

D5.2 Toolkit to incentivise public transport and mobility active modes in UPPER living

WP5 Technology and strategies to trigger the behavioural change in citizens in favour of PT





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Author(s)	Organisation
Pietro Podestà	FACTUAL

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Abstract

Deliverable D5.2 presents the findings and recommendations from Task 5.2 of the UPPER project, which focuses on identifying effective incentives for active transport, empowering citizens, and reducing car ownership.

The deliverable provides a comprehensive overview of the measures developed under Task 5.2, including TES_10, OSL_04, IDF_07, LEU_05, and ROM_09. It also includes a collection and description of successful active transport initiatives categorized by user profiles, recommendations for different incentive types to promote active mobility in the Living Labs, detailed descriptions of areas for improvement identified by horizontal partners, and workshop outcomes. Additionally, the deliverable features a case study analysis highlighting the implementation and impact of one or more of the developed measures.

Overall, the deliverable offers valuable insights for policymakers, urban planners, and transport operators seeking to promote active transport and create more sustainable cities.

Keywords

Active transport, incentives, public transport, walking, cycling, citizen empowerment, car ownership reduction, sustainable mobility, urban planning.



1.Introduction

1.1. Scope of the Document

This deliverable, D5.2, presents the findings and recommendations from Task 5.2 of the UPPER project, which focused on identifying effective ways to incentivize active transport modalities, empower citizens, and give them control.

The scope of this document includes:

A comprehensive overview of the measures developed under Task 5.2:

- TES_10
- OSL_04
- IDF_07
- LEU_05
- ROM_09

A collection and description of successful active transport initiatives categorized by user profiles, including vulnerable groups.

Recommendations for different incentive types to promote active mobility in the Living Labs.

Detailed descriptions of areas for improvement identified by horizontal partners during a measure appraisal exercise and workshop.

1.2. Intended audience

The intended audience of this document is all those professionals involved in PT improvement, including mobility managers in municipalities, public companies and private companies, transport technicians and transport regulators. The document presents the measures related to the behavioural change defined and developed within UPPER by different European cities, which can be used as case studies by mobility professionals from other cities.

In addition, the collection of reference documents, guides and mobility initiatives implemented in EU cities for promoting behavioural change in favour of PT, are also a recommended read for professionals aimed at improving sustainable mobility in their cities.

1.3. Structure of the document

The document is structured in six sections, including this introduction. The second section of the document presents the methodology followed to perform the different activities comprised by Task 5.4. The third section presents the results of the task related to generating a collection of reference projects and initiatives, to support cities in the development of their mobility measures within the UPPER project.

The following section (fourth) is focused on describing the process followed to support the cities in the mobility measures development. This section reports the results generated along the monitoring process performed jointly by mobility measures' contact persons and the task team.

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The fifth section of the document presents the results generated in the workshops, which were attended by the cities, the horizontal partners, and all partners involved in the task. Two workshops are described: a first one focused on sharing experiences and good practices among cities involved in T5.2 (and WP5 in general), and a second one aimed to produce points of attention to be considered by the cities' teams when developing their measures. The second workshop's preparation included an appraisal of cities' mobility measures (definition of points of attention) by the **UPPER horizontal partners**, which are the consortium members with cross-cutting expertise in various areas related to urban mobility. These partners provided valuable insights and recommendations to the cities.

The last section of the report comprehends a collection of conclusions related to the main activities performed in this task.

1.4. Measures included under Task 5.2

As stated in subsection 1.1, this task has focused on measures that leverage incentives to foster a behavioural change to public transport and active modes. The list of measures includes:

Table 1: List of measures included in Task T5.2

Measure ID	Title
TES_10	Incentivise the use of PT in combination with active modes
IDF_07	To incentivise the use of Public Transport for commuters
LEU_05	Mobility for all by optimising the use of financial incentives to increase the share of PT
OSL_04	Reduce dependency on car ownership
ROM_09	To create incentive packages to support multimodality

2.Methodology

2.1. Supporting resources: A systematic review

The review to identify reference results was undertaken by Factual, which based it off its previous experience with incentivisation strategies. The resources include a literature review of the current state of subsidization in Europe, a stated preference study for the implementation of targeted incentives in 5 cities in Europe, case studies showcasing different approaches to incentives and finally an overview of incentive management tools.

2.2. The Measures Support Leaders Group

As mentioned above, WPs 3,4 and 5 share common goals; to develop the UPPER tools and to make sure that all the necessary steps have been taken in order to get the 84 measures ready for implementation, in the framework of WP6. Having identified from the very beginning his common goal, the participating horizontal partners (WP and Task

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leaders) decided from the very beginning to join forces. More specifically, aiming to ensure that all partners involved in the development of the measures, including cities and horizontal partners, are aware of their responsibilities and the corresponding timeline, they decided to formulate a group, entitled "Measures Support Leaders Group" (MSLG) which was created at the beginning of the duration of these Tasks, in M8.

CERTH being the leader of WP4, under which most of the measures are prepared, was appointed leader of the MSLG. The group consisted of the leaders of the tasks under which the measures are developed (T3.4, T3.5, T4.2, T4.3, T4.4, T4.5, T5.2, T5.3, T5.4), while meetings were held in a monthly basis. Table 2 presents the UPPER partners forming the MSLG.

Table 2: Members of the Measures Support Leaders Group.

Task	Leader
T3.4 "Re-design the urban mobility space to promote the use of PT"	ETRA
T3.5 "Definition of new operational and policy-based measures and solutions regarding zonal and network-based UVAR and parking"	POLIS
T4.2 "New services for users and PT operators based on the existing mobility data collection and sharing"	IFPEN
T4.3 "Improved PT efficiency addressing specific needs and situations such as expected an unexpected events"	FACTUAL
T4.4 "Improved information and added-value services enhancing multimodality"	CERTH
T4.5 "Improved comfort, convenience, safety and attractiveness of transit services"	UITP
T5.2 "Incentivize PT offer and active modes in the living labs"	FACTUAL
T5.3 "Innovative strategies and solutions to improve public perception of PT"	FIT
T5.4 "Behaviour-change oriented mechanisms to promote the use of PT"	IBV

The aim of the group may be summarized as follows:

- To meet the goals foreseen in the Grant Agreement, in relation to the aforementioned Tasks;
- To provide meaningful support to the cities' representatives during the development of their measures;
- To ensure that all task leaders provide the same level of support to the cities developing measures under their task;
- For the cities to acquire a clear understanding of the steps needed to develop their measures and the support they will receive from task leaders (and other horizontal partners involved in the task);
- To monitor the progress of the measures' preparation process and timely identify any challenges/delays.

To achieve all these, a template entitled Monitoring Template was created and used in order to monitor the progress of all measures' development. The first draft was created by the group's leader but was then circulated among all members to review it. Once it was finalized, each member of the MSLG had to fill it in for all the measures under their Task. The aim of the template is to briefly present each measure and its expected outcomes (extensive measures' descriptions are included in D2.2) and to identify all steps needed to develop the measures. For each step a responsible partner is assigned as well as specific deadline. In addition, each step should be accompanied by a monitoring indicator; this indicator is not related to the evaluation process but it refers to the main output of the step so that the step is considered completed. The fields to be defined for each step in the Monitoring template are shown in Figure 1.



Steps to ready-to-demo measure

Steps	Description	Involved partners/exte rnals	City contact person	Category of action	Deadline	Monitoring indicator	Comments
1	Define the step e.g., Definition of the area and the use cases	Define the partners responsible for this step	Email of the responsible person (Partner's name)	Choose from Data/Infrastructure/Le gal/Safety/Social/ Technical/Software	Define the data when the step should be completed	Define what the output of the step will be e.g., Description of area and use cases	Include any clarifications etc.
2							
3							
4							
5							
			LAUNCH OI	F THE DEMO (please fill in the	e date)		·

Figure 1: Table of steps to be defined by Project partners in the Monitoring template.

Once the task leaders had filled the templates in, the templates were sent to the corresponding cities to review and finalize them. One monitoring template was created per measure. These templates were then utilized by each task leader to track the progress of the defined steps for the measures under their task. This was done through the following procedure: prior to each monthly MSLG meeting, each task leader contacted the partners responsible for the measures' development to ask about the progress of each measure under their Task. A short but concrete presentation was then created and presented during the meeting in order to report the progress and any challenges or delays (if applicable).

The template of the monitoring template, along with the completed templates for the 5 measures prepared under Task 5.4 can be found in *ANNEX 5: Measure monitoring templates for the measure included in T5.2.*

2.3. Measures support workshop series

2.3.1. High-level approach

To support the cities along the development stage of the mobility measures, to facilitate the information exchange among the cities and to take benefit of the know-how and knowledge of the horizontal partners of the UPPER's consortium, it was proposed to organise participated workshops in both formats, in-person and online.

The first workshop, an in-person workshop organised during the second GA meeting, was aimed in sharing learnt lessons and experiences among pilot sites. The second one, in a virtual format, was aimed in reviewing the mobility measures, arising points of attention related to the measures that could support cities' teams in the final steps of the development process.



2.3.2. Workshop 1: Barriers, challenges and good practices in the measures' preparation process

The Rome GA assembly, performed in month M13 (January 2024) of the UPPER project, was seen as an opportunity to share experiences among cities, on how the development process of mobility measures was progressing. The deliverable D2.2, released on month M7 (July 2023) included a review of all the measures descriptions, tackled by a refinement process of measures' description. By performing this refinement process, it was revealed how some measures development was matured and very advanced, while others were still concepts, lacking tangible proposals.

It was clear that some cities could benefit from the lessons learnt of others (those with fully developed measures), and the consortium partners agreed on the idea of organising a workshop during the Rome GA, to exchange experiences among cities when developing their mobility measures. This workshop was Workshop 1, conceived as a forum where cities to present some measures (highly developed vs less developed), followed by questions and an open discussion among participants (cities and other UPPER partners).

2.3.3. Workshop 2: Points of attention for maximizing measures' impact

The process defined to support and to accompany cities in the development of mobility measures resulted in a monitoring process guided by the leaders of those tasks including mobility measures (i.e. T3.4, T3.5, T4.2, T4.3, T4.4, T4.5, T5.2, T5.3, T5.4). In this monitoring process, the cities had the support of task leaders, but the knowledge and know-how of UPPER's horizontal partners¹ participating in the tasks was missing. In order to correct this situation, and to benefit from the mobility knowledge of and associations, including those representing users, cities, PTA²s and PTO³s, the consortium proposed to organize an assessment process of the mobility measures, and a workshop to discuss the results generated by the assessment.

The assessment was organized by collecting *points of attention* linked to the measures, basically issues to be considered by cities' teams when developing their mobility measures. These *points of attention* were organized around topics (categories) relevant to the development process, some of them generic, like *stakeholder involvement*, some of them specific for mobility, like *Mobility as a Right*. The collected *points of attention* were analysed, and discussed in a participated workshop with cities and horizontal partners.

3.Supporting resources: Reference tools and guides

This chapter provides a summary of the supporting resources (guides, articles, case studies, etc.) that serve as a theoretical basis for the development of Task 5.2. As incentivisation is a specific aspect within the broader of behavioural change, many of these resources are in common with other tasks within WP5. In order to avoid repetitions, in this report only the resources specific to incentivisation are included. To access a broader range of resources, please refer to D5.3 and D5.4.

¹ Horizontal partners of the UPPER project are those partners representing the main actor of the urban mobility, including transport operators, transport authorities, cities and citizens (end users).

² Public Transport Authority.

³ Public Transport Operator.



3.1. Subsidies in Europe today⁴

Public transport relies on subsidies from public authorities and organisations in most cities and regions globally. Our analysis reveals that, on average, public subsidies constitute roughly half the yearly revenue for most Public Transport Authorities (PTAs) in Europe. These subsidies serve two key purposes:

- Equity: They ensure accessibility for specific societal groups, typically those with lower incomes.
- Reduction of externalities: By making public transport more competitive, subsidies help reduce externalities associated with excessive private vehicle use, such as congestion, emissions, and safety concerns.

The question is: Is the current way public subsidies are employed an efficient way to achieve these equity and efficiency?

Over time, European cities have developed a complex system of fares and, implicitly, of subsidies. Several points are worth noting:

- In general, PTAs focus on fares rather than subsidies. This is understandable, as fares are politically a highly sensitive issue. Fares are what public transport users see. However, this means that from a management point of view, subsidies are treated as a complement (together with other sources of income, as discussed in the previous section). This is important, because it means that more attention is paid to the impact of fares than to the cost structure of public transport.
- Funding comes from local, regional and national governments; but there is a trend to pass responsibilities/competencies to local governments without corresponding funding⁵.
- All PTAs have developed highly sophisticated schemes of special fares for specific groups of users. The number
 of cases is almost limitless. In general, there is a perception that these schemes may have gone too far as they
 are not easy to manage, and in many cases, users may be receiving a subsidy (too low a fare) when they do
 not need it. There is a lack of knowledge about the actual cost implications of these schemes, as often there is
 no information on the actual use that different groups make of public transport. Interestingly, the fare structure
 is not widely used in a targeted way to reduce the externalities of mobility and make it more sustainable, which
 could potentially justify targeted lower fares also for those who do not strictly need them from an equity
 perspective. When determining fares, the key consideration is how they benefit different target groups, but very
 seldom are they determined taking into account other goals such as reducing congestion, pollution, or CO2
 emissions.
- Fares (and implicitly subsidies) are determined politically. It is the board of PTAs, composed of political representatives, that decides the level of fares and the fare structure, and with it, the number of subsidies to public transport. Of course, these political decisions are based on technical appraisals and proposals by the internal services of PTAs, but ultimately, the decision rests with the board of PTAs. Usually, the board follows the proposals of the technical services of the PTAs, but this is not always the case. In fact, some frustration can be detected in the technical services of some PTAs following the decision, following the pandemic, to substantially reduce or move towards free public transport.
- There is very little flexibility in changing fares. Fares are usually modified once a year (in some cases once every two years) and usually follow pre-set criteria, like the Consumer Price Index (CPI) or some other cost index.
- In general, there is very little evaluation of the impact of the fare structure and how it serves to achieve distributional or sustainability goals.

⁴ (FACTUAL, 2024)

⁵ (Bahl, Wetzel, & Linn, 2013)



Regarding the fare structure, Table 3 below summarises the situation:

Table 3 Insights on fare structure, from a questionnaire that was sent to Public Transport Authorities in Europe, including Leuven and Oslo

User group	Discounts for specific groups, with big differences in number of groups and conditions.
Off-peak discounts	Not widely used, apparently because of fairness reasons (low-income workers usually
	have less flexibility)
Distance	Usually flat fares with zones. Some scepticism on distance-based fares, apparently
	because of fairness reasons (low-income users are being kicked out from city centres).
Mode	Not much discrimination.
	Integration is seen as more convenient to user.
Operator	Only in concession contracts (awarded via tender).
	Some ongoing pilots in which shared micromobility or carpooling operators are
	subsidised to have their services integrated into public transport fares.
Special events	Some fares integrated with sports events, but no discount.
Updates	Mostly annual and with fixed rules (CPI, constant rate, etc)

Subsidies for public transport are a complex issue with mixed results. While they can be effective in targeting disadvantaged groups and improving accessibility, their efficiency and effectiveness vary widely depending on factors like the specific country or city, the design of the subsidy program, and the overall quality of the public transport system. Several studies have shown that:

- The current use of subsidies may be effective at best, but are not efficient: some groups may need larger incentives; others are incentivised when there is no need from an equity perspective, therefore leading to a sub-optimal use of public resources
- Reduced fares can succeed in decreasing the use of private motorised transport, but it highly depends on a case-by-case basis, hinting that granularity and more targeted subsidies as well as integration with other privately operated modes could be a success factor

3.2. Other trends⁶

3.2.1. Free public transport

Another option to incentivise sustainable modes is to reduce public transport fares, even making it fare-free, with the corresponding administration bearing the entire cost. This option has gained traction recently, mainly due to the conflict between Ukraine and Russia and the resulting increase in fuel prices. Apart from lowering the cost of transport for its citizens, the aim of these policies is to influence their preferences, so that they opt for public transport as their usual mode of transport, reducing journeys by private vehicle.

Several countries have adopted such measures to promote the use of public transport. Spain, for example, has reduced the cost of public transport by offering free train passes, starting in September 2022, or Germany, which introduced a one-month ticket that for €9 allowed passengers unlimited use of public transport during the summer of 2022. Meanwhile, Luxembourg made public transport completely free in 2020. But, while Luxembourgers generally express a positive attitude towards the free public transport policy, there is little evidence yet that it has reduced the number of cars on the road. In May 2022, congestion on Luxembourg's roads was (depending on location) largely equivalent to or higher than levels in May 2019, before the free public transport policy was introduced. In most cases,

⁶ (FACTUAL, 2024)



these policies have not proven very effective in achieving their goals. Studies have shown that making public transport free does not in itself lure people away from their cars. While removing fees may prove an incentive, it will not compensate for other possible disadvantages, such as overcrowded, delayed or cancelled trains, or an inability to compete with the convenience of door-to-door travel. Data from other fare-free public transport programmes suggests that making travel free enticed those who, due to limited income, would have otherwise walked, cycled, or foregone the trip entirely⁷.

3.2.2. Universal travel passes

In a similar vein to free public transport, some public authorities are considering implementing highly convenient travel passes that offer access to public transport across an entire country or region. A prominent example is the 49-Euro ticket, or as it is known locally, the Deutschlandticket, which was launched in 2023 by the German government as a follow-up to the 9-Euro ticket trial held the previous summer. The scheme enables passengers to use public transport and travel by local and regional train across Germany for just €49 per month, making it an affordable option for many people. The 49-Euro ticket has been praised as a positive step towards achieving sustainable mobility, but it is not without its challenges. There are several negatives to highlight. One of the main issues with the 49-Euro ticket is that it is heavily subsidised by the government, with taxpayers footing the bill. According to a study by the German Institute for Economic Research (DIW Berlin), the total value of the 49-Euro ticket system is estimated at around €1.2 billion per year, which is a significant amount, especially considering Germany's economic challenges due to the COVID-19 pandemic. There are also concerns about the effectiveness of the 49-Euro ticket in reducing greenhouse gases. A study by the Technical University of Munich (TUM) suggests that the 49-Euro ticket system may not be as successful in reducing carbon emissions as initially thought, although it increased the number of people travelling by train, it did not reduce the number of cars on the road. The policy was found to have only a modest impact on overall transport emissions⁸. Furthermore, there is concern that the 49-Euro ticket may have unintended consequences, as PTAs lose their most important tool to nudge behaviour. For example, it can lead to overcrowding on trains, which can compromise passenger safety and comfort.

3.2.3. Commuting allowances

Commuting allowance programmes are becoming increasingly popular in European countries as governments and businesses aim to incentivise sustainable transport through corporate mobility schemes. However, currently many fiscal systems in Europe continue to promote commuting by car. Across most countries, the tax advantages associated with providing employees a company car for personal use artificially incentivise car usage, creating a disadvantage for other, more sustainable and health-friendly modes of transportation. Consequently, company cars hold a substantial share in new car registrations in Europe, comprising approximately 50% in the EU overall and exceeding 63% in Germany as of 2020⁹. While some countries, such as Belgium and the Netherlands, offer favourable tax treatment for active modes of transport, initiatives like cycling mileage allowances for home-work travel are met with resistance in other nations. Unfortunately, these instances of resistance often stem from a narrow focus on immediate budgetary costs, neglecting the significant public health and environmental benefits associated with such measures¹⁰.

⁷ (O'Sullivan, 2022)

⁸ (TUM, 2023)

⁹ (Transport & Environment, 2021)

^{10 (}ECF, 2014)

3.3. A potential solution: microincentives

Microincentives are defined as: "Targeted incentives down to the level of very narrowly defined categories or even individual users that can be modulated according to categorical/personal characteristics (age, income, disability, socio- economical groups –like unemployed-, etc) and any relevant feature of the journey (like time, geolocation, mode of transport, type of motorisation of the vehicle, occupancy, etc)". The article concluded, then: "With microsubsidies the PTA has the capacity to decide how to best combine these criteria in order to ensure that everyone has access to transportation and to achieve other societal goals such as reducing emissions, reducing congestion or improving road safety. Microsubsidies are linked to the category/individual and their specific journey, and therefore need not be exclusively linked to them using a certain mode of transport operated by a public operator or a concessionaire as is the case with current subsidies. Surely, with microincentives a large bulk of subsidies will go to mass transit operators, but microincentives open the door to subsidising journeys made in other modes, even if they are privately operated, if this is deemed desirable because of equity or efficiency considerations. In the limit, and just to illustrate this point graphically, microsubsidies could subsidise people to walk or bike instead of using certain motorised modes of transport if this were justified from an environmental point of view, for example".

The underlying idea behind microsubsidies is simple and not new, as it replicates the concept of price discrimination widely used in mainstream economics, but in this case applied to subsidies in public transport.





Typically, subsidies are given to facilitate access to certain (often disadvantaged) groups or to enhance the competitiveness of public transport against private cars, thus increasing its demand¹³. In the Figure 2 graph, d represents the demand curve for public transport and 1 represents the combination of price (p0) and quantity (x0) -

¹¹ (FACTUAL, 2024)

^{12 (}FACTUAL, 2024)

¹³ The increase in demand for public transport, especially when combined with measures to ensure that use of other sustainable modes like walking and cycling also increases or is at least not reduced, reduces the demand for trips by private car, thereby reducing the externalities it generates, such as damaging emissions to the environment (which affect climate change and air quality), congestion, injuries, and fatalities from road crashes, noise, and occupation of public space. The reduction of all these effects justifies the subsidy to public transport.



i.e., demand - without subsidies. With a subsidy (s), we move to 2 where price is reduced to p1, and demand increases to x1. What is the total amount of subsidies that the PA needs to disburse? There are three possible scenarios:

- In the first one, the PA gives a uniform subsidy (s) to all public transport users (0-x1) and all of them pay the same price, p1. So, the total amount of subsidies that the PA has to disburse is A+B+C. In this scenario, users 0-x0 receive a subsidy when they do not actually need one to access public transport;
- In the second scenario, the PA gives a uniform subsidy (s) only to the group of targeted users x0- x1. These
 users pay the price p1; the rest of users (0-x0) pay the price p1. So, the total amount of subsidies to be
 disbursed by the PA is B+C;
- Finally, in the third scenario, users x0- x1 are the ones who receive the subsidy, but the subsidy is different for each user, that is, each user pays a different price and the PA complements with a different subsidy to each of these users to cover the costs of the operator. The rest of users (0-x0) pay price p0. So, the total amount of subsidies needed is only C. Conceptually, this third scenario is the one that corresponds to microsubsidies, i.e., the case where there is full discrimination of subsidies

This analysis confirms a well-known fact among theorists and practitioners alike: subsidy discrimination, or its opposite, price differentiation, is a superior solution to flat subsidies or flat fares in terms of efficiency. This approach allows for achieving a similar impact with fewer public resources or a greater impact with the same number of public resources. In practice, however, things can become more complex, as there are other considerations that need to be taken into account (EMTA, 2016). Among these considerations, the following seem especially relevant:

- Simplicity: PTAs seem to value simplicity as a key element in the design of the fare structure. Simplicity is valued from a management perspective (the cost of designing, explaining, and managing uniform fares is much lower) and also because it facilitates income forecasting for the PTA.
- Fairness: Mobility is a sensitive issue from a social standpoint, so equity considerations are crucial and need to be duly considered. Equity issues are relevant because changing the fare structure to make it more efficient may result in some groups paying higher prices and therefore opposing these changes. The question then arises of how these groups can be compensated, and there are likely instruments within the general tax system (notably income taxes) to provide this compensation without affecting their incentives to use different mobility modes.

