the evaluation actions undertaken to evaluate the TfWM Trip Planner application and show the progress done for the 3rd evaluation cycle.

The evaluation results extracted from the Google Play platform, the logging module developed to record user interaction with the HoPE mobile applications and the user surveys, revealed promising results towards the application usefulness and user acceptance, also revealing its impact on user transport habits. Finally, the evaluation of the TfWM Trip Planner application revealed the user habits towards the time of the day they tend to use the application the most, also showing the popular origins and destinations of the requested route plans.