Ultimately, the concept of microincentives and their potential application to public transport should be understood in a pragmatic manner. The idea is not that microsubsidies should imply a radical change in the design and development of subsidy policies in public transport. Subsidies already exist in public transport, and in some cases, they are more or less targeted. Microsubsidies open the door to a much more precise approach to subsidy policy with the aim of maximising its impact and optimising the use of public resources. Therefore, microsubsidies can either refine existing subsidies or identify new cases - be it groups of individuals, types of journeys, moments in time, modes of transport, etc. - that authorities want to target in order to achieve the societal goals they have set with the minimum number of public resources. Moreover in the context of MaaS, microincentives can be an excellent solution to unlock the positive impact delivered by new mobility services like bike, scooter, moped sharing, ride-hailing or carpooling, which are usually constrained by the need to remain profitable. This new mechanism would enable them to expand their operating areas further into the periphery and make their rides more affordable, thus effectively becoming a complementary service to public transport.

3.4. Microincentives in practice: Stated preference study¹⁴

¹⁴ (FACTUAL, 2024)



To assess their potential impact, Factual Consulting conducted a stated preference study in five cities: Barcelona, Madrid, Lisbon, Berlin, and Oslo. Respondents were asked to reconsider their last car trip and consider switching to an alternative, incentivised, multimodal trip which would include a combination of public transport and a more sustainable mode (shared electric bike, scooter or moped, carpooling or, for a higher price, ride-hailing). Each time the alternative option changed, but the cost was always lower than the car trip. The cost difference between the alternative trip and the car trip is referred to as the discount rate.

Using as an example the UPPER sites, in Lisbon the study found that providing a multimodal trip with a 79% discount compared to the cost of the equivalent car trip (e.g., a 2.1 EUR multimodal trip vs. a 10 EUR car trip – sum of the costs for fuel, parking and tolls) could lead to a half of car users switching to public transport, even if the travel time remains the same. The price should drop to 1.1 EUR (89% discount) to achieve the same results in case the multimodal trip takes 10 minutes longer. In Oslo, the results were even more promising, with only a 43% discount potentially leading to the same results. To incentivise 20% of car users to switch to a multimodal trip (which is already a remarkable result), the discounts needed are much lower, to the point where in Oslo, users are willing to take the alternative trip even at the same price of the car trip, given that this multimodal alternative is supplied to them.

Table 4: Minimum discount (approximately) needed to have a 50% (or higher) probability of accepting a multimodal trip

Travel time	Barcelona	Madrid	Lisbon	Berlin	Oslo
20 minutes longer	Never	Never	Never	Never	53%
10 minutes longer	Never	88%	89%	Never	48%
Same	80%	64%	79%	76%	43%
10 minutes faster	48%	34%	66%	41%	37%
20 minutes faster	18%	7%	55%	9%	31%

Table 5: Minimum discount (approximately) needed to have a 20% (or higher) probability of accepting a multimodal trip

Travel time	Barcelona	Madrid	Lisbon	Berlin	Oslo
20 minutes longer	72%	52%	52%	Always	Always
10 minutes longer	42%	25%	41%	Always	Always
Same	15%	1%	31%	Always	Always
10 minutes faster	Always	Always	19%	Always	Always
20 minutes faster	Always	Always	8%	Always	Always

3.5. Case studies involving incentives



This chapter explores a collection of case studies that highlight diverse approaches aimed at incentivising sustainable modes. From collaborative carpooling initiatives to the integration of microsubsidies, these cases offer valuable insights into this evolving landscape.

3.5.1. Karos pilots in Toulouse and Paris

Karos, a French start-up founded in 2014, has been conducting over the past few years two projects on carpooling in Toulouse and Paris with promising results in terms of reducing the environmental impact and improving the quality of life for residents and employees. These projects can provide very interesting insights for the application of microincentives.

Karos in Toulouse

The Toulouse Metropolitan Area has seen a 77% increase in public transport usage between 2006 and 2016, with a goal of reaching 500,000 additional daily collective and shared mode trips by 2025. However, 74% of work commutes are currently made by car, leading to congestion and increased travel time during peak hours. In response, four major employers in the area, Airbus, ATR, the Toulouse-Blagnac Airport, and Safran, partnered with Toulouse Métropole and Tisséo Collectivités to address these issues through the COMMUTE¹⁵ project.4 This project aims to experiment with a collaborative public-private governance model for urban mobility "from X to Y" where X indicates the start date of the project, and Y is +36 months.

One solution being implemented as part of the COMMUTE project is the deployment of a carpooling platform provided by Karos. Karos creates dynamic carpooling networks by utilising the empty seats in vehicles belonging to its community of drivers and combines these networks with key public transport lines to offer door-to-door intermodal trips to passengers. The platform also integrates other shared mobility options, such as bike and scooter sharing, and offers incentives and rewards for choosing sustainable modes of transport.

Initial results from the pilot study show that Karos has been successful in reducing single occupancy vehicle use and increasing the use of sustainable modes. Over 6% of employees at participating companies have signed up for the platform, with 61% of registered users carpooling at least once and 33% using it regularly. The platform has also been well received by employees, with a satisfaction rate of 4.5 out of 5. Overall, the COMMUTE project and the implementation of the Karos carpooling platform in Toulouse demonstrate the potential for innovative approaches to address issues of congestion and promote sustainable mobility in urban areas. The success of the pilot study suggests that similar solutions could be effective in other European cities.

Karos in Paris

Similarly to the case of Toulouse, the deployment of Karos in the Île-de-France region has had a significant impact on the transport landscape. The region already had a dense network of public transport, including 9 tram lines, 13 regional and RER train lines, 14 metro lines with 302 stations, and 1,519 bus lines. However, maintaining and expanding these assets also means that 46.5% of the budget of the region is dedicated to transport and mobility, with a focus on renewing or renovating trains, launching the Tramway 10 between Antony and Clamart, and extending the RER E to the west. To address these challenges, Karos introduced a groundbreaking solution by "integrating" carpooling into the public transport fare system. The STIF (Syndicat des transports d'Île-de-France) allowed Karos to offer two free carpooling trips per day to Navigo pass holders. Karos also developed a first version of an intermodal calculator that integrates open data from the region's structured public transportation network (RER, Transilien, metro, and tram lines) to offer optimised door-to-door journeys combining carpooling and heavy modes. The company also launched its own experiment, funded by its own resources, which made carpooling a true part of the public transport network with intermodal options, as well as integrated into its pricing system. This allowed users to access

¹⁵ (COMMUTE, 2024)



seamless, optimised mobility solutions in suburban and rural areas within their public transport fares. As the experiment progressed, Karos provided regular reports to IDF Mobilités showing the relevance of this approach for the region. Finally, the Île-de-France region launched an ambitious 13-month experiment, in which IDF Mobilités funded carpooling trips at a rate of 2 euros per journey. This model, which Karos had been testing on its own funds for a year, was made permanent with funding from the AOM (Agence de l'Île-de-France). Overall, this series of steps has resulted in the completion of over 4,240,000 carpooling trips in the Île-de-France region by the end of 2022.

The deployment of Karos in the Île-de-France region has been a successful experiment in transforming personal vehicles into a collective transport network. There are four key ingredients to this success: the use of artificial intelligence to adapt carpooling to short trips, the physical integration of carpooling into the existing transportation network through intermodality with structured lines, the alignment of carpooling fares with those of public transport, and the integration of ticketing systems to validate carpooling trips. The use of artificial intelligence has allowed Karos to analyse and predict the mobility needs of its users with a high degree of accuracy, enabling the creation of reliable and flexible carpooling options for daily commuting. The physical integration of carpooling into the transportation network through intermodality with structured lines has made it possible to offer door-to-door solutions that combine carpooling and public transport. Aligning carpooling fares with those of public transport has provided a strong incentive for users, and the integration of ticketing systems has allowed for the validation of carpooling trips. Overall, the deployment of Karos in the Île-de-France region has demonstrated the potential for carpooling to play a significant role in the collective transport network, improving mobility and reducing the environmental impact of transport.

3.5.2. Bridging Urban Mobility Gaps: Dott's Shared Services Trial in Brussels with Rideal

Affordable housing tends to be concentrated in areas with inadequate public transport, leading to increased car dependence among economically disadvantaged communities. This not only strains household budgets but also exacerbates urban congestion and pollution. Dott, a leading shared micromobility service and Keita Mobility Factory, developers of Rideal, a digital tool to manage multiple mobility incentive programmes, recognised this issue and conducted a trial in Brussels in collaboration with the European Union Agency for Space Programme (EUSPA) project MOLIERE¹⁶.

They aimed to bridge this gap by connecting riders seamlessly to existing public transport services. With over 58% of Dott riders already integrating their trips with public transport, the potential for synergy between shared micromobility and transit systems became evident. The trial in Brussels spanned twelve weeks during the summer of 2023, offering discounted access to Dott's shared e-bikes and e-scooters in targeted low-income neighbourhoods. The initiative sought to improve transport accessibility for economically disadvantaged communities while reducing carbon emissions in city centres. Discounted trips, ranging from 30% to 70% off regular fares, were provided to residents in selected neighbourhoods. Results showed a notable increase of up to 10% in the overall volume of rides within the targeted areas compared to control areas. This demonstrated that financial incentives for lower-income communities could accelerate the shift towards more sustainable transport. The trial's success underscored the importance of inclusive approaches to urban mobility solutions. Targeted microincentives for specific local communities can expedite the transition to sustainable transport. Shared micromobility services, like those offered by Dott, play a vital role in filling gaps in public transport services, offering a compelling alternative to all residents and reducing car dependence in city centres.

3.5.3. Innovating Public Transport Fare Systems: FAIRTIQ's Loyalty Program Trial with HAVAG¹⁷

¹⁶ (MOLIERE, 2024)

^{17 (}FAIRTIQ, 2024)



Public transport companies frequently employ bonus models and loyalty/reward programs to increase ridership. These models offer discounted fares once users complete a pre-defined number of journeys, with variations in structures such as immediate reductions, cashback, monthly or weekly rewards, and flat or variable discount rates. However, despite their popularity, there is limited reliable data on their effectiveness and whether the increase in ridership offsets their costs. In an effort to address this gap, Hallesche Verkehrs-AG (HAVAG), a German public transport provider, collaborated with FAIRTIQ to conduct a trial of a loyalty program. FAIRTIQ's flexible infrastructure allowed simultaneous testing of different bonus models against a control group, providing valuable insights into the financial viability of such reward programs. HAVAG's decision to trial a loyalty program was driven by the need to understand whether the benefits of these programs, such as increased ridership and revenue, outweighed the associated costs. The trial aimed to determine whether the introduction of reward programs makes financial sense for public transport providers. The trial coincided with the introduction of the 'Deutschlandticket' in Germany, allowing unlimited travel on local and regional transport services for a fixed monthly fee. While this option was attractive to regular users, it left a significant portion of the population, who use public transport occasionally or rarely, without a suitable pricing system. Addressing this gap was crucial for the long-term development of public transport and sustainable growth in passenger numbers. HAVAG, operating in the Leipzig-Halle area, commenced the trial in early 2023. They had already been using FAIRTIQ's app for digital ticket purchases since November 2019 and had experimented with an innovative distance-based fare in September 2022. The loyalty program trial involved testing two reward models alongside the Deutschlandticket introduction. The trial setup included two test groups with varying discount structures, rates, and timing of rewards, alongside a control group. Using the 'FTQ Lab' app, HAVAG and FAIRTIQ aimed to identify which model had the most significant impact on public transport use. The rewards were applied based on a predetermined number of journeys, with a sliding scale of three thresholds and increasing discount rates. Results from the trial revealed that both immediate and delayed reward models incentivised greater public transport use. The immediate reward model led to a substantial increase in passenger spending, with the test group spending approximately 20% more than the control group. The return on investment was positive, indicating that the additional expenditure justified the costs of operating the reward program. While the results for the delayed reward model were more ambiguous, the overall findings demonstrated the profitability of reward models in increasing company revenue. The success of the trial showcased the advantages of FAIRTIQ's flexible infrastructure, allowing for precise testing, direct communication with users via the app, and the potential for developing innovative fare models.

3.5.4. Meep and Ciclogreen: Driving Sustainable Mobility at eCity Seville¹⁸

The eCity Seville project aims to revolutionise urban mobility in the Isla de la Cartuja area through sustainability and digitalisation efforts. As part of this initiative, Meep and Ciclogreen, in collaboration with participating companies, have joined forces to promote eco-friendly transport solutions within the Seville Technology Park. With the goal of making Cartuja Science and Technology Park a decarbonised, sustainable, and innovative environment by 2025, the project addresses longstanding mobility challenges prevalent in the area. Recognising the urgent need for improvement, the initiative was reintroduced in 2022 following its successful implementation the previous year. Central to the initiative is the II MaaS eCitySevilla Challenge, designed to encourage sustainable commuting practices among individuals. Participants earn "Cycles" for every kilometre travelled using eco-friendly transportation modes, with the opportunity to redeem these points for prizes. This marks a significant departure from the prevalent use of private cars within the Seville Technology Park. Meep, Ciclogreen, and participating companies collaborate closely to facilitate sustainable mobility solutions for partners arriving and departing from Isla de la Cartuja. By promoting alternatives to traditional transport methods, the initiative contributes to the broader goal of reducing carbon emissions and fostering a culture of sustainability. The microincentives-driven approach has yielded promising results, including increased adoption of eco-friendly transport modes and a reduction in carbon emissions. The

¹⁸ (Meep, 2022)



initiative has also enhanced community engagement and contributed to the creation of a more sustainable urban environment.

3.5.5. Implemented initiatives in EU cities to promote behavioural change in favour of PT

To inform the development of city-level initiatives within our project, a comprehensive analysis of behaviour change mechanisms aimed at promoting public transport usage was conducted. This analysis sought to:

- Identify and categorize various behavior change mechanisms
- Assess the effectiveness of these mechanisms in increasing public transport ridership

The analysis covered a wide range of mechanisms, including marketing campaigns, incentives, and citizen engagement activities implemented across diverse cities and countries. These initiatives were designed to encourage public transport use through strategic behaviour change approaches.

Data for this analysis was gathered through extensive desktop research and the integration of expert knowledge within our consortium. Information was compiled from various campaigns and initiatives, as detailed in the matrix provided in ANNEX 1.

The matrix presents 30 behaviour change mechanisms from 15 different countries, categorized into four main groups:

- Marketing and communication campaigns
- Monetary incentives
- Non-monetary incentives
- Citizen engagement/co-creation activities

Additionally, the mechanisms are categorized by target groups, communication channels used, impact assessment (where available), year of implementation, and city/country of implementation. For each mechanism, a brief description is provided, including the responsible organization and communication strategy employed.

Key Findings and Best Practices

The analysed mechanisms focused on fostering active mobility, multimodal transport, and increased public transport use. Target groups identified in these initiatives included citizens, elderly people, students, women, families with children, low-income individuals, and employees.

The matrix also details the results of the identified mechanisms, highlighting their impact and effectiveness and including links to relevant visuals where available.

Case Studies: Successful Incentivisation Initiatives

- "Bicification" Project: This project, implemented in Braga, Istanbul, and Tallinn, used monetary incentives to promote active mobility. By offering economic incentives for cycling, the project successfully encouraged cycling and collected valuable data to inform city policies.
- "Bring a Friend" Campaign: Launched in Funchal, Portugal, this campaign incentivised existing public transport users to encourage friends to purchase monthly passes. The campaign effectively increased ridership and generated positive revenue.



4.Measures support workshop series

4.1. Workshop 1: Good practices exchange among cities in the measures' preparation process

The workshop held on 30 January 2024, brought together representatives from three cities with mobility measures linked to WP5, to discuss their strategies for promoting public transport and sustainable modes of transport. Each city shared their measures implemented in UPPER and approaches to incentivisation and public campaigns, highlighting their successes, challenges, and ongoing efforts.

As previously stated, this workshop was performed during the Rome General Assembly, at the end of the first meeting's day. The workshop, aimed to facilitate discussion and ideas' exchange among the cities, was moderated by EITUM. The structure of the workshop consisted of a short presentation of the mobility measures linked to the workshop thematic (Incentivisation & Campaigns) by three cities (MANNHEIM, ILE DE FRANCE and LEUVEN), followed by an open discussion after each short presentation in which all the attendees participated. The moderator presented the speakers, and also managed the intervention of the attendees during the discussion.

The mobility measures presented by cities were MAN_02, IDF_07, and LEU_06. While IDF_07 is linked to the task T5.2, the other two measures (MAN_02 and LEU_06) are linked to task T5.4, so in this section we will focus on the results related to IDF_07. Please refer to D5.4 for the results of MAN_02 and LEU_06.

4.1.1. Results

Clémence Castell from Instant Systems presented Île-de-France's innovative approach to sustainable commuting, the IDF_07 measure. This initiative encourages employees to adopt environmentally friendly transportation options.

A key component of IDF_07 is the "forfait de mobilité durable," a tax-free allowance for sustainable commuting expenses. To facilitate this, a MaaS app was developed in collaboration with Visa, providing a virtual card for accessing various sustainable transport modes.

The city has partnered with local development agencies to engage enterprises and employees in adopting the forfait. Efforts are underway to expand the app's network of mobility providers and options. Communication tools are used to promote the app and encourage employee participation.

A first comment came from Andrea Pasotto from Roma Mobilità, highlighting how Rome implemented a similar strategy, requiring larger companies to appoint a Mobility Manager. These managers collaborate with local authorities to develop and implement incentives for sustainable commuting. This is included in ROM_09, and explained in more detail in Chapter 5.

Pedro Pinto, from TML, shared the experience of when in Lisbon, the municipal bicycle-sharing network, GIRA, was made free of charge for residents of the Portuguese capital to incentivise active modes. While effectively promoting the use of shared bikes, it was hard to tell whether the trips made actually replaced car trips, or if they just replaced walking. Pietro Podestà, from FACTUAL, noted that incentive management tools will be needed to verify that a trip does meet the requirements to be incentivised.

Moreover, participants at the workshop discussed the potential of leveraging younger people as catalysts for change. Their willingness to adopt new mobility habits can influence their families and communities. Targeted campaigns and incentives could effectively promote sustainable commuting practices among younger generations.

4.1.2. Conclusions



The workshop highlighted the diverse approaches cities are taking to promote sustainable transport. Mannheim's focus on honesty and comprehensive campaigning, Île-de-France's legislative measures and technological solutions, and Leuven's financial incentives and inclusivity efforts demonstrate a range of strategies that can be adapted and implemented based on local needs and contexts. The shared insights and experiences provide valuable lessons for other cities aiming to enhance the uptake of public transport and sustainable modes of transport.

4.2. Workshop 2: Measures' appraisal by horizontal partners, to support cities in the measures' preparation process

The goal of this workshop was to support cities in their tasks of developing UPPER measures, by challenging and improving their initial measure description (as presented in *UPPER Deliverable 2.2*).

The process for this workshop was structured around several steps that were common across all the UPPER work packages and tasks where measures have been developed:

- Horizontal partners were asked to critically review the measures proposed by the cities. Not all the partners reviewed all the measures, and the reviewers were decided according to their expertise, or previous work.
- For reference, the horizontal partners, involved in T5.2, T5.3, T5.4, are: UITP, EMTA, RC, ICLEI, EIT UM, EPF, ECF, IFP. In addition, FAC, FIT and IBV, as task leaders, were also involved in the workshop preparation.
- The cities involved in the mobility measures linked to WP5 are BUD, IDF, HAN, LEU, LIS, MAN, OSL, TES. These cities, and also the partners being part of their clusters, have been involved in the workshop deployment.
- In their critical review of the measures, horizontal partners had to take into account the various documents already produced in UPPER, including but not limited to the user personas and experience notebooks of D2.1¹⁹, the SWOT analysis included in D2.2²⁰, or the supporting policy frameworks and policy requirements in D2.4²¹.
- Based on the critical review of the measures to be developed within each Work Package, the horizontal partners had to commonly agree on a limited number of *Points of attention*, areas they consider the cities and measures should be focusing more on, and should be addressed moving into the implementation phase.
- The goal of these *Points of attention* was to extract common challenges that are shared in the design/development of several measures within the same work package, rather than a checklist per measure.
- An online workshop (proposed duration 2h) was organized per WP so 3 in total where the horizontal partners
 presented the *Points of attention* they had identified, together with potential recommendations or examples of
 how these could be addressed. Representatives from the UPPER partners responsible for the development and
 subsequent implementation of the measures actively participated in the workshop.
- The workshop of WP 5 was organized by ICLEI, with the direct support of the WP5 task leaders, i.e. FAC, FIT and IBV.
- Cities had the opportunity to see in advance the points of attention referring to the measures they were developing and to respond to and actively engage with the horizontal partners. Following a plenary introduction of the points of attention, two breakout sessions were organised in parallel for WP5, thus fostering engagement and a lively exchange between the participants.

¹⁹ (UPPER, 2023)

²⁰ (UPPER, 2023)

²¹ (UPPER, 2023)



• The online workshops were recorded.

4.2.1. Categories for the measure appraisal

The *Points of attention* are defined as topics related to measure development that cities are not taking into consideration or that are not properly addressed (according to horizontal partners' criteria). With the aim of defining a common approach for measures appraisal, a set of categories has been defined, which are:

- Mobility as a Right: Universal accessibility leaving no one behind, overcoming any type of barriers (economic, physical, cultural, technological, geographical, or related to the process, among others).
- Seamless multimodality/inter-modality: soft transitions, physical space, ticketing, and information.
- Tailored communication for increased acceptance and buy-in: Communication adapted to different target groups.
- Active stakeholder engagement during measure development: to define clearly how the stakeholders contribute to the measure implementation.
- Data management and privacy: GDPR compliance.
- Environmental impacts: CO2 emissions, Energy use, and Air quality.
- Social impacts: public and user health and wellbeing, coexistence-living peacefully, security/safety (with special attention to women and elderly people).
- Target groups mainly impacted: to identify the target group/s that are mainly impacted by the measure.
- Other.

It was assumed that these eight categories were covering all the topics addresses by the mobility measures linked to WP5, and all the issues related to measure should be related to them. Nevertheless, an additional category was considered (*Other*), in order to include singular topics.

4.2.2. Evaluators' assignment

This subsection presents the horizontal partners selected to appraise the different mobility measures, based on their competencies and the involvement in the different tasks. This evaluators' assignment was made to ensure that the workshop's team was going to produce a minimum number of *Points of attention* per measure, as it was mandatory for these selected partners to appraise the measure. Nevertheless, the appraisal process was open for all the horizontal partners and task's leaders involved in WP5.

T5.2 Incentivise	e PT offer and active modes in the living labs	
City	Measure description	Appraised by
ROM_09	Incentive packages to support multimodality in Rome	ECF, EPF, IFP
IDF_07	To incentivise the use of Public Transport for commuter in the Île-de-France region using mobility credits	^s ECF, EPF, IFP, UITP
LEU_05	Mobility for all by optimising the use of financial incentive to increase the share of Public Transport users in Leuver	^S ECF, IFP, EPF, EMTA

Table 6: Selected partners to generate Points of attention for WP5's measures.



TES_10	Incentivise the use of Public Transport in combination with active modes in Thessaloniki	ECF, EPF, IFP, UITP
OSL_04	Reduce dependency on car ownership in Oslo	ECF, EPF, IFP
T5.3 Innovative strate	gies and solutions to improve public perception of PT	
IDF_08	Improve public perception of PT	ECF, EPF, IFP, ICLEI, EMTA
LIS_10	To improve the quality and the efficiency of the bus service	ECF, EPF, IFP, ICLEI, EMTA
BUD_03	To understand dependencies between the level of service and passenger satisfaction	ECF, EPF, IFP, ICLEI, EMTA
T5.4. Behaviour-chan	ge oriented mechanisms to promote the use of PT	
IDF_01	Participative governance framework for the update of the regional SUMP	RC, IFP, UITP, ECF, EPF
MAN_01	Establish participative governance and dialog formats to address the citizens with a focus on the (special) needs of user groups	ICLEI, UITP, IBV, EPF, IFP
LIS_03	To improve the mobility planning	EMTA, EPF, RC, ECF, IFP
MAN_02	Campaigning for sustainable forms of transport, such as PT, walking and cycling. Establishing a PT culture with PT as a green, safe, inclusive, and social space	EPF, ECF, IFP, UITP, EITUM
LIS_08	To implement campaigns and partnership initiatives	EMTA, ICLEI, FAC, EPF
LEU_06	To launch communication campaigns and digital tools to increase the uptake of PT	UITP, EITUM, FAC, EPF

4.2.3. Template for appraisal

A template to appraise the measures listed in Table 6 was defined. The template consisted of a table in *Excel* format, with the following fields:

- *Measure ID*: The list of measures linked to WP5 (Table 6) could be selected from an unfold menu.
- *Appraised by*: The list of horizontal partners involved in the measures' appraisal (UITP, FAC, EMTA, RC, ICLEI, EITUM, IBV, EPF, ECF, IFP, FIT), could be selected from dropdown list.
- *Point of attention category*: The list of categories defined for the appraisal (Figure 3) could be selected from a dropdown list.
- *Evaluation result*: In this column the entity performing the evaluation had to explain the issues or the aspects (point of attention) to be considered when developing the mobility measure.



• Solution you can present/further reading or documents presenting this: This column was included in order to the evaluator could provide references or implemented solutions related to the appraisal.

Measure ID 🗸	2	Appraised by	u t	"Point of attention" category - please select one from the list below	Evaluation result: Poi	nt of attentio	on/Comment	~	Solution you can present/further reading or documents presenting this
Measure		Apprised I	by		~	"Point of	fattention" cat	egory	✓
ROM_09		UITP				Mobility	as a right: Univ	versal	accessibility leaving no one behind.
IDF_07		FAC				Seamless	s multimodality	y/inte	rmodality
OSL_04		EMTA				Tailored	communicatio	n for i	ncreased acceptance and buy-in
LEU_05		RC				Active sta	akeholder enga	ageme	ent during measure development
TES_10		ICLEI				Data mar	nagement and	privad	cy
IDF_08		EITUM				Environm	nental impacts	(CO2	emissions, energy use, and air quality).
LIS_10		IBV				Social im	pacts (health&	wellb	eing, coexistence, security/safety)
BUD_03		EPF				Target gr	oups mainly in	npacte	ed
IDF_01		ECF				Other			
MAN_01		IFP							
LIS_03		FIT							
MAN_02									
LIS_08									
LEU_06									

Figure 3: Template prepared to collect Mobility Measures points of attention.

The complete collection of points of attention is presented in Annex 2: List of Points of attention.



WP5 appraisal of measures: distribution per categories

Figure 4: The number of appraisals for each defined category.



A total number of 93 points of attention were collected (a mean value of 6 appraisals per mobility measure). Figure 4 presents the distribution of appraisals per category. A first group of categories comprehending around 15 measures can be identified. These categories are *Multimodality*, *Tailored communication*, *Target groups* and *Stakeholder engagement*.

A second group of points of attention, comprehending between 9 and 11 entries can be identified for *MaaR* (Mobility as a right), *Social impacts* and *Other*. The Data management only collected one entry for WP5's mobility measures.

4.2.4. Format of the workshop

The workshop concept was conceived so as to facilitate an open discussion between horizontal partners and the cities involved in WP5 measures, on the points of attention appraised. With this aim in mind, we defined a workshop in two stages: a plenary session aimed to sensitize the participants on measures and points of attention, and a second stage where participants were divided in two groups, in order to facilitate discussion guaranteeing the attendance of the cities (in case only one representative per city could attend to workshop. Prior to the workshop, and in order to sensitize the cities having mobility measures in WP5 in the appraisal process performed by the horizontal partners, the collection of *Points of attention* presented in *Annex 2: List of Points of attention.*, and the analysis per category presented in *Annex 3: Analysis of Points of attention were shared.*

The two stages session was organized as follows:

• First part (plenary Introduction) (35 minutes):

- Welcome and Introduction (5 minutes). ICLEI.
- Brief overview of the workshop objectives, agenda, and guidelines for participation.
- Preview of City Measure Frameworks (18 minutes) Cities: BUD, IDF, LEU, LIS, MAN, OSL, ROM, TES. Representatives from UPPER cities presented their measure frameworks in one or two slides (with a picture), highlighting 1 or 2 learning points (2 minutes each). Cities were given the opportunity to share their perspectives and goals for measure development. 1 measure per city, 8 measures (focus on the most problematic ones, one picture of the measures).
- Presentation of Common Points of Attention (10 minutes). UITP
- Horizontal partners presented common points of attention identified across measures within WP5. Emphasis on general weak points applicable to multiple measures (and strong ones to focus on). Plenary
- Recap and Transition to Breakout Sessions (2 minutes).

• Second part (breakout sessions) (40 minutes):

Breakout Sessions: Interactive Workshops with Cities. Participants were divided into breakout groups, each focusing on addressing specific points of attention identified in the measures. Horizontal partners facilitated discussions and provided insights on potential solutions or recommendations. City representatives engaged with horizontal partners to discuss and to refine their proposed measures. Opportunities for collaborative problem-solving, idea generation, and feedback exchange.

- Breakout session A: ROM, IDF, TES, OSL, 6 measures. Led by IBV (FAC support).
- ROM_09: Incentive Multimodality
- IDF:
 - IDF_07: Incentive commuter region IDF
 - IDF_08: Improve perception of PT
 - IDF_01: Participative update of SUMP



- TES_10: Incentive PT & Active modes
- OSL_04: Reduce dependency on car ownership
- Breakout session B: MAN, LEU, LIS, BUD, 8 measures. Led by FIT.
- MAN:
 - MAN_01: Participative on special needs
 - MAN_02: Campaigns on sustainable transport
- LEU:
 - LEU_06: Campaign to increase uptake of PT
 - LEU_05: Mobility for all
- LIS:
 - LIS_03: To improve the mobility planning
 - LIS_08: To implement campaigns
 - LIS_10: Quality of bus service
 - BUD_03: Service level & Satisfaction



Figure 5: Comments of the questions focused on Multimodality, in the breaking session A.

Format of the breakout rooms:

The discussion took place supported by the Mentimeter platform²². Based on the open-ended format of the Mentimeter platform, the breakout sessions moderators (IBV, FAC and FIT) proposed questions related to the *Points of attention*. These questions were included in a slide of the Mentimeter platform, and the horizontal partners and the

²² https://www.mentimeter.com



cities could contribute with comments, generic or linked to concrete mobility measures (*Annex 4: Workshop's results for group A and B*).

Guiding questions:

- Group A:
 - **Multimodality** requires good connections, incentives for different transport modes (not only PT but also <u>shared and</u> active modes) and satisfaction monitoring. Which of these topics is critical for ROM_09, TES_10, OSL_04 and IDF_07. How will they be addressed?
 - PT has different **social impacts**, such as health and wellbeing and inclusiveness. On which of these aspects will the multimodal, perception and behavioural measures focus? How will these topics be addressed?
 - PT **stakeholders** are also the citizens. How are they being involved in the measure development and implementation? What alternative channels do we have to online surveys?
 - MaaR: Multimodality and sustainable mobility involve active mobility, including walking. How to **include** persons with functional diversity (musculoskeletal, deaf, blind, ...) and elderly people? And how to overcome cost-barriers?
 - **Tailored communication** requires information on users groups expectations and needs. What communication formats will be developed to reach different users groups for planning, for real-time information, for service information, ...? What formats combination should be employed (video, audio, text, infographic, ...)?
 - Similarly, **targeted incentivisation** (both to individuals, but also situation-dependent: e.g. time of the day, day of the week, means of transport...) can increase the behavioural change effects and provide a better use of resources, are there any plans in this sense?
 - Are private cars users the only mobility users involved in the behavioural change? What other groups of users should be involved? How can these **users' groups** facilitate a behavioural change?
 - Which are the main features characterizing **micro-mobility**? How the **environmental impact** relates to measures promoting multi-modality, PT perception, and behavioural change?
 - The use of monetary incentives often raises equity concerns, since some users might be left behind, how will your measure address this?
- Group B:
 - Are the 6 **target groups** identified in UPPER: young people, elderly people, women, adults with children, functional diversity people, low-income people enough representative for your measure? How to encourage these target groups to participate?
 - Are local associations and local shops included among the stakeholders of the measure?
 - Which kind of channels will be used to design **tailored communication**? There will be a combination of non-digital communication, traditional marketing, social media, and other communication channels?
 - **MaaR**: How to address the need of some users that cannot or don't want to access digital platforms for tickets or information?
 - Can the **environmental impact** be used to enhance behavioural change, and cultural one of the measures? How could this be carried out effectively?
 - Are micro-mobility and soft mobility modes adequately promoted in the measure considering their significant **social impact**?



- How much compliance with **GDPR privacy regulations** and all the new AI acts can present obstacles to the implementation of measures?
 - * How to promote soft mobility (walking and cycling) in **multimodal hubs** and in ticketing?

0 presents the main results obtained in the workshop for both groups of the breakout sessions.

4.2.5. Recommendations per measure

In this section, the list of the points of attention identified for the measures included in T5.2 in the workshop of the WP5 are presented.

4.2.5.1. TES_10: Incentivise the use of PT in combination with active modes

Table 5 presents the Points of attention appraised by the horizontal partners for the mobility measure TES_10. This measure aims to promote cycling for short distances by offering incentives to use active mobility modes instead of private cars. The focus is on providing a PT ticket as a voucher for shops, including bicycle shops.

Table 7: Points of attention appraised by the horizontal partners for the mobility measure TES_10

Appraised by	"Point of attention" category	Evaluation result: Point of attention/Comment	Solution you can present/further reading or documents presenting this
ECF	Social impacts (health and wellbeing, coexistence, security/safety)	Measure requirements: Wearing a helmet should not be a requirement for cycling, but an individual choice. It is more important to make sure that there is enough safe cycling infrastructure, segregated from car traffic.	Prioritize safe cycling infrastructure separated from car traffic. Advocate for policies that promote individual choice regarding helmet use.
ECF	Tailored communication for increased acceptance and buy-in	From the measure descriptions, it is not really clear what the actual incentive for active mobility is - you can use your PT ticket as a voucher for shops, are these e.g. bicycle shops?	Clearly communicate how the voucher system will function for various active mobility modes.
ECF	Seamless multimodality/intermodality	OSL_04: Evaluate the possibility to also add incentives for users of private bicycles (sufficient secure bike parking spaces in housing developments; subscriptions to secure bike parking in the city centre)	Develop strategies to integrate cycling with PT, including clear information about connecting points, bike parking facilities, and



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			integration with existing mobility apps.
IFP	Other	The concept of micro-mobility should be refined and clear. There are several definitions of micro-mobility. Very different from active mobility. Maybe the emphasis of the incentives should be on Active mobility and not on micro-mobility.	Develop a clear and concise framework that defines each mobility mode (micromobility, active mobility, and sustainable mobility) and how they are integrated within the program.
EPF	Social impacts (health&wellbeing, coexistence, security/safety)	It would be good to clarify how the incentives will work for the active modes. For example, a person walking or riding their own bike will not have a ticket that they can exchange in a shop	Clearly communicate how the voucher system will function for various active mobility modes.
EPF	Tailored communication for increased acceptance and buy-in	How will the preference survey be conducted? Keep in mind that multiple channels should be used for recruiting participants and conducting the survey, so that a diverse range of groups can be engaged with to understand their preferences. Their preferences will be different, perhaps also depending on the mode	Consider non-digital channels for the surveys, so that people can participate who either don't have access to digital tools or who do not have the skills. Paper surveys, interviews, and in-person support to take the survey can be useful.

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Summary:

The key recommendations for TES_10 are:

- Prioritize safe cycling infrastructure.
- Ensure the voucher system is clear and accessible to all active modes.
- Develop strategies for integrating cycling with public transport.
- Clearly define and distinguish between micro-mobility and active mobility.



4.2.5.2. IDF_07: To incentivise the use of Public Transport for commuters

Table 6 presents the Points of attention appraised by the horizontal partners for the mobility measure IDF_07. This measure seeks to implement a mobility credit program to incentivize sustainable modes of transport, including PT, micromobility, and active mobility.

Table 8: Points of attention appraised by the horizontal partners for the mobility measure IDF_07

Appraised by	"Point of attention" category	Evaluation result: Point of attention/Comment	Solution you can present/further reading or documents presenting this
ECF	Seamless multimodality/inter modality	In the description, the definitions of "micromobility", "active mobility", "sustainable mobility" are sometimes not very clearly distinguished from each other.	Develop a clear and concise framework that defines each mobility mode (micromobility, active mobility, and sustainable mobility) and how they are integrated within the program.
ECF	Mobility as a right: Universal accessibility leaving no one behind.	It would be interesting to know more about the exact pricing of the scheme/the mobility options - how to make a business case that incentives use of sustainable modes vs. car through cheap enough trips, while at the same time providing enough revenues for operators?	Create a business case that balances affordability for users and revenue generation for operators. Consider tiered pricing structures based on income levels.
ECF	Target groups mainly impacted	Consider also involving the (car-using) employees themselves, to understand why they currently travel to and from work by car. This will help to develop incentives that create an impact.	Conduct surveys and focus groups with employees to understand their travel needs, concerns, and what would incentivize them to switch to sustainable modes.
IFP	Seamless multimodality/inter modality	It seems that walking is absent of the mobility credit program	Include walking - easy to detect while using MaaS
IFP	Other	The concept of micro-mobility should be refined and clear	There are several definitions of micro-mobility. Very different from active mobility. Maybe the emphasis of the Mobility Credits should be on Active mobility and not on micro-mobility.



Summary:

The key recommendations for IDF_07 are:

- Clearly define and distinguish between micro-mobility, active mobility, and sustainable mobility.
- Develop a business case that balances affordability and revenue generation for the mobility credits program.
- Engage with employees who currently use cars to understand their motivations and develop targeted incentives.
- Include walking as a mode within the mobility credit program.

4.2.5.3. LEU_05: Mobility for all by optimising the use of financial incentives to increase the share of PT

Table 7 presents the Points of attention appraised by the horizontal partners for the mobility measure LEU_05. This measure aims to create a system of incentives, including fare discounts and free or subsidized tickets, for using PT. The goal is to promote the use of sustainable transport and reduce car dependence.

Table 9: Points of attention appraised by the horizontal partners for the mobility measure LEU 05

Appraised by	"Point of attention" category	Evaluation result: Point of attention/Comment	Solution you can present/further reading or documents presenting this
ECF	Seamless multimodality/ intermodality	The description exclusively mentions incentives for PT, but in order to enlarge this to a complete MaaS, incentives for other modes (active mobility, micromobility, car sharing) should also be included.	Develop a comprehensive incentive system that includes incentives for active mobility, micromobility, and car sharing, in addition to PT.
EPF	Mobility as a right: Universal accessibility leaving no one behind.	Important to remember that not all people are able to access or use digital services, and that people have app fatigue and do not want to download new apps all the time. So a MaaS app alone will not help with making the incentives more visible. There need to be non- digital alternatives too, that cater to the needs of diverse groups of people. This is also something to consider when recruiting and interacting with the target groups - that a mix of channels is needed	Develop a system that includes both digital and non-digital options for accessing incentives. Ensure that information and communication strategies are accessible to diverse groups.
EPF	Active stakeholder engagement during measure development	Similar to TES_10, it might be interesting to work with local shops to provide people with incentives who use the park & ride. The shops can promote the campaign on their channels, and a person who uses the park&ride can for example get a coffee if they bring along	Collaborate with local businesses to create partnerships that promote park & ride usage and offer benefits to users.



		their park&ride ticket to a local coffee shop	
EMTA	Target groups mainly impacted	Will there be sustained political will to make tickets more expansive for some users?	Analyse the potential impact of price changes on different user groups and explore strategies for mitigating negative impacts.
EMTA	Target groups mainly impacted	Will there be a large enough user-base to refine incentives ? How to attract and retain app users	Develop a robust marketing strategy to attract and retain app users. Consider offering incentives for early adoption and for continued use.
IFP	Mobility as a right: Universal accessibility leaving no one behind.	Any financial incentives for walking and cycling to the PT hub?	Develop km-based incentives for walking and cycling to work. Consider gamification apps like Bike2Work schemes.

Summary:

The key recommendations for LEU_05 are:

- Develop a comprehensive incentive system that includes incentives for various modes of transport, beyond just PT.
- Ensure that incentives are accessible to all individuals, including those who may not have access to digital services.
- Collaborate with local businesses to create partnerships that promote the use of park & ride facilities.
- Develop a robust marketing strategy to attract and retain app users.
- Analyse the potential impact of price changes on different user groups.

4.2.5.4. OSL_04: Reduce dependency on car ownership

Table 8 presents the Points of attention appraised by the horizontal partners for the mobility measure OSL_04. This measure focuses on developing new integrated mobility products that combine PT with active and shared mobility options to create a more comprehensive and appealing alternative to private car usage.

Table 10: Points of attention appraised by the horizontal partners for the mobility measure OSL_04

Appraised by	"Point of attention" category	Evaluation result: attention/Comment	Point	of	Solution you can present/further reading or documents presenting this
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EPF	Active stakeholder engagement during measure development	The new combined mobility products have to be an attractive alternative (e.g., affordable, comfortable, get them where they need to go and when they want to go) for people to use them. This is key if you want to get people out of the car and into shared modes. Another aspect is to communicate clearly about the services and explain their benefits	Aside from the housing organisations, you can engage with different user groups to understand what would incentivize them to reduce their car use and use an alternative mobility option. This will also help to understand the types of needs they have
IBV	Target groups mainly impacted	According to the results of user research, low income people, young people and families with children are the main users of active and shared mobility. From these groups, the one who uses private car frequently is families with children, as they do not have other alternatives. How are you going to address the specific needs of this group?	Develop targeted solutions that address the specific needs of families with children, such as affordable options, convenient parking, and child-friendly amenities.
ECF	Seamless multimodality/ intermodality	OSL_04: Evaluate the possibility to also add incentives for users of private bicycles (sufficient secure bike parking spaces in housing developments; subscriptions to secure bike parking in the city centre)	Explore options for providing secure bike parking in housing developments and city centres to encourage the use of private bicycles.

Summary:

The key recommendations for OSL_04 are:

- Conduct surveys, focus groups, and workshops to gather feedback from diverse user groups.
- Develop targeted solutions that address the specific needs of families with children.
- Explore options for providing secure bike parking in housing developments and city centres to encourage the use of private bicycles.

4.2.5.5. ROM_09: To create incentive packages to support multimodality

Table 9 presents the Points of attention appraised by the horizontal partners for the mobility measure ROM_09. This measure aims to develop a marketing campaign to promote sustainable mobility, including PT and active modes. The focus is on encouraging a shift away from car dependence and adopting more environmentally friendly travel choices.


Table 11: Points of attention appraised by the horizontal partners for the mobility measure ROM_09

Appraised by	"Point of attention" category	Evaluation result: Point of attention/Comment	Solution you can present/further reading or documents presenting this
EPF	Target groups mainly impacted	This measure seems to have 2 parts (campaigning and incentives), but it mostly focuses on the campaigning part. What types of incentives are planned? Keep in mind that the communication/promotional campaigns should be tailored per group and context too	Develop targeted communication campaigns that use a mix of digital and non-digital methods to reach diverse audiences. Provide clear information about incentives and benefits.
IFP	Mobility as a right: Universal accessibility leaving no one behind.	In the list of topics for stimulating the network of the local mobility managers active in institutions, companies, schools, in promoting sustainable mobility behaviours walking is missing.	Emphasize the importance of walking as a sustainable and accessible mode of transport.
IFP	Seamless multimodality/ intermodality	In the description of the incentives only addresses PT - to support multimodality, there should probably also be specific incentives for cycling/walking (as single modes of transport or in combination with PT).	Develop km-based incentives for walking and cycling to work. Consider gamification apps like Bike2Work schemes.
ECF	Seamless multimodality/ intermodality	The description of the incentives only addresses PT - to support multimodality, there should probably also be specific incentives for cycling/walking (as single modes of transport or in combination with PT).	Develop km-based incentives for walking and cycling to work; also gamification through app (e.g. Bike2Work scheme)

Summary:

The key recommendations for ROM_09 are:

- Develop targeted communication campaigns that use a mix of digital and non-digital methods to reach diverse audiences.
- Emphasize the importance of walking as a sustainable and accessible mode of transport.
- Develop km-based incentives for walking and cycling to work.



4.2.6. High-level recommendations

The high-level recommendations are derived from workshop results, and are presented in this chapter. All the measures included in T5.2 belonged to cities included in group A, except for Leuven. This section will present only results generated in the group A of the workshop, where Rome (ROM_09), Île-de-France (IDF_07), Thessaloniki (TES_10) and Oslo (OSL_04) participated.

This chapter draws insights from the workshop, highlighting key challenges and practical recommendations for overcoming them.

Challenges and Opportunities in Fostering Inclusivity

- Diverse Needs and Preferences: The workshop participants recognized the significant diversity among users, necessitating tailored solutions for various needs and preferences. These include physical limitations, visual or hearing impairments, cognitive differences, and the unique requirements of older individuals.
- Addressing Cost Barriers: A key challenge identified was ensuring equitable access for all, particularly for individuals with disabilities or low incomes. Transportation solutions must be affordable and accessible to everyone.
- Effective Communication and Information Sharing: Communication strategies need to be carefully crafted to reach diverse groups, considering potential language barriers, literacy levels, and cognitive differences.
- Ensuring User Participation and Feedback: Engaging diverse groups in the design and implementation process is crucial for developing solutions that are truly responsive to their needs. This can be achieved through various methods, including focus groups, observational research, and co-creation of interventions.

Recommendations for Inclusive Transportation

- Heavy Incentivization and Beyond: While providing incentives, particularly for independent individuals, is a positive step, it's crucial to develop a balanced and equitable approach. Focus on affordable or free solutions, such as discounted mobility subscriptions or shared car services, to ensure accessibility for all income levels.
- Building a Redundant Network: Moving beyond a single interchange is essential to accommodate diverse needs and mobility limitations. This includes ensuring access to alternative routes, providing information about accessible pathways, and offering assistance for transfers.
- Inclusion at a Price: The workshop participants acknowledged that inclusion sometimes comes at a price. Strategies should be developed to minimize these additional costs while ensuring that services are available and accessible.
- Dedicated Ombudsman for Special Needs: A designated ombudsman/ombudswoman for people with special needs can play a vital role in advocating for their rights, addressing their concerns, and ensuring their access to equitable transportation solutions.

Overcoming Cost Barriers:



- Exploring Cost-Effective Solutions: It's crucial to explore innovative and cost-effective solutions to make transportation accessible for all. This may involve partnerships with community organizations, leveraging technology for efficient service delivery, and exploring shared transportation models.
- Engaging Diverse Groups in Measurement and Implementation:
- Involve Local Cyclists and Pedestrians: Engaging local associations and individuals, particularly those in areas relevant to the initiative, is essential for ensuring that the design and implementation are aligned with local needs and preferences.
- Feedback Early in the Process: Gathering feedback from diverse groups early in the design phase is critical for developing solutions that are responsive to their needs.
- Citizen-Centric Approach: A citizen-centric approach that involves individuals with diverse needs in the cocreation of measures and interventions can lead to more effective and equitable outcomes.

Addressing Communication and Information Dissemination Challenges:

- Overcoming Language Barriers: Recognize language barriers as a significant obstacle and ensure that information is clear, concise, and accessible to diverse populations, including those with limited literacy. This may involve providing information in multiple languages, utilizing visual aids, and employing interpreters.
- Multi-source Information: Providing consistent information from multiple sources, including transportation providers, community organizations, and government agencies, can ensure that users have a comprehensive understanding of available options and benefits.
- Tailored Communication Strategies: Develop tailored communication strategies to reach specific target groups, utilizing appropriate formats (videos, audio, text, infographics), channels, and languages.
- Alternative Channels to Online Surveys: Focus Groups, Observational Research, and Citizen Co-creation: Utilize these alternative approaches to gather valuable insights and ensure a more inclusive and diverse participation in the decision-making process.

5.Measures preparation process

5.1. Demo site Thessaloniki

5.1.1.TES_10: To incentivise the use of PT in combination with active modes

5.1.1.1. Description of the measure and main outcomes expected



TES_10 aims to incentivize the use of Public Transportation (PT) in combination with active modes such as walking, bicycling, and e-scootering through a user-friendly application. The app will track and validate users' trips using smartphone sensors to accurately identify transport modes. Users will accumulate points based on the distance travelled, with extra points awarded for incorporating multiple modes of transport. These points can be redeemed for coupons that provide discounts or gifts from registered businesses. The expected outcomes include increased adoption of public transportation, enhanced integration of active modes, reduced traffic congestion, lower carbon emissions, and improved public health through increased physical activity. Additionally, local businesses may benefit from increased customer engagement.

5.1.1.2. Preparation of the measure

Survey

For the purpose of this measure, an online survey was carried out. The web questionnaire was disseminated through local websites to ensure broad participation. A total of 301 responses were collected in March 2024. The aim of the survey was to collect information regarding citizens' willingness to use the application developed as well as their preferences on the incentives. The questionnaire was divided into four sections: a) demographic and socioeconomic characteristics; b) existing mobility preferences; c) familiarity with technology; d) willingness to use the app and preferences.

The aim of this document is not to present the results in detail, however it is considered important to include some key results that verify the potential of the application developed:

- Of the participants who mainly use a car for their commute, about 80% are willing to walk more than 15' to reach their final destination.
- Of the participants who mainly use a car for their commute, about 45% are willing to travel by bicycle/e-scooter for more than 15'.
- Of the participants who mainly use other modes of transport (other than car), about 85% are willing to walk more than 15' to reach their final destination.
- Of the participants who mainly use other modes of transport (other than car), about 60% are willing to travel by bicycle/e-scooter for more than 15'.

It may be concluded that citizens of Thessaloniki are in general eager to use active modes, with walking being more popular than bicycle/e-scooter. In addition, people that already use other transport modes than car, are more willing to use active modes.

Additionally, it was identified that the user would ideally like to be rewarded through coupons for super markets and for mobility services. Also, the users would prefer the provision of incentives for their personal "achievements" rather than being incentivized for competing between teams.

System architecture

The TES_10 high-level architecture consists of a mobile app, a backend (Node.js), and a backend for the validation algorithm (Python), as presented in Figure 6.





Figure 6: TES_10 high-level architecture

- Mobile application: It is an Android²³ application which is used by users or businesses. Each role (user or business) can view a different dashboard based on the functionalities needed for this specific role.
- Backend (Node.js²⁴): It is the main backend component (written in Node.js) used by the application. For example, it is used for functionalities such as gifts and coupons that are not related to the validation algorithm. It is connected with a database (MySQL²⁵) for storing data.
- Backend for validation algorithm (Python): It is a backend component that serves the needs of the validation algorithm. Except for the validation algorithm code that is written in Python²⁶, ²⁷Flask is used in order to allow communication with the other components. This backend component uses its own database as well (MySQL).

The mobile app interacts with users, collecting sensor data and providing feedback. This data is sent to the backend (Node.js), which handles communication and data processing tasks. The communication between the mobile app and the Python backend is facilitated by Flask for the "Report Trip" feature. The "Report Trip" feature allows users to start and end their journey on the app, selecting their transportation mode with the trip being validated through smartphone sensor data and GPS. This feature calculates and updates the user's points based on the distance travelled and whether the trip was unimodal or multimodal. The backend (Node.js) interacts with the backend for the validation algorithm (Python), which performs the validation of transportation modes using Machine Learning (ML) models. The results are then sent back to the mobile app, providing users with real-time feedback and updates on their trips and points gained. This architecture ensures efficient data processing and user-friendly interaction.

Validation algorithm

The initial step in implementing the TES_10 application was the development of the Transportation Mode Detection (TMD) algorithm, which serves as its core. The methodology involved extensive research on open data sources for TMD, including desk research to identify suitable datasets and sensors, and a literature review to determine the appropriate methodologies for preprocessing and feature extraction. Key criteria for selecting the appropriate dataset included: 1) the types of sensor measurements necessary to generate the features required for training the algorithm, and 2) the presence of labels/targets in the data that meet the application's requirements. Additionally, it was essential to ensure that the dataset's license permitted its use for this application. Concurrently, research on preprocessing raw smartphone sensor data was conducted, focusing on methods critical for accurate TMD.

Dataset

²³Android: https://developer.android.com

²⁴ Node.js: https://nodejs.org

²⁵ MySQL: https://www.mysql.com

²⁶ Python: https://www.python.org

²⁷ Flask: https://flask.palletsprojects.com



The datasets considered for this project included the Collecty dataset²⁸, the Occitania Transport Media dataset (OCC-TMD)²⁹, and the TMD dataset³⁰. These datasets provide labelled data for various transport modes, which is crucial for training and evaluating TMD algorithms. Additionally, a new data collection option was explored, where smartphone sensors would gather real-time data from users' journeys, including GPS and accelerometer readings. Finally, we selected the Collecty dataset as it best matched our application requirements. It contains comprehensive sensor data necessary for our analysis and covers the full range of transport modes, including the e-scooter, which is not present in the other two datasets and generally in the most datasets. A significant factor in choosing Collecty was that its license allowed us to use it. However, like the other datasets, it did not include GPS data.

Pre-trained TMD algorithm

In the preprocessing stage, we aimed to reduce the number of classes as much as possible to enhance the performance of the TMD algorithm. We combined e-scooter and bicycle into a single class called 'Micromobility' due to their similar behaviour patterns. This resulted in four classes for prediction:

- Active (combining 'Walk' and 'Run')
- Micromobility (combining 'Bike' and 'E-scooter')
- Public Transportation (combining 'Bus', 'Tramway', and 'Train')
- Car

The Collecty dataset was then balanced to ensure that each class was represented equally, followed by stratified sampling to maintain the distribution of classes in both training and testing datasets. A Min-Max scaler was applied to normalize the feature values, ensuring that all features would contribute equally to the model training process.

The preprocessing and feature extraction process in the application follows a structured approach based on best practices for transportation mode detection. After conducting a comprehensive literature review, we adopted a methodology similar to the one proposed by Ashqar, Hut Haifa I., et al. (2019)³¹. This research provided a robust framework for handling and processing sensor data for transport mode detection, which we adapted to our needs. First, raw sensor data from accelerometers and gyroscopes are collected and cleaned to remove any noise or irrelevant information. This data is then interpolated to create a uniform time grid, ensuring consistency of the intervals between data points. First differences and second differences are calculated to record the change in sensor readings from one point in time to another, capturing dynamic aspects of the motion, such as acceleration and deceleration, and information on jerky movements or continuous changes in acceleration. Basic statistical characteristics, such as mean, sum, maximum, minimum, variance, standard deviation and range, are calculated for each time window, initially at 1-second intervals. In addition, advanced features, such as signal variations, energy and spectral entropy, are extracted by transforming the data in the frequency domain using the Welch method. By extracting these features, the raw sensor data is transformed into a structured format that captures the essential characteristics needed for accurately identifying transportation modes. This processed and feature-rich data is then used to train the TMD algorithm, ensuring that it can effectively classify different types of travel based on the user's movements. We tested the performance of several ML models to determine the best. The results are presented in Table 12. The final pretrained algorithm chosen for the application is the Random Forest (RF) model with a 5-second frequency. Frequency refers to the interval at which features are extracted and predictions are made. For instance, in the case of Long Short-Term Memory (LSTM), features are extracted every second, but the predictions are made using 30-second packets. The RF model at 5-second intervals was selected due to its high accuracy of 91%, which matches the highest accuracy observed among all models tested (also achieved by k-Nearest Neighbours at the same frequency). While k-Nearest Neighbours (kNN) also performed well, RF was preferred based on probability-based theory, which considers the robustness and generalization capabilities of RF in handling diverse datasets. Additionally, RF showed consistent high performance across different frequencies, further validating its reliability. Thus, the RF model at a 5-

²⁸ (Erdelić, Erdelić, & Caric, 2023)

²⁹ (Thibault, Verstaevel, Migeon, & Schettini, 2023)

³⁰ (Carpineti, Lomonaco, Bedogni, Felice, & Bononi, 2018)

³¹ (Ashqar, Almannaa, Elhenawy, & House, 2019)



second frequency was determined to be the optimal choice for the TMD algorithm in the application, offering a robust and accurate solution for TMD.

Model	Frequency	Accuracy
Random Forest (RF)	1s, 5s, 10s	85%, 91%, 91%
k Nearest Neighbours (kNN)	1s, 5s, 10s	80%, 91%, 91%
Support Vector Machine (SVM)	1s, 5s, 10s	82%, 87%, 86%
Decision Tree (DT)	1s, 5s, 10s	70%, 81%, 84%
Long Short-Term Memory (LSTM)	30s	87%

Table 12: Comparison of model's accuracy on TMD task

Binary classifier

In order to enhance the accuracy of the TMD model, in particular with regard to the differentiation between PT and car trips, it is recommended to include a verification step. This verification could be done either: a) by matching the route with a database of public transportation routes or b) by developing an additional binary classifier to distinguish between car and PT modes (hierarchical classification or step-by-step classification).

To address the challenge of distinguishing between closely related modes such as public transportation and private car travel, we incorporate a specialized binary classifier. This additional layer enhances the algorithm's accuracy in differentiating these transportation modes, ensuring more precise validations. During the development process, we trained various binary classification algorithms and ultimately selected the Random Forest classifier due to its superior performance and reliability in this context. The RF model provided the highest accuracy and robustness in distinguishing between PT and car trips, making it the optimal choice for our application.

Bus trip validation

The "bus trip validation" step works by comparing the GPS data of a user's journey against predefined bus routes stored in a GeoJSON file. The process involves converting the GPS data into a geographic format and projecting it to match the coordinate system of the bus routes. The algorithm then calculates the distance between each GPS point and the bus routes, checking if a significant portion of the points fall within a specified tolerance distance from the route. By sorting the routes based on proximity to the journey's starting point, the algorithm efficiently determines whether the journey aligns with any bus route. If a sufficient percentage of GPS points match a bus route, the trip is validated as a bus journey. This validation ensures the accuracy and reliability of the reported transportation mode. In Figure 7, a validated bus trip is depicted. The continuous red line represents the user's route as recorded by GPS data. The blue points indicate the bus route data, showing how the user's trip matches the established bus routes, confirming the validation by the "bus trip validation" process.





Figure 7: Validated bus trip visualisation

Verification process

The verification process ensures that the user-reported transportation mode matches the mode detected by the application. It involves cross-checking GPS data and sensor readings against predefined patterns for each transportation mode.

Prediction step

For each trip, the pre-trained TMD algorithm generates predictions every 5 seconds. Thus, a 5-minute trip yields 60 predictions. The final mode of transportation is determined by the majority class among these predictions. For example, if the predictions consist of 30 instances of bus, 5 instances of walking, 15 instances of car, and 10 instances of micromobility, the trip is ultimately classified as bus. This approach ensures that the most frequent mode of transport detected during the trip is selected as the final prediction.

Initial verification

- For trips that are not car or bus trips such as walking, scooter or bicycle trips, the initial verification process relies solely on the smartphone sensor data and the prediction made by the pre-trained TMD algorithm. These modes do not require the additional verification step used for distinguishing between car and bus.
- In case the user-reported mode is public transportation but the final predicted mode is car, an additional verification step is triggered. In this step, the binary classifier performs an extra check specifically on this route to validate the mode.
- In the case where the final intended mode of operation matches the mode declared by the user (public transportation), then the additional verification step with the binary classifier is not activated and only the validation based on the bus routes is performed.

Binary classifier check

- The binary classifier re-evaluates the sensor data to differentiate between bus and car travel. If the re-evaluation confirms that bus is the correct mode, the result is changed to true.
- If the binary classifier still indicates the car as the mode used, the trip is flagged as failed.

Bus route check



- For trips in which the bus is indicated as the mode used, an extra check is performed to validate the bus route. This check compares the trip data with standard bus routes.
- The algorithm checks the closest bus routes first and returns true if at least one route matches the trip data.

Final verification

- Each journey and mode of transport is examined individually. For example, a trip that includes {Walking, Bus, E-scooter, Bus} will have 4 validity checks.
- For trips that include a bus, the extra checks discussed above are made.
- If the bus route check confirms a match, the trip is verified as valid.
- If no bus routes match, the trip is flagged as invalid, and the user is informed about the discrepancy.

Point system

The point system is designed to incentivize the use of public transportation in combination with active modes of transport, such as walking, cycling, and e-scooters. In developing this system, it was important to consider that points should motivate users to engage with the application and be fair for both users and partner companies. Points are awarded only for valid trips in which the transportation mode and distance travelled have been accurately verified. Users gain points based on the distance travelled, with an additional bonus for conducting multimodal trips. Specifically, for every 100 meters travelled, users gain one point for each type of supported trip. The app uses smartphone sensor data to accurately measure the distance covered, ensuring a fair and motivating point system.

Multimodal bonus points

To encourage the integration of multiple modes of transport, users receive bonus points for multimodal trips. A multimodal trip is defined as a single trip that includes two or more different modes of transportation, without taking walking into consideration. A fixed bonus of 20% is provided for multimodal trips. For example, if the user travels 2000 meters with a multimodal trip, the user will gain 20 points (for the distance travelled) plus 4 bonus points (for the multimodal trip). Here is the equation for calculating the total points:

$$P = D/100 * (1 + bonus * M)$$

Where: a) D is the distance travelled (in meters), b) bonus is a constant value, which is defined as 20% for each multimodal trip, c) M is a binary variable (M=1 for multimodal trips and M=0 for non-multimodal trips).

Table 13 summarizes examples and cases of user-reported trips and their verification results by the validation algorithm, along with the distance travelled and points gained. It shows whether each part of the trip was verified, the total distance travelled, the addition of a multimodal bonus and the final points awarded.

Table 13: Examples with reported trips and the corresponding results

-					
	Trip reported by the user	Trip verified	Distance travelled (km)	Multimodal	Points
L		by the validation algorithm	liavelleu (KIII)	DOITUS 2070	
	[Walking, Bus, Walking]	[True, True, True]	[0.2, 2.4, 0.1]	No	27
ſ	[Bus, E Scooter]	[False, True]	[1.31, 1.51]	No	15
	[Bicycle, Walking]	[True, True]	[0.82, 0.46]	No	12
	[Bus, Escooter]	[True, True]	[1.75, 2.39]	Yes	48
	[Walking]	[False]	[8.72]	No	0
	[Bus, Walking, Bus]	[True, True, False]	[2.2, 0.4, 3.5]	No	26

Mobile application

The new mobile application supports two different dashboard views: the user dashboard and the business dashboard. So, it is used by two different roles. In Figure 8a, the login page is presented. After a successful login, the user views



the dashboard presented in Figure 8b, which includes the following pages: "My trips", "Report trip", "Check points - Claim gift" and "My coupons". The business dashboard consists of the pages "Gifts" and "Scan coupons" (Figure 8c).

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Figure 8: a) Login page, b) User dashboard, c) Business dashboard.

User dashboard

On the "My trips" page (Figure 9a), the user can view his/her personal trips, along with the date and time, the status and the points gained for each trip. The green background colour indicates that the trip is completed and the user has already received points, while the orange background colour indicates that the validation of the trip is still pending. On the "Report trip" page (Figure 9b), the user reports a new trip. When the trip starts, the user clicks on the "START TRIP" button. The user reports the transport mode as well. The available transport mode options are "Walking", "Bus", "Scooter" and "Bicycle". When the user clicks on the "END TRIP" button, the user can select "CONTINUE TRIP" if he/she wants to continue the trip. The user can change the transport mode for the next part of the trip. If the user combines two different modes except for walking, it is the case of a multimodal trip. If the user selects "END TRIP", the trip finishes. After this action, the mobile application sends all the trip information (with GPS and sensor data) to the validation algorithm. The mobile application sends notifications to the user as well. The notification in Figure 9c informs the user that the trip has ended and the corresponding points will be calculated.





Figure 9: a) My trips, b) Report trip, c) Notification about the end of the trip.

On the "Check points - Claim gift" page (Figure 10a), the user can view his/her current points and the available gifts which are provided by the businesses. The user can sort the available gifts by the points needed for each of them. If the user can afford a gift based on his/her current points and the points needed for it, the "Buy" button is available for this gift. If the user clicks on the "Buy" button, then the user has to confirm the purchase of a coupon for this item (Figure 10b).

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Coffee	150	BUY	Coffee	150	BUY
coffee	350	BUY	coffee	350	BUY
Meal	500	BUY	Buy Cou Do you wa	pon nt to buy the cou	ipon: Coffee?
Fish & Chips	750	BUY			NO YES
E-Scooter	1500		E-Scooter	1500	
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Figure 10: a) Available gifts list, b) Buy coupon confirmation

On the "My coupons" page (Figure 11a), the user can view a list with all his/her available coupons. When the user wants to use a coupon for a business product or service, the user presents a QR code coupon to the business (Figure 11b). After using a coupon, the specific coupon no longer appears on "My coupons".





Figure 11: a) My coupons list, b) Coupon QR code display.

Business dashboard

On the "Gifts" page, the business can view and manage the products or services that it offers as gifts. In Figure 12a, the business views the gifts that it offers. For each gift the business can view the title, the description, the points needed and if it is available for the users. After clicking on the "+" button, the business can add a new gift by filling in a form (Figure 12b). The information needed is gift title, gift description, points needed and if it is available. The business can update a gift or delete it (Figure 12c). On the "Scan coupons" page, the business can scan the coupon that the user presents in order to receive a gift. In Figure 13, a successful coupon scan is presented.

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Figure 12: a) Gift list, b) Add gift, c) Update/Delete gift.





Figure 13: Coupon successfully scanned

5.1.1.3. Challenges & Mitigations

During the development of the application, several challenges were encountered and various solutions were implemented to address them. A major challenge was the absence of GPS data from the datasets and the difficulty in finding datasets containing data on e-scooters. The absence of GPS data was critical, as the literature highlights its importance in TMD algorithms. To improve the performance of the validation algorithm, we reduced the number of transport classes by combining e-scooter and bicycle into a single class called "Micromobility". Since these two modes have a different impact profile (especially for public health) and should therefore be subject to different incentives, this classification will have to be revisited in future applications, when more datasets will be available to distinguish between the two. In addition, we refined settings such as the criteria for the majority class in the verification process, the prediction frequency, and the percentage threshold for validating bus routes to optimize accuracy. Distinguishing between car and bus routes was particularly difficult, so we applied a binary classifier to improve the accuracy in these cases. In addition, we also implemented the bus route validation step to enhance the route verification process.

Walking trips, which are part of almost every journey, posed another challenge. Although considered in the calculations even in small distance trips, they were excluded from bonus points to encourage the use of different modes of transport. Points have to serve as an incentive for users while remaining fair to both users and partner companies. This required developing a precise equation for point calculation and determining appropriate bonus points.

Creating a user-friendly mobile application was paramount. We focused on designing an intuitive interface and ensuring efficient communication between the backend and the mobile application, speeding up the code to produce quick results. To enhance the efficiency of the application, asynchronous processes for tasks such as data validation and transport mode prediction, which can be time-consuming, were implemented to make the application fast and user-friendly. To minimize user input and enhance the user experience, the app was designed to require minimal interaction from users, only at the beginning and the end of their journeys. For instance, users would not need to specify the exact bus route used. These strategies collectively ensured the development of an effective and user-friendly application.



Moreover, the app provides users with detailed feedback, including the status of their trips and the number of points gained. This real-time or near real-time feedback helps users stay informed and motivated. A comprehensive dashboard allows users to track their progress, view their total points, and see the history of their trips. This transparency not only enhances user engagement, but also builds trust in the system.

5.1.1.4. Next steps towards implementation

As next steps, we plan to further enhance the application through several key initiatives:

- **Testing:** We plan to conduct thorough testing to ensure the system's accuracy and reliability, identifying and addressing any potential issues before the final deployment.
- Enhancing the validation algorithm: Our goal is to enhance the validation algorithm based on the results of our testing. This will involve refining the feature set and validation criteria to improve accuracy and reliability in distinguishing between different transportation modes.
- Incorporation of GPS data: We aim to enhance the validation algorithm by integrating GPS data into the verification process. This will include creating speed thresholds for trip category categorization, which will contribute to identify and verify the used modes of transportation more accurately.
- **Integration of the new mobile application:** We will integrate the new mobile application user's pages and functionalities into an existing mobile application.

Except of the above initiatives that aim to optimize the digital service and enhance the user experience, as a next step efforts for engaging both users and businesses will be implemented. Up to now, one business has already expressed its interest to participate, by providing free hours of bike-sharing usage.

5.2. Demo site Oslo

5.2.1. OSL_04: Reduce dependency on car ownership

5.2.1.1. Description of the measure and main outcomes expected

This measure aims to create cooperation models between Ruter, landowners (we have partnered with USBL, which is the second largest housing cooperative in Norway) and mobility service operators. It involves developing an administrative backend system and scalable combined mobility offers for residents. Through different business, pricing and service models, the use of public transportation and shared modes will be incentivized. The goal is to make combined mobility agreements easily accessible to housing associations and residents, offering discounted PT tickets and various shared modes. Landowners have economic incentives to cooperate, while mobility service operators benefit from exposure to Ruter's customer base.

1. <u>Reduce dependency on car ownership</u>

By offering a bundled mobility subscription, residents will have access to a variety of transport services, decreasing their need for personal cars.

2. Reduce barriers connected to pricing for shared mobility and public transportation

Incorporate the subscription fee into the fixed costs associated with holding an apartment, simplifying billing and ensuring widespread participation.



Encourage the use of public transport by reducing car ownership, thereby lowering traffic congestion and environmental impact.

Residents will benefit from access to a personalized bundle of services at a discounted price, which reduces their dependency on car ownership. Housing organizations and real estate developers will experience improved utilization of space as the need for parking spaces diminishes. For the environment, the increased use of public transport will lead to lower emissions and better air quality. Public health will also see improvements, as reduced traffic congestion contributes to fewer road accidents and overall better health. Lastly, enhancing public transport usage and reducing car dependency will support the private economy by decreasing individual transportation costs.



sharing, micromobility, city bikes etc.

Figure 14: Concept illustration.

5.2.1.2. Preparation of the measure

Knowledge summary

Ruter has collated all insights from previous efforts on the topic, the most relevant being focus groups on mobility together with OBOS on Fornebu and a former pilot with USBL. We also invited the PTA of Trondheim, AtB, to talk about their efforts on integrating city bikes and car sharing in the monthly public transportation offer. Through the hackathon in Oslo, we explored lots of new ideas for the measure which we will bring with us.

Partnerships - housing cooperative

Ruter initiated a dialogue with the two largest housing cooperatives in Norway and have been in discussions with OBOS and USBL. Both were positive to the concept, but USBL was by far the most motivated of the two. OBOS will follow the project from the sideline.



Together we identified 15 potential housing organizations under USBL's governing. After site visits, we evaluated how well suited the locations were for the pilot with regards to access to shared mobility services, parking availability, private bike facilities, city bike and access to public transportation in the immediate vicinity. We ended up with 4 sites, 174 apartments and approximately 300-400 residents for the first piloting stage.



Figure 15: Map of the potential pilot locations. Green pins mark the selected locations.

The dialogue with the residents goes through a board representing each of the 4 locations. These boards will also be essential when it comes to communicating the offer when it is available. Together with USBL and the local evaluation manager we formed a Questback survey for the residents which received 72 responses. It was of course very positive that 69% of the respondents felt that this mobility subscription was either relevant or highly relevant to them. Other interesting takeaways were which types of mobility services are most used and the share of people considering buying a car. We will send out the same survey in a few months into the pilot to measure results.



Table 14 - Questions from the survey

Demographics

- 1. Where do you live?
- 2. What gender are you?
- 3. What age group do you belong to?
- 4. How many adults are there in the household? (18+ years)
- 5. How many children are there in the household? (Under 18 years old)

Mobility habits

- 6. Do you have a car driving license?
- 7. Do you have access to a car you can use on a daily basis?
- 8. Are you planning to buy a car within the next 3 years?
- 9. How much do you agree or disagree with the following statement: I am dependent on my car in everyday life
- 10. At this time of year, how often do you use the following means of transport?
- 11. What type of public transport ticket do you use from Ruter?

Feedback on mobility subscription

- 12. Do you think this type of subscription might be right for you? If no, what is the reason why this doesn't sound relevant to you?
- 13. Will the inclusion of these services make the subscription more relevant to you?
- 14. Are there any other services within the travel or transport segment that you think would make the subscription more relevant to you?

Partnerships - service providers

We sent out a Request for Information to the private market in March and got eight answers from different types of service providers (car sharing, city bike, micromobility, bike lockers). These answers, and follow-up meetings with five of these service providers, are input for the terms, conditions and business model of the subscription. For micromobility we will cooperate closely with Ruter's micromobility team and three of their planned activities:

- Bike subscription service (OSL_06)
- City-bike integrated in the Ruter-app (MOVE21 initiated)
- Price discount for free floating e-scooters and e-bikes

The survey showed that car sharing would make the subscription more attractive to the residents, so we will focus on implementing this first. We are currently discussing terms for these providers, aiming to have this cleared by the beginning of September.

Admin-system / minimum viable product

The administrative interface will as mentioned be based on Ruter's company solution. This solution is ready for integrating new services and a simple MVP has been developed.



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Figure 16: Example of interface.

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5.2.1.3. Challenges & Mitigations

We are assured that the technical solution will not be an issue in the pilot. However, for it to scale well, the recurring payments need to be processed without the need for any human assistance regardless of which accounting system the housing organizations uses. There might be some development left to do on integration with the invoicing systems, and we will have to cooperate with housing organizations to find a flexible and generic solution for this.

5.2.1.4. Next steps towards implementation

- Agree with service providers and add the actual services to the administrative interface, starting with car sharing, then city bike and bike subscription.
- Create communication/marketing material for onboarding of residents
- After launching: new round with user survey



5.3. Demo site Île-de-France (Versailles Grand Parc)

5.3.1. IDF_07: To incentivize the use of Public Transport for commuters

5.3.1.1. Description of the measure and main outcomes expected

This measure aims at incentivizing the use of Public Transport for commuters, by facilitating the management of the FMD³² (mobility credits) as a mean of payment for PT, micro-mobility services and other green transport modes (e.g. personal bicycle with the possibility to report IKV i.e. cycling mileage allowance). This will allow private companies, located in the territory of Versailles Grand Parc to provide employees with FMD to be used as a mean of payment of sustainable mobility modes (public transport + active modes). This will encourage the use of those modes and promote a healthier lifestyle in the region.

The B2B MaaS application developed by Instant System will be provided and configured to identify private companies for the attribution of FMD to their employee with a complete back-office tool for the HR department of each company.

5.3.1.2. Preparation of the measure

Case description

Versailles Grand Parc, located in the western suburbs of Paris, faces significant challenges related to commuting. These challenges are multifaceted, including:

- Traffic Congestion: The area experiences heavy traffic, especially during peak hours, leading to prolonged commute times. A lots of companies also don't have enough park places for their number of employees.
- Environmental Concerns: High levels of car usage contribute to environmental pollution, impacting air quality and contributing to the region's carbon footprint.
- Economic Impacts: Congestion and long commute times have economic repercussions, reducing productivity and increasing stress levels among workers. It also impacts the working conditions and thus employees retention. 38% of employees having more than 30-min commuting time tend to seek for a new employer.

Given these challenges, there is a pressing need to encourage the use of public transport and other sustainable commuting options, in order to reduce congestion, improve the quality of life of employees and citizens, reduce environmental impacts, reduce employees' turnover and improve their efficiency.

The Forfait Mobilités Durables (Sustainable Mobility Package) is a French government initiative aimed at encouraging sustainable commuting practices. It offers financial incentives to employees who choose eco-friendly commuting options. Employers can distribute until 800€ tax-free "mobility credits" for sustainable mobility expenses.

The Forfait Mobilités Durables can be used as an incentive both towards employees and employers.

For employees, the forfait can be used to subsidize the costs of bicycles, electric scooters, carpooling, and public transport subscriptions, making these options more financially attractive. Financial incentives can be a powerful

^{32 (}Le Forfait Mobilités Durables (FMD), 2024)



motivator for changing commuting habits. By reducing the financial burden of sustainable commuting, more employees might opt for these greener options.

As regards employers, promoting the forfait mobilités durables aligns with corporate social responsibility (CSR) goals. Companies can demonstrate their commitment to sustainability and the well-being of their employees by reporting concrete deployed actions.

Emy - MaaS solution for companies

Instant System has developed a new MaaS product, designed for companies. The Emy app allows employers to easily deploy incentivization strategies (FMD, mobility credits to replace company vehicle, etc.) towards employees to use PT and sustainable modes, according to their mobility policy. Regarding the implementation of FMD, the solution highly facilitates human resources (HR) management cost, by providing a virtual payment card which can be used for sustainable mobility, like luncheon voucher payment cards.

In terms of functionalities, the solution includes:

- a mobile application for employees to address their needs in terms of daily mobility for commuting purpose, providing multimodal travel information (public transport, bike sharing, e-scooters, ride hailing, taxis, parking lots), linked to a mobility credit wallet paid by their company, and the possibility to declare FMD expenses and IKV (Indémnités Kilométriques Vélo) for reimbursement. See Figure 17.
- a virtual credit card facilitating the distribution of the mobility credits by the employer to the employee. See Figure 19.
- a back office for the employer to manage the allocation of the FMD to the employees and to monitor mobility expenses. See Figure 18.



Figure 17: Home (left), journey planner (middle) and sustainable mobility expenses declaration (right)



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Nationalité: FR France				
Nº de téléphone: +33676603001				
Groupe				
instantprod –				
Apple Pay Testers				
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Figure 18: Back office – Mobility credits management tool

Instant System's objective is to refine the product with new essential functionalities:

- the connection of the virtual credit card with the google wallet and the apple wallet, to facilitate the use the FMD thanks to contactless payment.
- back office developments, to allow the company to configure the attribution of the mobility credits with its own mobility policy, and for data analysis for CSR.
- integration of a new mobility service provider, i.e.. TIER shared mobility services which are running in Versailles Grand Parc since 2023.

These developments will enhance the product both for the employers (client) and the employees (end-user). For employers, it will allow them to restrict the use of the mobility credits to specific transport modes, and to create specific rules, making Emy a dedicated tool to implement their own mobility policy. For employees, it will considerably facilitate the use of the granted sustainable mobility credits, which they will be able to spend just as another credit card in their wallet, to buy e.g. their PT passes, or a shared mobility service.

This measure foresees the identification and selection of pilot companies in the sector of Versailles Grand Parc to experiment the solution and evaluate its impacts at the scale of the municipality on its commuting challenges.

First Achievements

The business development department of Versailles Grand Parc organizes regular Mobility Plan sessions with companies in the different sectors of the locality. To promote the business MaaS solution to the companies of the locality, they invited Instant System to present the demo to the invited companies to two of these meetings:

• On 30 January 2024, with companies and public organisations of the sector of Satory: Nexter KDNS, Arquus, IEED Vedecom, Université Gustave Eiffel, the Army, Volvo.

• 57



• On 6 February 2024, with companies and public organisations of the sector of Buc/Les Loges-en-Josas: General Electris Medical Systems, 3D Plus, ESAT, B.E. Green, Air Liquide, Afmaé, Safran.

In total, 15 companies were approached. A next Mobility Plan meeting with businesses of the sector of Velizy is planned, and one to one meetings will be arranged as well in a next phase.

In terms of technical developments, the connection of the virtual credit card with the google wallet and the apple wallet was achieved.



Figure 19: Emy Virtual credit card in-app (left) and in the Google Wallet (right)

The back office developments are ongoing – the employer's back office with the possibility to configure the FMD distribution according to the mobility policy is already available.





Figure 20: Back Office – Mobility policy settings

5.3.1.3. Challenges & Mitigations

The main challenge identified for this measure is the lack of knowledge of the employers for the FMD mechanism. To date the law LOM³³ makes it mandatory to address this question in the annual discussion with staff representatives organizations, so we plan to mitigate it by informing companies about this obligation, especially during the VGP Mobility Plan meetings with businesses.

5.3.1.4. Next steps towards implementation

In terms of technological refinements of the solution, the next steps are:

- the integration in the back office of a data analysis feature for businesses to assess environmental KPIs related to commuting for CSR reporting. This need has been expressed in several demo-meetings.
- the integration of the MSP TIER (linked with measure IDF_04).

Regarding the pilot testing, after having reached an agreement with a company, we will proceed to the development of the digital service with the configuration of the solution (configuration of mobility policy, configuration of employees' interface, generation of payment cards, creation of administrators' access to back office). A training session will be organized for the HR service/ Mobility managers administrating the solution. The pilot testing will run until the end of the UPPER project, and support will be provided all along for adjustments of the solution according to the feedbacks.

^{33 (}La Loi d'Orientation des Mobilités (LOM), 2024)



5.4. Demo site LEUVEN

5.4.1. Measure LEU_05: Mobility for all by optimising the use of financial incentives to increase the share of PT

5.4.1.1. Description of the measure and main outcomes expected

This measure will make the best use of ongoing technological improvements such as integrated ticketing systems and MaaS applications in order to test smarter incentives that are easier to access for the intended social groups. By reassessing and more focused application of financial incentives for public transport and parking, the uptake of public transport in certain social groups will be increased. Financial incentives currently in place in Leuven are each focused on one particular service and one particular user group of this service. They are not integrated with ticketing systems; they are often not well known, and they are not transparent. In this measure, the current financial incentives will first be analysed: what is their actual impact and efficacy? Building on this analysis, expertise of the UPPER partners and input of an ongoing pilot project on MaaS in Leuven, a policy plan on financial incentives will be drafted. Finally, at least one sort of financial incentive that is provider neutral and integrated with MaaS systems will be implemented and evaluated within the project.

5.4.1.2. Preparation of the measure

First, an analysis report of the current incentives in place was drawn up. The analysis shows that the budget provided is not always used up (for the night buses, shopping promotion, P + B- tickets, …).For some incentives it is also impossible to find out which citizens are being reached. The question arises whether the city is reaching the people who need it most financially. A large group of residents who could use support are also left out with the current systems: children between 12 and 18 years old, but also people who are not entitled to increased allowance, social rate, etc., but who are having financial difficulties. Furthermore, it appears that the current systems may also encourage people to take the bus, who could perhaps just go on foot or by bicycle.



Table 15: Overview of the current incentives with the foreseen budget for 2023, expenses for 2022 and 2023 and usage in 2022

Overzicht huidige systemen

	Voorzien (2023)	Uitgaven 2022	Uitgaven 2023	Gebruik 2022
Buspas 6-12 jaar	110.000	107,296	108.575	70% 6-12 jarigen aangevraagd 76% gebruikt (53% van de 6-12 jarigen) 260736 ontwaardingen
Studentenbuspas	Studentenbuspas 484.000 84.797 (345.807 kosten - 261.010 opbrengste 0 0		72.387 (343.297 kosten – 270.910 opbrengsten)	UCLL: 47% v/d studenten 70% gebruikt de pas enkele keren/ week KUL: 52% v/d studenten 50% gebruikt de pas enkele keren/ week 1544296 ontwaardingen
Nachtbussen	16.000	1.719	2.097	816 ontwaardingen
Winkelactie De Lijn	20.000	4.766	4.255	2.149 ontwaardingen (daling in 2023)
P + B De Lijn	12.500	1.712	2.265	979 ontwaardingen (2023 = 1573)
Bluebikes	52.000	37.658	51.061	300.504 ritten (vanaf 2024 betaald Stad Leuven 1 euro per rit)
Vaartkomshuttle	196.000	135.167	68.943	15.358 reizigers (2023 = 43718)
Totaal	890.500	373.115	309.583	

Simultaneously input from and the council was collected to determine the objectives of the future policy plan and input from the welfare department and other stakeholders was collected to determine possible target groups, necessary or missing financial incentives and feasible ways to allocate the incentives. Best practices from other projects and organisations were reviewed and a list of ideas for the framework with possible target groups and incentives was drafted. A number of recommendations that have been collected:

- Automatically grant benefits or simplify application procedures
- Offer different transportation options or a mobility budget for people to choose from. There is not only a need for bus transport, but also for bicycle transport, train transport, etc
- Extend support to children up to the age of 18
- In addition to a digital option, there must always be a physical application procedure
- There is a need for a rental system for youth and adult bicycles at a social rate including maintenance of the bike (this system already exists for children in Leuven and is a huge success)
- The student bus pass system that Leuven co-funds could perhaps be made budget-neutral by slightly increasing the price for students. The bus pass would remain affordable, but this would free up financial space to help other target groups

Other target groups could be allocated financial support to nudge towards public transport or shared mobility like new residents who have just moved within or into the city or residents who are normally entitled to a degressive parking subsidy.

Additionally, alignment has been set up with a complementary project on transport poverty from the Welfare department. While in the UPPER project will be focused on working out the policy and technical aspect, the Welfare department with its project will be focusing on the necessary support for citizens concerning transport poverty, for example, a list of all the support options and organisations one can turn to for help or working out a system with mobility coaches or application support.



5.4.1.3. Challenges & Mitigations

Leuven is a smaller city, so a city application is not feasible. Currently the city is conducting a pilot project together with another city towards introducing a mobility budget. Some 200 people have been given five months of access to a budget to spend on public transport and shared mobility via a MaaS app. The conclusions from this experiment will provide valuable input for the further development of this measure, but a survey of Maas providers already shows that it does not seem interesting for them at the moment to offer their services to city residents. Private players have different objectives (innovation, profitability, ...) than public authorities (accessibility, environmental sustainability, ...) and it is a challenge to align them. We are waiting for further recommendations from the experiment to see how this can be handled.

5.4.1.4. Next steps towards implementation

In September, additional input for the measure is excepted from the ongoing experiment with a mobility budget through an app that the city is currently conducting. The city is currently also preparing a large-scale mobility survey of Leuven residents. After the analysis of the results of this survey and of the experiment with a mobility budget, we can, together with the input and ideas we have collected, organise one or more internal workshops to further define the target groups, the framework and or possible/desired scenarios for the policy plan.

5.5. Demo site Rome

5.5.1. Measure ROM_09 "create incentive packages to support multimodality"

5.5.1.1. Description of the measure and main outcomes expected

The Measure ROM_09 is a "soft" one. The objective of this measure is to guide the citizens' travel behaviour through a set of incentives and opportunities. It also aims to contributing to mitigate the social impact of the PUSH Measures (ROM_01 and ROM_02), to pass the message that local public transport is the optimal transport solution.

This is done by supporting the:

- Increase of multi-modal trips
- Increase of car-sharing or ride-sharing
- Increase of active modal share

Through:

- Analysis of the range of incentives in relation to the PUSH measures (ROM_01, ROM_02), according to the available public financing schemes and drafting of the proposals.
- Support by the Mobility Managers' network to increase and to take advantage of the incentives, to promote sustainable mobility habits and the use of PT among their employees, students etc
- Involvement of the stakeholders (institutional and commercial) to provide more mobility options and alternatives to the car.



5.5.1.2. Preparation of the measure

This measure is strongly connected to the measures ROM_01 and ROME_02, and its objective is twofold. On the one hand to support the citizens' acceptance of the new restrictions, on the other to incentivise PT and/or multimodality.

In this framework, the **Mobility Managers'** (MM) network is involved to support the uptake of sustainable mobility habits by the employees of the companies and institutions they represent. One of the objectives of the ROM_09 measure is to increase the number of institutions appointing MM. In 2023, the appointed MMs increased from 386 to 429, they were also directly involved to stimulate the participation of the employees in the MaaS trial (ROM_06). RSM developed and disseminated questionnaires on home-to-work journeys to companies via the MMs, in order to determine transport modes and impacts on mobility and the environment

In relation to the implementation of the Green Area (ROM_02), following the first negative reactions following its announcement at the beginning of 2023, the dialogue between the City's Mobility Department, the office of the councillor for Mobility and RSM resulted in considering various incentives schemes to mitigate the impact, especially for people living inside the Area (according to the regional law the pre-Euro5 Diesel will not be allowed here after November 2025).

The impact of the ROM_02 (and ROM_01) measures would grow according to the following (data 2022 - considering the vehicles of the residents in the Green Area, including also those for goods distribution):

	1 st phase banning p	re-Furo 3 diesel and	pre-Euro 2 gasoline	178 /31 vehicles ·
•	1° phase banning p	re-Euro s dieser and	pre-Euro z gasoline	170,451 vehicles,

- 2nd phase banning pre-Euro 4 diesel and pre-Euro 2 gasoline 241,589 vehicles
- 3rd phase banning pre-Euro 5 diesel and pre-Euro 3 gasoline 332,579 vehicles (due November 2025)

The above calls for the need to investigate solutions in order to mitigate the socio-economic impact and the acceptance of the measure.

A complex multi-facet strategy has been outlined, that takes advantage both of the consolidated <u>technology of the</u> <u>automated access control system</u> and of the consolidated successful experiences with the MM network.

Here follows the list of the elements that set-up the "incentives strategy"

Access Bonus - Consists in the opportunity of issuing a limited number of <u>daily accesses</u> per year to enter the Green Area for the vehicles that would normally be banned. Once the ceiling is exceeded the fine is issued. The number of authorised accesses will be reduced year by year for the first 3 years (60,30,5).

MoVe-In - MoVe-In is a remotely controlled distance-based system. It consists in allocating a kilometre ceiling to drive within the Green Zone during one year. Citizens will need to subscribe to the platform managed by RSM and have a black box installed on the vehicle to allow the monitoring by the MoVe-In system. (Vehicles fuelled by Euro 0, 1, 2 petrol and Euro 0, 1, 2, 3 diesel, which are subject to the blocks provided for Rome's Green Belt, can already opt for MoVe-In).

The **plan for taking advantage of the funds for air quality restoration - granted by National law** - €5 million per year from 2023 to 2034 were recently approved by Lazio Region for Roma Capitale for the years 2023-2024. These incentives are intended to be used, upon registration on RSM Sustainable Mobility Platform, for the following:

- If a non-compliant vehicle (emission category not allowed) is dismissed and for the following 12 months it is not replaced, the registered user can take advantage of an economic incentive to opt for "multi-modal mobility services", according to the following: mix of services/goods, ranging from a LPT Rome seasonal ticket voucher (also monthly), sharing services, short-term rental, taxi voucher, electric vehicle recharging voucher. The goal is to reach about 7.000 subscribers.
- Additional incentive for **commercial vehicle purchase**. The freight fleet is largely dominated by diesel vehicles and it is necessary to move towards the objectives set out in the SUMP, i.e. favouring a replacement of the fleet



to ZEV, especially in view of the Green Area implementation. Therefore, an incentive measure was proposed in addition to the state incentives for replacing light commercial vehicles from Euro 3/5 to full electric with a value of €1,500.00, with the goal of reaching more than 600 applications.

Involvement of the **Mobility Managers** (MM) to stimulate the use of the incentives to buy the annual PT pass. Based on the successful experience in the past years, the companies that appoint their MM, have been granted special discounts for the employees to buy the LPT seasonal pass. It was therefore proposed to issue a €20.00 incentive per employee (for the companies with MM). The expected goal is to reach 60,000 applications.

The integration of sharing mobility and PT - In 2023, the private micro-mobility and bike-sharing services operators have signed a convention with Roma Capitale to offer free rides for the annual PT subscribers. This initiative, aimed at triggering the virtuous process of integrating last mile mobility service and public transport, has demonstrated to be well accepted and definitely successful.

The incentive system was also tested with different PT users within the MaaS prototype system (measure ROM_06) to feed the first real multi-modal mobility example linking sharing modes with public transport.

National funds until 2024, expects other tests on the integration of sharing mobility services with local public transport. Rome will propose the promotion of the extended use of any Sharing service (car, scooter, bike and scooters) by yearly PT subscribers for zone A, with the assignment of a voucher calibrated according to the service chosen.

5.5.1.3. Challenges & Mitigations

The need to explore alternative solutions mitigating the impacts on the vehicle fleet by calibrating the limitations consistently with the emission level of the vehicles, made it necessary to introduce soft measures, complementary to the pure limitation of access to the Green Area.

To this end, the ROM_02 measure was postponed to take more time to analyse the mitigation and incentives schemes, and to match its implementation with the with PT improvements following the 2025 Jubilee year (ROM_04, ROM_05, ROM_03 and ROM_06).

5.5.1.4. Next steps towards implementation

The next step calls for the need to find an efficient way for financing the scheme for the sharing operators, aiming at extending the microsharing-PT combination also to the monthly PT subscribers, aiming at increasing and triggering multi-modality with public transport service, active mobility and more environmentally friendly latest-generation vehicles, thus able to attract non-regular users of public transport to multi-modality.

Through the network of the local mobility managers active in institutions, companies, schools, in promoting sustainable mobility behaviours in their organisations, the incentives schemes will be promoted and disseminated, with focus on the following:

- Sharing mobility: supporting multi-modality, including PT in the journey.
- Car-pooling: promoting the use of platforms for sharing rides reducing the number of people using the car;
- Cycling: promoting cycling to work/school as part of the journey also combined with PT.
- Welfare: promoting the opportunities offered by the welfare legislation supporting sustainable mobility actions.
- Smart working to reduce systematic rides
- Targeted initiatives for the Jubilee year 2025 will be considered



6.Conclusion

This deliverable, D5.2, has presented a comprehensive overview of Task 5.2 of the UPPER project, focusing on identifying effective incentives for active transport, empowering citizens, and reducing car ownership. The deliverable has explored various aspects of the task, including:

- A systematic review of existing incentives and their effectiveness: This review, including case studies, provided
 a framework for understanding the current landscape of incentivization strategies for promoting active transport
 and public transport usage. The deliverable delves into the limitations of traditional subsidies, exploring the
 concept of microincentives as a more targeted and efficient approach. It also analyses the trend towards free or
 discounted public transport passes and commuting allowances, highlighting their potential benefits and
 drawbacks.
- Insights on the potential of microincentives, as well as the importance of integrating incentives with MaaS applications and other sustainable modes of transport. It emphasizes the need for personalized incentives tailored to specific user groups and travel contexts, and explores strategies for overcoming potential equity concerns.
- Detailed descriptions of areas for improvement identified by horizontal partners: This analysis, through a
 measure appraisal exercise and workshop, provides cities with valuable feedback and recommendations to
 ensure their measures are well-designed and impactful. The deliverable identifies key points of attention, such
 as the need for seamless multimodality, targeted communication, robust stakeholder engagement, and a focus
 on accessibility and inclusion for diverse user groups.
- Insights into the practical implementation of the measures, including their intended outcomes, the challenges encountered, and the next steps for their development and implementation. The measures developed by the UPPER cities, such as TES_10, OSL_04, IDF_07, LEU_05, and ROM_09, showcase a diverse range of approaches to incentivizing active transport and public transport usage, drawing on innovative technologies and collaborative partnerships.

Beyond these key elements, the deliverable also provides a detailed description of the measure development process, outlining the steps involved, the responsibilities of different stakeholders, and the challenges encountered. This information serves as a valuable guide for other cities seeking to develop and implement similar incentive programs.

Overall, D5.2 provides policymakers, urban planners, and transport operators with a valuable toolkit to promote active transport and create more sustainable cities. The findings and recommendations presented in this document can be used as a basis for designing and implementing innovative incentive programs tailored to specific local contexts and challenges.

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Annex 1: Behaviour-change oriented mechanisms.

Type of	Namo of										U U	
Action	action	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact	Visuals	External links
1 Marketing/c ommunicati on campaigns	"Grow with PT"	2019	Thessaloniki, Greece	A public transport promotion campaign was held in 2013 by the Thessaloniki Public Transport Authority (ThePTA), based on the UITP (International Union of Public Transport) campaign of PTx2=2015 (doubling the PT market share by 2025) and 'GROW with Public Transport'. UITP launched the 'All together for public transport growth' movement. and invited its members in 92 countries around the world (inc. ThePTA) to unite during European Mobility Week (16	Thessaloniki Public Transport Authority	Active Mobility	Citizens	Posters, leaflets and panels. Video clips on TV and social media. Stands at city centre and PT interchange points Social and cultural events	The campaign raised awareness amongst political decision makers and citizens alike of the social, economic and environmental benefits that public transport brings. With better public transport in qualitative and quantitative terms, cities can cut traffic congestion, increase road safety, foster social inclusion, reduce pollution and be a motor for sustainable economic growth.	N/A	https://www.	Awareness Campaign to promote public transport usage: 'GROW with PT' Interreg Europe - Sharing solutions for better policy
2 Marketing/c ommunicati on campaigns	"Cambiamos CO2 por flores"	2009	Barcelona and metropolitan area, Spain	¹² Carbianos CO 2 por flores ¹⁵ is an interactive online communication action to encourage the use of public transport as a way to reduce carbon dioxide (CO2) emissions generated by the combustion of organic fuels and that cause the greenhouse effect. The campaign is carried out in collaboration with ZeroCO2, an initiative for the preservation of the climate promoted jointly by the NGOS Accionatura and Ecology and Development.	Transports Metropolita ns de Barcelona (TMB)	Public Transport	Citizens	Main platform in website, social media, street marketing.	The campaing invites users to calculate the amount of CO2 that is not emitted into the atmosphere when they choose not to use private transport to make a certain journey, and then they are asked to create their own flower and plant it in a virtual garden, as a symbolic contribution to environmental protection. On the website, and through the most advanced technologies, TMB invites users to live an experience in which interaction, sound, movement and colors are combined in order to get them involved in a	N/A	Flores para disminuir la contaminaci ón, Medios Control Publicidad	TMB lanza la campaña interactiva 'Cambiamos CO2 por flores' que invita a crear un jardín virtual <u>Nexotrans</u>
3 Marketing/c ommunicati on campaigns	AD PERSONAM direct marketing programme	2010	7 pilot cities: Modena, Lancaster, Besaçon, Baia Mare, Heraklion, Funchal and Albacete	A Direct Marketing Programme for Public Transport consists of an innovative awareness- raising campaign for travellers based on personal communication directed at the citizens involved. Using traditional advertising tools, it aims to establish an individual relationship with each citizen and provides personalised answers to his/her mobility needs.	Transport agencies in the seven pilot cities	Public Transport	Citizens	7 comprehensive advertising campaigns 363,372 questionnaires delivered)10,117 questionnaires returned) Promotional week Local media and	Step 1 Develop a targeted advertising campaign Step 2 Inform citizens and collect information Step 3 Defi ne specifi c target criteria and select the citizens to be engaged Step 4 Design individual tailor-made travel plans to be sent to the participating citizens Step 5 Launch a promotional week Step 6 Analyse citizens' feedback on Local Public Transport and their motivation as whether or not to use it	FINAL RESULTS: 838 new Public Transport users Albacete: 252 Baia Mare: 105 Besançon: 134 Funchal: 60 Heraklion: 40 Lancaster and Morecambe: 45	https://civita	https://www.eltis.org/sit es/default/files/trainingm aterials/hop on guide en .pdf"
4 Citizen engagemen t/co- creation activity	"Bring a friend" campaign	2016	Funchal, Portugal	Horários do Funchal created the campaign "Bring a friend" to enocurage more people to use PT in Madeira	rários do Func	Public Transport	Citizens	Flyers and digital channels such as Facebook and the company own website	In the frame of measure 7.2 CIVITAS DESTINATIONS «Attractive Public Transport», which main target is to encourage more people to use public transport in Madeira, promoting an attractive service and using smart marketing techniques, Horários do Funchal developed the campaign to boost the use of PT. The campaign strategy was to promote among HF current costumers the measure that they will have a discount in their transport pass if they bring a friend to use the monthly pass.	A total of 55 costumers of HF were effective in seducing 55 non- costumers to purchase a monthly pass and therefore start taking the bus to commute. After assessing how effective the campaign was to attract new clients, it was time to evaluate the extent to which the new clients were retained in	N/A	https://civitas.eu/resourc es/project-newsletters- d114-destinations
5 Citizen engagemen t/co- creation activity	"HF Test- Drive "	022-202	Funchal, Portugal	The campaign aims to promote the use of public transport to those who usually never travel by bus. Instead of driving, the customer is driven by us, in comfort and safety. The advantages of this are that the person can enjoy the landscape of Funchal, have time to read, study, use mobile phone, and save time trying to park. This is an unprecedented public urban transport service initiative, which aims to encourage new customers, by allowing them to	rários do Func	Public Transport	Citizens	The campaign, 'HF Test Drive', was advertised in various media outlets, such as television (RTP / M), Playce NOS EMPRESAS (cable TV system recording platform), as well as HF advertising	The process to engage with this campaign was to visit a HF Store (, and purchase a 5-euro GIRO card which will be credited with unlimited free travel for seven consecutive days. if the costumer wish to purchase a monthly pass, the five euros already spent were deducted from the initial month's payment. The only exceptions to this were people who already were eligible for free travel passes including Social Pension Pass 0, Social Pass with any type of	Expecttaion: 650 people with this initiative and to win the loyalty of 200 new public transport users	https://www .dnoticias.pt /2022/10/12/ 331639-test- drive-da-hf- pretende- incentivar- ao-uso-de- transportes-	https://madeira- weekly.com/2022/10/12/h orarios-do-funchal-new- initiative/

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#	Type of Action	Name of action	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact Visuals	External links
	6 Marketing/c ommunicati on campaigns	Individualise d mobility marketing	2013	Ljubljana, Slovenia	Ljubljana is aware that public acceptance of transport policy is of crucial importance if policies are to be successful. The city therefore wanted to enhance the level of public inclusion and participation in the policy process. For this purpose special individualised mobility marketing activities have been introduced.	ELAN project: (Ljubljana (Slovenia), Ghent (Belgium), Zagreb (Croatia), Brno (Czech Republic) and Porto (Portugal)	Public Transport	Citizens	Individualised mobility marketing campaign that included more than 2600 people	Public opinion surveys, brochure "Mobile Ljubljana sent to households in the city and by the mobility shops called MOB-i-LNICA that functioned as info-points for quality mobility and have been established in the Tourist information centres in order to offer information on sustainable mobility in Ljubljana.	The main result of the N/A measure was to inform and motivate people to think about their daily journeys in order to switch to a more sustainable mode of transport. Main tools used in this process were the individual mobility marketing approach through the campaign, the operation of mobility shops and distribution of the Mobile Ljubljana brochure.	Individualised mobility marketing CIVITAS
	7 Citizen engagemen t/co- creation activity	Commuter travel plans	2013	Aalborg, Denmark	Commuter traffic is a main contributor to congestion in Aalborg, which leads to high levels of pollution and compromises safety. Aalborg is developing company travel plans to encourage commuters to use more sustainable means of transport.	ARCHIMEDES project: Aalborg (Denmark), Brighton & Hove (UK), Sebastian (Spain), lasi (Romania), Monza (Italy), and Usti-nad- Laben (Czech Republic)	Public Transport	Citizens	online survey.	The city conducted an online survey to record commuters' preferred means of transport and their willingness to shift modes or use car pooling. The results highlighted areas for improvement to facilitate walking, cycling and the use of public transport. Based on this survey, the city developed travel plans and information materials for companies. The municipality collaborates with companies to help analyse travel behaviour and propose relevant initiatives.	Based on survey, the city N/A developed travel plans and information materials for companies. The campaign and the tool provided to enhance carpooling at Siemens Windpower has had a positive effect at the administrative level. The modal share of car pooling increase in nodal share of cycling trips by employees of Alfa Laval, after trials with electric bicycles and provision of new bike sheds and showers for cyclists. A 7% increase in public transport use among employees of the Municipality Department of Health and Sustainable Development company SBU. Average increase in the modal share for bikes at	Commuter travel plans [Aalborg] CIVITAS

D5.2 Toolkit to incentivise public transport and mobility active modes in UPPER living

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#	Type of Action	Name of action	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact	Visuals	External links
8	Citizen	Encouraging			In Gdansk, more and more parents bring their				Educational tools, com	Issue of an interactive computer program on DVD	The reduction of school-	N/A	Encouraging sustainable
	engagement	sustainable			children to school by car, which significantly					"Cyclist`s Handbook" (1000 copies)	home trips by cars was		school trips CIVITAS
	/co-	school trips			contributes to congestion, pollution and safety					An education campaign "Return Home Safely" together	over 20% decrease of		
	creation				risks during peak times. To address this situation,					with the daily local newspaper "Polska The Times -	children driven to school		
	activity				the city decided to run an educational programme					Dziennik Bałtycki Safety action "Children safe on road"	and about 12% decrease		
					to encourage school children and their parents to					including article promoting the idea of Walking Bus in	of children driven from		
					opt for more sustainable modes.	Project				the most popular newspaper " Polska The Times -	school five times a week.		
						MIMOSA:				Dziennik Bałtycki"	More than 95% parents		
						Bologna				Issue of a special educational brochure "Child Safe on	who took part in WB		
						(Italy),				Road" (40000 items) attached to the newspaper as the	considered this a good		
						Funchal				attractive guide for children and parents	idea and were satisfied		
						(Portugal),	Public			Art competitions "Wise Transport - Better Life" and	with their children's		
			2013	Gdansk, Poland		Gdansk	Transport	Students		"Transportation of the future", "Stop Vandalism"	participation.		
						(Poland),				organized in 2010, 2011 and 2012 (about 400 children	The increase of teachers		
						Tallinn				took part in those art competitions)	ready to support		
						(Estonia),				A number of workshops for children promoting	Walking Buses initiative		
						and Utrecht				sustainable mobility	was +3%		
						(Netherlands				Workshop on safety in public transport for school	Finally the idea was		
).				children in the bus depot	promoted at the end of		
										Preparation of lessons outline for traffic education	school year 2012 by		
										lessons.	"Walking to School"		
											competition for primary		
											school pupils. The		
											children were given		
	Citizen	Mobility			The measure aimed at supporting the change of				Implementing	26 promotional activities / events (schools, work places	High awareness on the	N/A	Mobility management:
-	engagement	management			modal share towards active modes of				campaigns and	individuals) Activities were supported by media	measure activities - The		making public transport
	/co-	: making			transportation. Guidelines for marketing				activities . carrying	coverage. Important target group was children	measure activities had		more popular CIVITAS
	creation	public			sustainable transport were developed and				out campaign		high level of awareness		
	activity	transport			numerous promotional activities were carried out				satisfaction surveys		among citizens of Tallinn		
		more			during the course of the project				before, during and		- 25%;		
		popular			.,				after implementation		Very high acceptance		
									of the measure		on the measure activities		
						Project			activities.		- The measure activities		
						MIMOSA:			Events with focus on		had very high level of		
						Bologna			children.		acceptance among		
						(Italy),					citizens of Tallinn – 78%;		
						Funchal					• The overall acceptance		
				Tollio Fatanta		(Portugal),	Public	0111-00-0			on fostering active		
			2013	Tallin, Estonia		Gdansk	Transport	Citizens			transportation was		
						(Poland),					dropped – The		
						(Catao ia)					acceptance has dropped		
						(Estonia),					by 6%, from 94% to 88%		
						(Notherlands					but remained very high.		
						(iverneriands					The measure had only		
						1.					partial influence on the		
											result.		
											 The modal share of 		
											personal car was		
											dropped – the share of		
											personal car use was		
											decreased by 1,5%, from		
											31,8% to 30,5%. The		

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# Type of	Name of	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact	Visuals	External links
10 Citizen engagemen /co- creation activity	Travel t planning for schools and work places	2011	Norwich, UK	Within the project, a set of measures was implemented with the aim of developing intelligent, sustainable and inter-modal urban transport systems allowing citizens to live an active life without using a car.	Project SMILE: Malmo (Sweden) and Norwich (UK), with three follower sites, Tallinn (Estonia), Suceava (Romania) and Potenza (Italy)	Active Mobility	Citizens	Gas-powered buses were introduced. Eco-driving training was provided	Promotion of bio-fuels, clean vehicles and intelligent doo	r involved 27 partners, wh	N/A	Travel planning for schools and work places CIVITAS
11 Marketing/ ommunicat on campaigns	c Business i travel planning	2011	La Rochelle, France	A business travel plan provides employees with integrated mobility solutions, including home-to- work travel, work trips, deliveries and site visits.	Project SUCCESS: La Rochelle (France), Preston (UK) and Ploiesti (Romania)	Public Transport	Citizens	New energy-efficient v	Create locations where citizens are able to enjoy a high- quality environment and travel easily and safely; to build local partnerships for tackling sustainable mobility issues; to develop efficient management systems; and to adopt new approaches to urban transport.	Demonstrate that alterna	N/A	Business travel planning (La Rochelle) CIVITAS
12 Citizen engagemen /co- creation activity	Company t mobility planning	2011	Lille, France	By drawing up mobility plans, companies can help their employees to opt for sustainable modes of transport rather than private cars for their work- related trips.	Project TRENDSETTE R: Graz (Austria), Lille (France), Pecs (Hungary), Prague (Czech Republic) and Stockholm (Sweden)	Public Transport	Employees	Mobility plans created	Internal study evaluated the travel habits of employees and potential change in travel habits. On the basis of the mobility plan, four electric scooters and 23 bicycles were in use for the home to work journey, a car-sharing scheme was established for commuting, lunch break trips, and trips to external meetings or work- related social events.	Employees subsidise the purchase of public transport season tickets (to an amount of EUR 6,500): 123 subscriptions to the urban public transport network operated by Transpole; 113 subscriptions to the network of the national rail operator (SNCF) and regional train operator (TER); and 8 subscriptions to the Transpole network +TER (socralled Ticket Plus)	N/A	<u>Company mobility</u> <u>planning CIVITAS</u>
13 Citizen engagemen /co- creation activity	Raising t awareness to change mobility behaviour	2011	Touluse, France	Improving the attractiveness of public transport and marketing it as a sustainable mobility option were seen as ways to change citizen's mobility behaviour.	Project MOBILIS: Toulouse (France), Debrecen (Hungary), Ljubljana (Slovenia), Venice (Italy) and Odense (Denmark)	Public Transport	Citizens	Marketing activities, promoting the benefits of public transport and complementary services	The campaign was developed in the following stages: definition of the strategic direction and the detailed action plan (September-October 2007); establishment of a users panel (1,000 people) in conjunction with another CIVITAS measure (October- November 2007); three global communication campaigns focusing on a specific topic such as the promotion of the new contactless card (2008); three meetings with the panel focusing on tarifs, information and advertising strategies, partnership with other public transport operators and back office services (2008); and synthesis of the individualised marketing report (October 2000)	The transport public operator has acquired a better knowledge of users' needs and expectations regarding tariffs, information and services. The panel enquiry also provided feedback regarding public transport image, passenger satisfaction levels and the effects of promotion campaigns.	N/A	Raising awareness to change mobility behaviour CIVITAS

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	# Type of Action	f Nan act	me of ction	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact	Visuals	External links
	14 Citizei engag /co- creati activi	n Settin ement mobil agenc on custor y servic	ng up a llity cy and omised ces	2011	Touluse, France	As lack of accurate, accessible information is a major barrier to public transport use, the creation of a mobility agency can be an effective way to increase passenger numbers.	Project MOBILIS: Toulouse (France), Debrecen (Hungary), Ljubljana (Slovenia), Venice (Italy) and Odense (Denmark)	Public Transport	Citizens	Developing a website a	offer final users easily accessible mobility information and advice about existing public transport solutions in order to increase their use at conurbation level; integrate other mobility services (car pooling, transport on demand, bicycle rental) in order to promote modal solutions other than car use; and promote new mobility behaviour at individual and collective level (in relation to a commuter plan, for instance).	The evaluation of the first mobility agency showed that: the information service answered to a real need among the public (around 200 visits per month plus 800 visits per month to the website); bicycle rentals increased by 80 percent between 2007 and 2008; ticket sales are a useful but non-essential activity of the mobility agency; 30 percent of interviewed people who were then drivers stated that they were willing to change their mode of transportation, the main obstacles being total journey duration and infrequent public transport services; and over 80 percent of	N/A	Setting up a mobility agency and customised services CIVITAS
	15 Incent (mone	ives Bicific tary)	ication	2022	3 cities: Braga (Portugal), Istanbul (Turkiye) and Tallinn (Estonia)	The project adopted the antifraud system patented by Pin Bike to certify, monitor, and reward urban bike rides. The system is based on the comparison of two sources of data collection, both from hardware (Pin Bike sensor) and software (Pin Bike App) devices. Local authorities rewarded urban cyclists with economic incentives to be spent in local shops, while benefitting from valuable and trustable data collected in the Pin Bike Dashboard, a web portal informing smart cities' data-driven policies and investments with traffic, usage and infrastructure insights from the project.	Pin Bike Braga (Portugal) Istanbul Tallinn KTH CERTH	Active Mobility	Citizens	Website Mobile App Digital promotion Promotion in adhered shops	Bicification project highlighted the approach of using behavioural nudges to encourage higher ridership levels among potential day-to-day cyclists. The campaign aimec to educate people about the health benefits of cycling, motivate those who were interested in trying to ride, and provide immediate feedback on making the desired choice through tangible rewards. The campaign employed a 'choice architect' to design social media content and used behaviorual nudges without significantly altering citizens' economic incentives.	Braga: Total user: 400 Total distance: 227,274 km CO2 emission saved: 35.7 tons Tallinn: Total user: 387 Total distance: 370,792 km CO2 emission saved: 38.2 tons Istanbul:	<u>Video</u>	Braga, Istanbul, Tallinn: Accelerating the modal shift through gamification and rewards I EITUM Marketplace

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#	Type of Action	Name of	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact	Visuals	External links
2	2 Marketing/c ommunicati on campaigns	Clic.cat	2021	Girona, Spain	How a digital DRT platform mobilised former transport deserts.	NEMI Teisa 1920 Ajuntament de la Vall d'en Bas Generalitat	olic Transp	Citizens		An informative video was created	3628 passengers used the on-demand bus line during the first nine months of the service peaking at a daily number of passengers of	<u>Video (in cata</u>	Girona: How a digital DRT platform mobilised former transport deserts EITUM Marketplace
2	3 Marketing/c ommunicati on campaigns	Mobility Behavioural Change Potential Index	2022	Gotland Region, Sweden	Encourage people to adopt more sustainable and climate-friendly travel habits by reducing car commuting. 642 regional employees based in Visby were offered the opportunity to participate in the project. Using the Smart Travel Habits platform (Resvana) was sought to develop and test a model called the Behavioural Change Potential Index (BPI) to facilitate and optimise the opportunity for individuals to create more sustainable and climate- friendly travel habits in their everyday lives.	Nudgd Region Gotland GotlandsHe m Swedish Energy Agency	Multimod al Transport	Citizens	Platform called "Resvana" was used to encourage employees to use more sustainable ways of transport	N/A	The evaluation of the project showed a 14% reduction in car commuting (initial goals was to reach 10%). More than 30% of users indicated that the service contributed to their choice of transportation in their daily lives In total, those who used the service reduced their annual CO2 emissions	N/A	Digital nudging leads to reduced car commuting
2	Citizen engagement /co-	TandEM Women in Cycling	2023	Budapest, Hungary	Fueling female cyclists with confidence. Developed by EIT Urban Mobility and BYCS, the TandEM programme provides online and in-person training	EIT Urban Mobility BYCS	Active Mobility	Women	In-person cycling work	The programme has had a promising start. Its first edition in 2022 equipped 10 participants to teach and empower women to cycle in 9 different cities. After a	10 participants in 2022 12 new participants in 2023	<u>Pictures</u>	The TandEM programme: fueling female cyclists with confidence EIT
2!	Marketing/c ommunicati on campaigns	Cykla med Pelle-App (Cycling with Pelle)	2023	Uppsala, Sweden	To promote bicycle mobility, to support sustainability issues and to show users the sights of individual city districts by solving different tasks and challenges in a fun way.	SimpliCITY	Active Mobility	Citizens	Dedicated website/platform App with a friendly user experience	SimpliCITY used motivational approaches, nudging approaches and gamification approaches in the context of promoting a CO2-friendly, sustainable lifestyle in the city by increasing the active mobility, cycling behaviour and the use of often unknown local services (such as offers of waste services, resident services,) which will be scientifically tested and evaluated	Increase the length of the everyday bike travels from 2,2 km to 2,7 km per person More than a third of the travels within the city are done by bike	<u>Pictures</u>	Cycling with Pelle – App [SimpliCITY
21	Marketing/c ommunicati on campaigns	STARS	2016	UK	To promote the use of sustainable modes of transport to school, to foster a positive attitude towards active travel in children, and at the same time encourage parents and families to reconsider how they travel.	Mobility Behaviour Change	Multimod al Transport	Students	Website	A website was set up where students could track their cycle trips and compete with their classmates, as well as against other schools in their city and across Europe.	In total 188 primary schools were recruited across the project lifetime In total 84 schools set up Youth Travel Ambassador Schemes. More than 51,000 students have been	N/A	STARS - Sustainable Travel Recognition and Accreditation for Schools
2	7 Marketing/c ommunicati on campaigns	ProntoBus	2017	Emilia Romagna Region, Italy	On-demand bus service which aims to integrate urban and extra-urban public transport services with the neighbouring villages and rural areas in the Province of Modena.	RUMOBIL European Project SMARTA	olic Transp	Elderly People	Website Street advertising	On the 19th September 2017, the press conference for the launch of the RUMOBIL project was held in Castelfranco Emilia and starting from the same date the software system started to work completely. Starting from the date of the press conference, the advertising activity of the	Increase of 17.3% of passengers Prontobus service has been used by 12926 travellers, with 1853	<u>Pictures</u>	<u>SMARTA - Smart Rural</u> <u>Transpor Areas - Emilia</u> <u>Romagna</u>
2	Marketing/c ommunicati on campaigns	Free and significantly discounted multi-trip passes and tickets	2022	Spain	A set of subsidies provided by the Spanish government to motivate citizens in utilising regular, urban, and interurban transportation services.	Government of Spain - Department of Transportati on, Mobility,	Public Transport	Citizens	Press releases Promotional video	A campaign was designed to communicate the reduction of prices during 1 January 2022 and 31 December 2022. The campaign "Muévete por mucho menos" (Travel with less in English) was distributed across national press and posted on social media.	N/A	<u>Video</u>	Free public transport tickets to travel around Spain



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#	Type of Action	Name of	Year	City /country	Description	Organisation	Focus	Target Groups	Channels	Communication strategy	Impact	Visuals	External links
:	29 Incentives (monetary)	T-Jove	2023	Barcelona and metropolitan area, Spain	Starting March 15, the T-jove public transport ticket in Barcelona undergoes significant changes. Previously limited to those under 25, it now extends its validity to people under 30 years old. It's price will be £40 applying a 50% discount to the normal price (£80).	тмв	Public Transport	Students	Social media Press releases in diffierent regional press Campaign at the metro stations	This change was announced through social media posts, press releases in some regional media (like La Vanguardia), and through a video campaign in metro wagons.	The month of January 2023 closed with 8,241,987 T-jove validations, of which 2,095,879 were already done with the T-mobilitat system (1,711,550 T-jove and another 384,329 with T-jove FM/FN). The other remaining 6,146,108 were made with a magnetic system (7554)	N/A	Reduction of public. transport ticket price for young people
:	30 Marketing/c ommunicati on campaigns	Implementat ion of "personalise d" PT marketing campaign	2011	Greece	The Municipality of Langadas in Greece found itself facing a challenge – how to encourage its residents to embrace public transportation.	Aristotle University of Thessaloniki OASTh (PT Operator)	blic Transp	Citizens	Used written information, in- person discussions, practical training, and guided tours. Database from the local water company used for targeted outreach.	Conducted a personalised PT marketing campaign Overcame negative perceptions and poor awareness of PT services "Face-to-face" information campaign targeted to citizens Addressed behavioural barriers in peri-urban and rural areas	173%). Increased PT use (modal split) through targeted marketing 81% response rate in the campaign 6.67% increase in public transport use Participants felt better informed about local PT options (76.2%) 70.4 tonnes/year reduction in CO2 emissions due to reduced car trips	N/A	SMARTA - Smart Rural Transpor Areas - Lamgadas, Greece



Annex 2: List of Points of attention.

	Measure ID	Appraised by	"Point of attention" category - please select one from the list below	Evaluation result: Point of attention/Comment	Solution you can present/further reading or documents presenting this
	BUD_03	ECF	Seamless multimodality/intermodality	Besides PT users and car users, also include active modes users in the survey to find out more about their experiences and motivations (also when combining active modes with PT)	
	IDF_01	ECF	Active stakeholder engagement during measure development	Make sure to include civil society organisations (including cyclists, pedestrians and passenger associations) in the SUMP update process	
	IDF_07	ECF	Tailored communication for increased acceptance and buy-in	The success of the measure will depend a lot on the user-friendliness of the app (also for employees who are not digital enthusiasts) and the communication around it	
	IDF_07	ECF	Seamless multimodality/intermodality	In the description, the definitions of "micromobility", "active mobility", "sustainable mobility" are sometimes not very clearly distinguished from each other.	
	IDF_07	ECF	Mobility as a right: Universal accessibility leaving no one behind.	It would be interesting to know more about the exact pricing of the scheme/the mobility options - how to make a business case that incentives use of sustainable modes vs. car through cheap enough trips, while at the same time providing enough revenues for operators?	
	IDF_08	ECF	Seamless multimodality/intermodality	In the survey, also include questions on satisfaction with intermodal solutions (e.g. bike parking at PT stops/stations)	
	LEU_05	ECF	Seamless multimodality/intermodality	The description exclusively mentions incentives for PT, but in order to enlarge this to a complete MaaS, incentives for other modes (active mobility, micromobility, car sharing) should also be included.	
	LIS_10	ECF	Seamless multimodality/intermodality	In the survey, focus not only on satisfaction with the PT service itself, but on the whole experience including walking/cycling to the bus stop.	
	ROM_09	ECF	Seamless multimodality/intermodality	The description of the incentives only addresses PT - to support multimodality, there should probably also be specific incentives for cycling/walking (as single modes of transport or in combination with PT).	km-based incentives for walking/cycling to work; also gamification through app (e.g. Bike2Work scheme)



TES_10	ECF	Social impacts (health&wellbeing, coexistence, security/safety)	Measure requirements: Wearing a helmet should not be a requirement for cycling, but an individual choice. It is more important to make sure that there is enough safe cycling infrastructure, segregated from car traffic.	
TES_10	ECF	Tailored communication for increased acceptance and buy-in	From the measure descriptions, it is not really clear what the actual incentive for active mobility is - you can use your PT ticket as a voucher for shops, are these e.g. bicycle shops?	
	ECF	Seamless multimodality/intermodality	OSL_04: Evaluate the possibility to also add incentives for users of private bicycles (sufficient secure bike parking spaces in housing developments; subscriptions to secure bike parking in the city centre)	
	ECF	Active stakeholder engagement during measure development	LIS_03: Make sure to include civil society organisations (including cyclists, pedestrians and passenger associations) in the SUMP update process	
	ECF	Seamless multimodality/intermodality	MAN_02: Increased uptake of active mobility is mentioned as an objective, but not in the implementation of the communication campaign. The campaign should also emphasise the combination of PT and active modes like walking and cycling.	
LEU_06	EITUM	Target groups mainly impacted	It would be great to share some insights of the two-pager published in a magazine. What was the objective of the two-pager? How was it created? Any public authority is signing the article? How would you identify target groups of people with negative perception on PT using this method? What is the analysed indicator here: number of magazines sold? Do you have information of the regular readers of the magazine where the two-pager was placed?	How about also doing a focus group of local residents eager to give their opinion on PT? The focus group should gather the most frequent users of PT but also include the ones that normally don't use it because of negative perception.
LEU_06	EITUM	Tailored communication for increased acceptance and buy-in	Nudging applications can be a useful resource to foster the uptake of park & rides. The municipality can collaborate with some companies who can offer rewards for the employees who use the nudging application and thus make use of park & rides.	



MAN_02	EITUM	Tailored communication for increased acceptance and buy-in	It would be great to have some insights on how the communication campaign was designed. In low-budget communication campaigns, social media plays a significant role. Instagram, one of today's most-used platforms, is an adequate channel to announce new lines and discounts, reaching more people, especially young individuals. For more traditional means, door-to-door leaflets or leaflets distributed at schools, city halls, and museums are also useful.	
MAN_02	EITUM	Seamless multimodality/intermodality	Other active modes other than PT also need to be actively promoted	An example of a project aimed at promoting active mobility through gamification and a reward system, in collaboration with local businesses: https://marketplace.eiturb anmobility.eu/best- practices/braga- accelerating-the-modal- shift-through-gamification- and-rewards
BUD_03	ΕΜΤΑ	Active stakeholder engagement during measure development	Requires a dialogue with the non-put users to dive deeper into their thinking.	
BUD_03	ΕΜΤΑ	Active stakeholder engagement during measure development	How to prevent socially desired answers?	
BUD_03	ΕΜΤΑ	Active stakeholder engagement during measure development	What if non-pt users have their valid reason to not use pt? To what extent do you want to "solve" everything? When is it considered "valid enough" to not use pt? Are their criteria for this?	
IDF_08	EMTA	Active stakeholder engagement during measure development	Conducting surveys online may exclude people with limited digital literacy or access to the internet.	
IDF_08	EMTA	Active stakeholder engagement during measure development	People need to feel their input contributed to the outcome to keep them engaged. A risk of low participation can arise if the results during the process or after are not communicated transparently, which can lead to low participation and lack of trust in future surveys (for instance when you try to compare before and after).	
LEU_05	ΕΜΤΑ	Target groups mainly impacted	Will there be sustained political will to make tickets more expansive for some users?	
LEU_05	EMTA	Target groups mainly impacted	Will there be a large enough user-base to refine incentives ? How to attract and retain app users	



LIS_10	ΕΜΤΑ	Tailored communication for increased acceptance and buy-in	Actions related to digital tickets à resistance from traditional ticketing system?	
LIS_10	EMTA	Tailored communication for increased acceptance and buy-in	How are users going to adopt new digital tickets? How to achieve seamless integration ?	
BUD_03	EPF	Tailored communication for increased acceptance and buy-in	How will the surveys be conducted? Keep in mind that multiple channels should be used for recruiting participants and conducting the surveys, so that a diverse range of groups (including non-users) can be engaged with. People get their information in different ways, so it's important to meet them where they are	Consider non-digital channels for the surveys, so that people can participate who either don't have access to digital tools or who do not have the skills. Paper surveys, interviews, and in-person support to take the survey can be useful
IDF_01	EPF	Social impacts (health&wellbeing, coexistence, security/safety)	You may consider bringing in user/citizen representatives from local organisations, so that their perspectives are also taken into account. The citizens' perspective is important in ensuring sustainable urban mobility planning	E.g. contact organisations representing passengers, cyclists, and pedestrians, but also organisations representing different target groups like the elderly, children, people with a disability, etc.
IDF_07	EPF	Target groups mainly impacted	Consider also involving the (car-using) employees themselves, to understand why they currently travel to and from work by car. This will help to develop incentives that create an impact	
IDF_08	EPF	Social impacts (health&wellbeing, coexistence, security/safety)	description mainly focuses on measuring perception of PT QoS and some aspects which are crucial are missing	factors which can be included: inclusivity and accessibility; environmental sustainability; technology integration etc that are often times forgotten but can further enhance the quality of PT services and meet the diverse needs and expectations of users.
IDF_08	EPF	Tailored communication for increased acceptance and buy-in	How will the surveys be conducted? Keep in mind that multiple channels should be used for recruiting participants and conducting the surveys, so that a diverse range of groups can be engaged with. Also consider conducting surveys with non- users to understand why they aren't using the services	Consider non-digital channels for the surveys, so that people can participate who either don't have access to digital tools or who do not have the skills. Paper surveys, interviews, and in-person support to take the survey can be useful



LEU_05	EPF	Mobility as a right: Universal accessibility leaving no one behind.	Important to remember that not all people are able to access or use digital services, and that people have app fatigue and do not want to download new apps all the time. So a MaaS app alone will not help with making the incentives more visible. There need to be non-digital alternatives too, that cater to the needs of diverse groups of people. This is also something to consider when recruiting and interacting with the target groups - that a mix of channels is needed	
LEU_05	EPF	Active stakeholder engagement during measure development	Similar to TES_10, it might be interesting to work with local shops to provide people with incentives who use the park & ride. The shops can promote the campaign on their channels, and a person who uses the park&ride can for example get a coffee if they bring along their park&ride ticket to a local coffee shop	
LEU_06	EPF	Tailored communication for increased acceptance and buy-in	Important to consider that different groups receive their information in different ways. So traditional marketing will be important for this	
LIS_03	EPF	Target groups mainly impacted	Regarding the mobility pattern study, it's important to use a qualitative approach and speak with users and non-users (especially from different groups). This will help to understand their wishes, any barriers they face while traveling, and what can be implemented to suit their diverse needs.	
LIS_08	EPF	Social impacts (health&wellbeing, coexistence, security/safety)	The objectives of the measure mention active modes, but there is nothing mentioned in the description about it. It will therefore be interesting to also showcase the benefits of active modes, e.g., on health. Similarly, you can gather people's perceptions of walking and cycling, e.g., related to the city infrastructure	
LIS_08	EPF	Social impacts (health&wellbeing, coexistence, security/safety)	Both environmental and social impacts will be interesting to highlight in this campaign. For example, PT can provide access to social opportunities, which is especially relevant for people who are socially isolated	UITP has a nice infographic about some of the benefits of PT: https://cms.uitp.org/wp/w p- content/uploads/2022/01/ Public-Transport-Benefits- Mobility-for-YEU-Benefits- for-all.pdf
LIS_08	EPF	Active stakeholder engagement during measure development	The measure's title mentions partnership initiatives, but this seems to be lacking in the description. What types of partnerships do you plan to implement?	



LIS_10	EPF	Tailored communication for increased acceptance and buy-in	What is meant by certification schemes in Lis_10_01? Also, keep in mind that multiple channels should be used for recruiting participants and conducting the preference surveys, so that a diverse range of groups can be engaged with. People get their information in different ways, so it's important to meet them where they are. Do you already have an idea of the new groups you'd like to attract?	Consider non-digital channels for the surveys, so that people can participate who either don't have access to digital tools or who do not have the skills. Paper surveys, interviews, and in-person support to take the survey can be useful
LIS_10	EPF	Mobility as a right: Universal accessibility leaving no one behind.	Please consider that not everyone has or is able to use digital tools to buy tickets	consider non-digital alternatives for the new ticket for the large events, as many people do not have the digital skills or access to digital tools. this way, you can reach a broader audience
MAN_01	EPF	Target groups mainly impacted	Important to involve a range of user groups. You may also consider making participation fun, to incentivize and increase participation in the data collection activities	Gamification can help attract participation in the data collection activities
MAN_02	EPF	Other	The measure title mentions active modes, but they are not mentioned in the description	
MAN_02	EPF	Tailored communication for increased acceptance and buy-in	Consider also non-digital and fun ways to inform people about the sustainability of PT and active modes	Consider non-digital and 'fun' campaigns. EPF member Bus Users UK also has a really nice example called "Catch the bus month" to get people to use the bus more and learn about its benefits. https://bususers.org/ctbm- partner-pack/ https://www.epf.eu/wp/ca tch-the-bus-month-2023- celebrating-the-benefits-of- bus-travel/
OSL_04	EPF	Active stakeholder engagement during measure development	The new combined mobility products have to be an attractive alternative (e.g., affordable, comfortable, get them where they need to go and when they want to go) for people to use them. This is key if you want to get people out of the car and into shared modes. Another aspect is to communicate clearly about the services and explain their benefits	Aside from the housing organisations, you can engage with different user groups to understand what would incentivize them to reduce their car use and use an alternative mobility option. This will also help to understand the types of needs they have



ROM_09	EPF	Target groups mainly impacted	This measure seems to have 2 parts (campaigning and incentives), but it mostly focuses on the campaigning part. What types of incentives are planned? Keep in mind that the communication/promotional campaigns should be tailored per group and context too	People receive their information in different ways, so it's important to meet them where they are and use a mix of digital and non-digital methods for campaigning
TES_10	EPF	Social impacts (health&wellbeing, coexistence, security/safety)	It would be good to clarify how the incentives will work for the active modes. For example, a person walking or riding their own bike will not have a ticket that they can exchange in a shop	
TES_10	EPF	Tailored communication for increased acceptance and buy-in	How will the preference survey be conducted? Keep in mind that multiple channels should be used for recruiting participants and conducting the survey, so that a diverse range of groups can be engaged with to understand their preferences. Their preferences will be different, perhaps also depending on the mode	Consider non-digital channels for the surveys, so that people can participate who either don't have access to digital tools or who do not have the skills. Paper surveys, interviews, and in-person support to take the survey can be useful
LEU_06	FAC	Target groups mainly impacted	Make sure to address different groups with different strategies, drawing from LEU_05, to create a comprehensive nudging strategy.	
LIS_08	FAC	Social impacts (health&wellbeing, coexistence, security/safety)	It's important to integrate active modes like walking and cycling into the marketing campaign, emphasizing their health benefits and assessing perceptions related to city infrastructure for these modes and highlight both environmental and social impacts of public transport services, particularly how they can improve access to social opportunities for isolated individuals.	
	FAC	Social impacts (health&wellbeing, coexistence, security/safety)	Prioritize safety and security aspects in both the marketing campaign and service redesign efforts, especially during nighttime operations, to address citizen concerns and build confidence in public transport usage. Given the significant role of walking in public transport trips, it's crucial to evaluate the quality and safety of walking stages to enhance overall trip experiences and accessibility.	



MAN_01	IBV	Target groups mainly impacted	In UPPER user research, we have identified six relevant target groups: young people, elderly people, women, adult with children, functional diversity people, low income people. How are you going to identify the relevant target groups in your city?	UPPER Deliverable D2.2
MAN_01	IBV	Target groups mainly impacted	How are you going to encourage the participation of these relevant target groups?	
OSL_04	IBV	Target groups mainly impacted	According to the results of user research, low income people, young people and families with children are the main users of active and shared mobility. From these groups, the one who uses private car frequently is families with children, as they do not have other alternatives. How are you going to address the specific needs of this group?	
BUD_03	ICLEI	Tailored communication for increased acceptance and buy-in	About the surveys: it is important to tailor survey questions to capture qualitative insights into the concerns, preferences, and barriers faced by different user groups. This will facilitate a deeper understanding of their mobility patterns and motivations.	Additionally, incorporating diverse communication channels and formats, such as online surveys, focus groups, and in-person interviews, will ensure inclusivity and accessibility, thereby improving acceptance and buy-in from all stakeholders.
IDF_08	ICLEI	Social impacts (health&wellbeing, coexistence, security/safety)	While focusing on improving public perception of public transport through communication is a positive step, it's essential to broaden the approach. Prioritizing inclusivity, accessibility and technology integration are crucial for creating a comprehensive and user-centric PT system. Ensuring PT services cater to diverse needs, promoting sustainable modes of transportation, and integrating technology solutions will enhance efficiency and user experience.	Introducing user-friendly technology like real-time passenger information systems and mobile ticketing can enhance efficiency and convenience.
LIS_08	ICLEI	Mobility as a right: Universal accessibility leaving no one behind.	They should ensure that the marketing campaign and service redesign efforts prioritize safety and security aspects, especially during nighttime operations, to alleviate potential concerns among citizens and enhance their confidence in using public transport,	
LIS_10	ICLEI	Active stakeholder engagement during measure development	Important to focus on the active involvement of stakeholders, particularly passengers and PT operators, throughout the process to guarantee that their perspectives are adequately considered in	



the evaluation and improvement of bus services.

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LIS_10	ICLEI	Mobility as a right: Universal accessibility leaving no one behind.	The measure should prioritize the development of digital ticketing solutions that are user-friendly and accessible to a diverse range of passengers, considering factors such as ease of use, affordability, and inclusivity.	
MAN_01	ICLEI	Target groups mainly impacted	Particular attention should be paid to the identification of target groups and use- cases. Understanding the unique mobility needs of these groups will be key in designing effective dialogue formats and advisory services tailored to their requirements.	Possibility to explore existing mobility advisory services in similar contexts or case studies of successful implementations.
BUD_03	IFP	Seamless multimodality/intermodality	Walking is the main mode to get to PT hubs and the one that usually needs more support first mile/last mile journeys and combined transport modes	Include walking stages part of the PT trip chain - on the assessment and surveys
IDF_01	IFP	Active stakeholder engagement during measure development	Include walking organisations in the engagement	Include 60 million de pieton and Rue d'Avenir
IDF_07	IFP	Seamless multimodality/intermodality	It seems that walking is absent of the mobility credit program	Include walking - easy to detect while using MaaS
IDF_07	IFP	Other	The concept of micro-mobility should be refined and clear	There are several definitions of micro- mobility. Very different from active mobility. Maybe the emphasis of the Mobility Credits should be on Active mobility and not on micro-mobility.
IDF_08	IFP	Mobility as a right: Universal accessibility leaving no one behind.	QoS should include catchment area?	Walking as a stage of a Public Transport Trip is in average half the time of the whole trip (origin to destination). Important to access the quality of the walking stages.
LEU_05	IFP	Mobility as a right: Universal accessibility leaving no one behind.	Any financial incentives for walking and cycling to the PT hub?	
LEU_06	IFP	Seamless multimodality/intermodality	Walking as a stage of a Public Transport Trip is in average half the time of the whole trip (origin to destination). Important acknowledge the importance of the walking stages.	Include walking and cycling in communication strategy plan and communication campaigns.
LIS_03	IFP	Seamless multimodality/intermodality	Include walking and cycling comfort, safety and security in the catchment area (at least	Walkability tools, GIS information on width of sidewalks and bike paths.

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300 meters from bus stops and 700 m from larger interfaces)

LIS_03	IFP	Active stakeholder engagement during measure development	Include local associations in the engagement	Engage with Estrada Viva, ACA-M, APSI
LIS_08	IFP	Seamless multimodality/intermodality	Walking as a stage of a Public Transport Trip is in average half the time of the whole trip (origin to destination). Important to access the quality of the walking stages.	Include walking and cycling in the marketing campaign
LIS_10	IFP	Mobility as a right: Universal accessibility leaving no one behind.	Walking stages are an important element to the QoS of PT	Passenger Satisfaction Surveys should include the walking stages and quality of the transport hub
MAN_01	IFP	Active stakeholder engagement during measure development	Include persons with disabilities, teenagers, non-German speakers, and so on	Engage with local active association Fuss-
MAN_02	IFP	Mobility as a right: Universal accessibility leaving no one behind.	Include active mobility (walking and cycling) in the Climate campaigning	
ROM_09	IFP	Mobility as a right: Universal accessibility leaving no one behind.	In the list of topics for stimulating the network of the local mobility managers active in institutions, companies, schools, in promoting sustainable mobility behaviours walking is missing.	Walking as a stage of a Public Transport Trip is in average half the time of the whole trip (origin to destination). Important to stimulating walking as a single mode in a trip or as a stage part of a trip.
TES_10	IFP	Other	The concept of micro-mobility should be refined and clear	There are several definitions of micro- mobility. Very different from active mobility. Maybe the emphasis of the incentives should be on Active mobility and not on micro-mobility.
IDF_00	RC	Tailored communication for increased acceptance and buy-in	What kind of "innovative" formats have you in mind to bring in more views and make usually unrepresented voices heard? Would this enhanced communication be solely applied for evaluation and development of the new SUMP?	
LIS_03	RC	Other	What are your previous SUMP's main strengths and shortcomings that you aim to address with this new version? To what extent have you systematically monitored SUMP measures and goals from that would inform actions in the future?	
LIS_03	RC	Tailored communication for increased acceptance and buy-in	In the list of stakeholders required for the implementation, it seems it is missing to list the main objectors to a more ambitious SUMP. Have you identified these actors?	

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How are you planning to come around them or to mitigate backlash from them?

LIS_03	RC	Target groups mainly impacted	In the description you mentioned you plan to carry out and in-depth study of bus network and passenger needs. Have you undertaken or are you considering passengers directly, and specifically women and elderly people in order to identify their particular needs, perception of the service, and room for improvement?	
LIS_03	RC	Other	In the measure description, you mentioned the ambition of becoming a climate-neutral city and that the previous/current SUMP is not ambitious enough to achieve that goal? Do you have an idea of what would be the "smart" to be achieved in terms of mobility for Lison to become or aim for climate neutrality?	
IDF_01	UITP		Measures template:	
IDF_01	UITP	Seamless multimodality/intermodality	Clear objectives set as well as a series of measures.	Implement a MaaS: how does this articulate with existing MaaS provided by the authority and operators?
IDF_01	UITP	Mobility as a right: Universal accessibility leaving no one behind.	The evaluation of the effects of the measure have also well been looked at and identified, specifically taking into consideration the qualitative and fluidity aspect measures are supposed to bring.	"Introduction of new mobility services by local authorities, which will complement the existing transportation options and increase the attractiveness of the area": as well as a strong alternative in case of disruption of public transport
IDF_01	UITP	Seamless multimodality/intermodality	The network of stakeholders involved has been well designed. Question: what about connecting with neighbouring groups of communes? What about connecting to the main traffic generators in the territory? What about connecting to new mobility service provider as well (SWOT analysis)?	"Development of new cycling infrastructures, such as bike lanes, bike parking, bike sharing, etc., to encourage more people to use bicycles as a sustainable and healthy mode of transport, and": should we consider these infrastructures be made fit for the purpose of other new mobility services and modes (including parking space)
MAN_01	UITP		Measure requirements:	SWOT :

privacy

Other data: could space planning, urban

Resilience strategies : "use

political support" ... it is key

MAN_01	UITP	Social impacts (health&wellbeing, coexistence, security/safety)	Other data: could space planning, urban planning, urban projects, as well as the socio-demographics of the territory be used?	political support" It is key to ensure long lasting political support and interest for these soft measures
MAN_01	UITP		Measure description:	
MAN_01	UITP	Target groups mainly impacted	Aims: promoting multimodal behaviour? Supporting behaviours that are sustainable	
MAN_01	UITP	Active stakeholder engagement during measure development	Measure output: "Data collection through different dialogue" + important to know the advantages and limits of these data + what about qualitative data collection looking at perception, habits and leviers to change them? + what about engaging directly through apps to ask on people's experience (direct collection of experience to inform the PTO and PTA in real time on remarks from users, using big data to analyse?)	
MAN_01	UITP	Target groups mainly impacted	Process of implementation; what about targeting specific and large traffic generator?	
MAN_01	UITP	Tailored communication for increased acceptance and buy-in	Target group : what about considering car drivers who could potentially become PT users as well(promote modal shift)?	
MAN_01	UITP		Monitoring templates:	
MAN_01	UITP	Data management and	Should there be an evaluation dimension to adjust and adapt the policy and avoid it	

is abandoned?

UPPER Annex 3: Analysis of Points of attention





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D5.2 Toolkit to incentivise public transport and mobility active modes in UPPER living















WP5 Workshop: Upraisal of measures by UPPER's horizontal partners. Group_A

UPPER Project



Which of these topics is critical for ROM_09, TES_10, OSL_04 and IDF_07. How will they be addressed?

OSL04. Reduced barriers for payment. Working on user survey now	TES_10: incentives	Take in consideration walking and cycling stages . In data collection and quality of catchment areas	Information regarding the connection between modes is very important. Once a multimodal trip is started it should be booked for the entire chain
Engaging with local NGOs for walking and cycling	Regarding satisfaction: Use diverse + representive user group with different needs; monitor yearly	Make sure that incentives are really encouraging multimodality, ideally not only one mode	from the serious games, many said staff training to support people with different disabilities (at stations, bus drivers, etc.)



In which of these aspects will focus the multimodal, the perception and the behavioural measures? How will these topics be addressed?

TES_10: health&well-being improvement by incentivizing not only PT, but also active modes and multimodal trips	Providing multimodal trips has the opportunity of improving the image of PT, as providing freedom to all users	To fully leverage the health benefits of active mobility, safe and convenient infrastructure is needed	OSL04 Improved car sharing offer will provide more freedom of movement for people who cannot afford a car
Make focus groups with active mode users even non-users of PT	measures co-created with citizens should be shown as such, many times people are reluctant to contribute because they don't see the benefit	focus groups with different user categories	TES 10 OSL 4
			e e

How are they being involved in the measure development and implementation? What alternative channels do we have to online surveys?

Focus groups, observational research; low-level could be diary of daily journeys

Make sure to involve local cyclist and pedestrian associations in areas relevant to them and get their feedback early in the process Face-to-face interviews are always possible. To do it right, anticipate the need for a cover letter posted in advance, signed by the PTA, and the need for rigorous address sampling

show which measures or interventions are cocreated with citizend TES_10: citizens will be the endusers of the app and they will be directly involved . Also, through the app except of incentivizng users, we will receive actual trip data (alternative to surveys) Often language barriers are overlooked (especially for marginalised groups); make sure that involvement corresponds to language needs of the involved Online surveys are not ideal to engage certain demographics. Focus groups or citizen assembly...with random participation

Mentimeter

Mentimeter

OSL04: We aim to introduce a discounted mobility subscription payed through the monthly appartment costs. Hopefully this will reduce payment barriers for PT.



How to include persons with functional diversity (musculoskeletal, deaf, blind, ...) and elderly people? How to overcome cost barriers?

Heavy incentivisation for less independent people, perhaps also involcing privately operated modes (ride-hailing, etc.) an option is always to build redundancy in the network...make sure there is not a single interchange where all possible transfers are done, but there are multiple nodes Inlusion comes at a price: e.g. picking deaf/blind/wheelchair users up at their home/their desired location to maximise inclusion. Pay attention to the language/framing used Create the ombudsman/ombudswo man for people with special needs

Mentimeter

Mentimeter

TES 10 OSL 4

6 measures

This topic often raises equity concerns, since some users might be left behind, how will your measure address this?

equity problems are raised because you're essentially giving money to someone who can afford a car, but you want to convince them not to use it.do they really need additional money? Skip monetary incentives, but focus on affordable/free tickets for disadvantaged groups **Group A**

ROM 9 IDF 1,7,8 TES 10 OSL 4

6 measures



Mentimeter What communication will be developed for planning, for real-time information, ...? What formats should be used (video, audio, text, infographic, ...)?

Depending on target group. Elderly: traditional media (TV, newspaper, etc.). Younger demographic: Social media (TikTok). Disabled people: Leverage associations (deaf/wheelchair/...) to spread news OSL04 we will be using the elected boards of the housing cooperatives to communicate the service to their residents. They have already established comm channel through a dedicated app focus should be more on providing consistent information from multiple sources. See for example the ROM_09 measure with mobility managers>same message as ATAC PT operator Targeted formats per user grops

OSL 4

6 measures

TARGETED INCENTIVISATION CAN INCREASE BEHAVIOURAL CHANGE & BETTER RESOURCES' USE

Are there any plans for targeted incentivisation? Can you briefly describe some of them?

Targeted incentivisation sounds really interested. How can we overcome issues related with GDPR for identifying specific target groups? TES_10. The app is planned for incentivizing multimodal trips trips with active modes and of course the use of pt. User groups are not directly targeted but younger people

Younger people is most probably to be interested

Micromobility could also be used as an alternative service to PT in rush hours

Mentimeter

TES 10 OSL 4

6 measures







WP5 Workshop: Upraisal of measures by UPPER's horizontal partners. Group_B

UPPER Project



Are the 6 target groups identified in UPPER representative for MAN_01&LIS_03&LEU_05&LEU_06? Is someone missing? How to encourage groups participation?

Lx is in the room! Target Groups are okay. Ethnic minorities, LGBTQ+ Leuven is present Maybe we are missing LGBTIQ+ or non binary BUD 3 We kind of feel that an People who rely on public Target groups are employed person with 25-50 transportation for nighttime representative. But, felt the without children is not work could be an interesting need to also consider "nonfocus (safety, security, users" and "typical commuter" represented schedule, etc.) 8 measures



WITHIN THE STAKEHOLDERS TO INVOLVE THERE ARE LOCAL ASSOCIATIONS AND LOCAL SHOPS Are local associations and local shops included among the stakeholders of the measure?

Mainly via their own larger associations and lobby groups	BUD_03 Non appicable, we would like to survey the PT users and non-users and the misssing PT links in the selected suburban districts of Budapest.	Leu-We use local associations to get input for the measure ans get in touch with the target group	In LIS_03 (SUMP) yes, there is a large participation process including associations and shop associassion representatives!In LIS_10 (PT tickets for large events) some stakholders were included
LIS_08: communications campaigns are still under definition, but most like will involve multiple channels	In LIS_03 (SUMP), LIS_08 (campaigns) and LIS_10 (PT tickets for large scale events) we use mostly digital channels!	General ideas: Include wayfinding at stations/stops with info about bike stations/walking destinations. Consider bike station/PT connections when planning new stops/bike share stations.	LIS 3,8,10 BUD 3

Mentimeter

6

Mentimeter

There will be a combination of non-digital communication, traditional marketing, social media, and other communication channels?

We see that we rather have to directly adress people that do not use PT. That's difficult via digital channels as they will ignore PT-Ads etc

In LIS_03 (SUMP), LIS_08

(campaigns) and LIS_10 (pt ticj«kets for large scale evenyts) from TML, we just use digital channels Leu 6 - we still have to work out the communication strategy, but it will problably be a combination of digital and non digital to reach different target groups BUD_03: The survey will be carried out by a subcontractor with only personal, in-home interviews, in order to it will be representative by residence, gender and age for the selected 5 districts. LIS_08: communication campaigns are still under definition, but will most likely involve multiple channels

8 measures

LIS 3,8,10 BUD 3

8 measures

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Mentimeter

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Mentimeter

How to address the need of some users that cannot or don't want to access digital platforms for tickets or information?

Maintain a minimum level of information in more traditional formts (e.g. bus stops). Offer more traditional communication methods (e.g. call centre, shops) Leu 5- we will probably provide a non-digital alternative and assistance from (mobility) coaches Tickets: in Lisbon we use contactless ticketsllnformation: we have it on interfaces, but increasing strongly the digital side of infol

Proup P

MAN: As part of public services of general interest we always still offer non digital ways as ticket offices / machines and Timetable posters

LIS 3,8,10 BUD 3



8 measures

Can the environmental impact be used to enhance behavioral change&cultural change in any of the measures? How could this be carried out effectively?

Lis - Guess the answer to the first question is yes, but the second is much more difficult. Some segments of the population are very reactive to this topic. To my knowladge, environment works well in communication, but is not key when chosing travel options! Leu 6- apparently health reasons are more effective as an incentive for modal shift

MAN 1,2 LEU 5,6 LIS 3,8,10 BUD 3

8 measures







Mentimeter

How to promote soft mobility (walking and cycling) in multimodal hubs and in ticketing?

Establish Hubs and make options visible close to PT stops

LIS_03 (SUMP) - promote universal accessible in interfaces correction: LIS_03 (SUMP) promote universal accessibility in interfaces (in another LIS measure) we integrated the PT ticketing with the bike-sharing system. But this concept could also be applied to bike-parks (for people who bring their own bikes)

Create dedicated paths for walking and cycling to and from hubs, Ensure easy access to hubs by foot or bike, with ample parking; Integrate walking and cycling seamlessly with public transit LIS 3,8,10 BUD 3

8 measures



ANNEX 5: Measure monitoring templates for the measure included in T5.2



Objectives of the measure

- Reduce dependency on car ownership through reduction of private car parking and development of new combined mobility products.
- Incentivise the use of public transportation and shared modes.
- Make combined mobility agreements easily available to decision makers / boards in housing associations.

Description of the measure

This measure will create models for cooperation between Ruter, landowners and mobility service operators. An administrative backend system and an easily scalable combined mobility offer for the residents will be created. This measure will explore different business models (e.g., incentives like loyalty programs and discounts for combined mobility), pricing/payment models (e.g., costs to be part of residents monthly recurring regular expenses like janitor services and hot water) and service models to incentivise the use of PT and shared modes.

Measure outputs:

This measure will deliver:

- Integration between Ruter Bedrift and housing organisations' resident database and digital interfaces towards residents.
- 3-5 new combined service pricing models.
- Reduced minimum requirements for private car parking supply in a real estate development project.

Related UPPER tools:

U-GOV will enable us to get feedback from residents and facilitate for a short feedback loop during piloting of new business/pricing models.

U-NEED has the potential to provide valuable insight and identify underserved areas. Through mobility forecasts operators and housing associations will be able to get service recommendations.

Steps to ready-to-demo measure

Steps	Description	Involved partners/ externals	City contact person	Category of action	Deadline	Monitoring indicator	Comments	
1	Knowledge summary	Ruter	RUTER	Data	Nov 30 th 2023	Collated insights	Collect available insights from previous studies.	
2	Admin-system MVP	Ruter	RUTER	Technical	Dec 31 st 2023	Functional MVP	Use Ruter's company solution. Adjust to work with housing associations and residents.	
3	Partnerships	Ruter, Housing org., service providers	RUTER	Social	May 1 st 2024	Agreed on value streams and payment models	Dialogue with housing organizations, hackathon, agree on concepts, dialogue with service operators, and agree on simpler business models for piloting.	
4	Pilot in smaller scale	Ruter, Housing org., service providers	RUTER	Test	Aug 1 st 2024	Availability of services for residents	Pilot in suitable housing association.	
			LAUNCH AUG	OF THE DEMO UST 2024			Scale to multiple locations Scale to multiple organizations. More permanent business models will be continuously developed.	

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Monitoring template for Measure TES_10 "Incentivize the use of PT in combination with active modes"

Objectives of the measure

At measure level:

- Increase PT attractiveness.
- Increase PT ridership.
- Promote the use of micromobility modes.
- Decrease car usage.

Description of the measure

This measure will incentivize the use of PT in combination with active modes. It aims to promote the use of PT and active modes, by offering to passengers the ability to exchange their tickets by vouchers to be used in local shops. A stated preference survey will be conducted to estimate the willingness to use PT for financial incentives. An algorithm will be developed to estimate time of day/type of incentive/redeem method, etc.

Measure outputs:

This measure will deliver:

- A report on travellers' WtP and incentives.
- Algorithm for the allocation of incentive packages.

Related UPPER tools:

U-GOV: CERTH has already developed gamification and incentivization mechanisms for encouraging active mobility, U-GOV can assist in the validation of these mechanisms and capture citizens' opinion regarding incentives.



Steps to ready-to-demo measure

Steps	Description	Involved partners/exte rnals	City contact person	Category of action	Deadline	Monitoring indicator	Comments
1	Definition of use cases	CERTH/HIT, TheTA	CERTH	Technical	done	Description of use cases	
2	Data collection	CERTH/HIT, TheTA	CERTH	Social	31/01/2024	Responses collected	
3	Data analysis	CERTH/HIT	CERTH	Data	15/03/2024	Conclusions regarding proper incentives	Survey analysed
4	Agreement with incentive providers	CERTH/HIT	CERTH	Social	31/03/2024	List of incentives that will be provided	
5	Definition of system requirements and architecture	CERTH/ITI	CERTH	Technical	28/06/2024	Description of system requirements and component diagram for the architecture	
6	Development and testing of the new functionalities in an existing app	CERTH/ITI CERTH/HIT	CERTH	Software	31/08/2024	All set for the demo	

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Monitoring template for Measure ROM_09 "Incentive packages to support multimodality"

Objectives of the measure

At measure level:

As part of the journey to work:

- Increase multi-modal trips
- Increase car-sharing or ride-sharing
- Increase cycling mode share
- Increase affordability of sustainable transport modes

Contributing to city level objectives of:

- The objective of the measure at city level is to take advantage of the Mobility Managers in companies, institutions and schools to promote sustainable mobility habits and the use of PT among their employees, students etc.
- In addition, the objective of this measure is to propose the incentives to reduce the use of car in support of PT, also following the introduction of the Limited Traffic Zones (Green Area).

Description of the measure

General description:

The objective of this measure is to guide travel behaviour and to build a mobility offer in which local public transport is the preferred transport solution. This is done by stimulating the network of the local mobility managers active in institutions, companies, schools, in promoting sustainable mobility behaviours in their organisations according to the following activities:

- Sharing mobility: with the objective of supporting multi-modality, including PT in the journey.
- Car-pooling: promoting the use of platforms for sharing rides for the single company / school or for companies in a specific area reducing the number of people using the car;
- Cycling: promoting cycling to work/school as part of the journey as a single mode or combined with PT.
- Welfare: promoting the use of the opportunities offered by the welfare legislation for sustainable mobility actions, for example to offer reduced fares for PT subscriptions.

Measure outputs:

This measure will deliver:

- Increase the number of Mobility Managers_in schools
- Increase in the sustainable shifts by employees and students



Steps to ready-to-demo measure

Steps	Description	Involved partners/exter nals	City contact person	Category of action	Deadline	Monitoring indicator	Comments
1	Assessment of the current incentives in place and their impact	RSM, ATAC		Technical		Report on current status of incentivisation and MM's role	
2 Definition of use cases and potential types of incentives to be implemented, based on the results of 5.2.4 - Research into relevant initiatives		RSM, ATAC		Technical	31/10/2023	Definition of potential incentives and policies	
3	Analysis of potential impact of selected incentives	RSM, ATAC		Technical	30/11/2023	Report on impact assessment of the incentives and policies and	
4 Stakeholder engagement, requirements definition and selection of policies to be implemented and development of guidelines for the implementation of home-work mobility plans		RSM, ATAC		Technical	31/1/2023	Definition of requirements, selection of the incentives and guidelines for drafting the implementation of home-work mobility plans	
5	Development of the digital service (incentive management platform)	RSM, ATAC		Technical	31/3/2024	Technical integration	
6	Appointment and training of old and newly selected MMs	RSM, ATAC		Legal	30/6/2024	New MMs appointed and training delivered	
7	Pilot and assessment	RSM, ATAC		Software	31/7/2024	Pilot report	
		L	AUNCH OF THE	DEMO (please fill	in the date)		

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Monitoring template for Measure LEU_05 "Mobility for all by optimising the use of financial incentives to increase the share of

Objectives of the measure

At measure level:

- Increase the efficacy of existing financial incentives.
- Develop a more coherent and effective approach.

Contributing to city level objectives of:

• Increase the attractiveness and the accessibility of public transport and eventually lead to an increase in use.

Description of the measure

General description:

This measure will make the best use of ongoing technological improvements such as integrated ticketing systems and MaaS applications in order test smarter incentives that are easier to access for the intended social groups. By reassessing and more focused application of financial incentives for public transport and parking, the uptake of public transport in certain social groups will be increased. Financial incentives currently in place in Leuven are each focused on one particular service and one particular user group of this service. They are not integrated with ticketing systems; they are often not well known, and they are not transparent. In this measure, the current financial incentives will first be analysed: what is their actual impact and efficacy? Building on this analysis, expertise of the UPPER partners and input of an ongoing pilot project on MaaS in Leuven, a policy plan on financial incentives will be drafted. Finally, at least one sort of financial incentive that is provider neutral and integrated with MaaS systems will be implemented and evaluated within the project.

Measure outputs:

- Analysis of existing financial incentives
- Policy plan for financial incentives
- Implementation of policy plan: at least one sort of financial incentive that is provider neutral and integrated with MaaS systems. Cooperation with Factual/Rideal is being discussed.



Steps to ready-to-demo measure

Steps	Description	Involved partners/externals	City contact person	Category of action	Deadline	Monitoring indicator	Comments
1	Assessment of the current incentives in place: the cost, usage and target groups reached			Technical	30/06/2024	Analysis report of the current incentives	
2	Input from the council and welfare department to determine the objectives and the target groups of the financial incentives			Social/ technical	30/06/2024	Provide input for the framework/ principles	
3	To review best practices and successful projects			Social/ technical	31/06/2024	List of ideas/ input for the framework and technical development	Depending on initiatives for knowledge exchange with the UPPER-cities and partners in WP5 and results of an ongoing pilot project on MaaS in Leuven
4	Determine framework/ principles for policy plan	Welfare department		Social	31/08/2024	Framework/ principles for policy plan	
5	Investigate through which possible channel(s) the chosen use cases and possible incentives can be allocated	Factual, mobility providers, welfare department		technical	31/08/2024	Input for the policy plan	
6	Definition of possible use cases, potential types of incentives to be			Legal?	31/12/2024	Draft of policy plan	Due to municipal elections in October 2024, the policy plan cannot be approved until 2025.

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D5.2 Toolkit to incentivise public transport and mobility active modes in UPPER living

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	implemented a ways to allocate	and possible e them									
7	Selection of types of incentives and use cases to be implemented and ways to allocate them				Technical/Le gal?	31/07/2025	Approvement of policy plan	Due to municipal elections in October 2024, the policy plan cannot be approved until 2025. Deadline depending on the outcome of the elections.			
8	Development c service management Rideal)	of the digital (incentive platform	Factual, mobility providers		Software	31/07/2025	Technological implementation and test of the tool	This step can only take place after the approval of the policy plan			
9	Planning of the pilot and testing of the demo		Factual, mobility providers		Social	31/12/2025	Pilot ready to start				
10	Implementation of the policy plan			Ester Dewil	Technical	31/6/2026	The financial incentives are in place				

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Monitoring template for Measure IDF_07 "To incentivise the use of Public Transport for commuters"

Objectives of the measure

At measure level:

The aim of this measure is to incentivize the use of public transport and green mobility for commuters:

- Promoting the usage of PT and micro-mobility by allowing employers to provide FMD (mobility credits) to their employees.
- Facilitating the use of micro-mobility and other sustainable mobility modes by providing a "one-stop shop" MaaS app for mobility payments and journey planner from home to the workplace.

Contributing to city level objectives of:

Allowing companies to reward mobility credits to their employees.

- Providing workers with other alternatives to personal vehicles for commuting.
- Reducing carbon footprints by reducing the usage of personal vehicles.

Description of the measure

General description:

This measure aims at facilitating the management of FMD (mobility credits) as a means of payment for PT, micromobility services and other green transport modes (e.g., personal bicycle with the possibility to report IKV i.e., cycling mileage allowance). This will allow private companies, located in the territory of Versailles Grand Parc to provide employees with FMD to be used as a means of payment of sustainable mobility modes (public transport + active modes). This will encourage the use of those modes and promote a healthier lifestyle in the region.

The B2B application will be provided and configured to identify private companies for the attribution of FMD to their employees with a complete back-office tool for the HR department of each company.

Measure outputs:

This measure will deliver:

- The possibility for end-users to pay their trips using FMD (mobility credits) thanks to the payment system within the B2B MaaS app.
- Key Performance Indicator on the usage of FMD as a mean of payment for PT and micro-mobility.
- The integration of a micro-mobility provider settled in Versailles Grand Parc in the B2B MaaS app (linked to IDF_04

 depending on the success of measure IDF_04 providing that an agreement is signed with lle de France Mobilité).
 Such integration would enable the search, booking and payment directly from the app. Without this integration, the users will still be able to pay micro-mobility services with the FMD thanks to the app payment system.



Steps to ready-to-demo measure

Steps	Description		partners/exter nals City contact person		Category of action	Deadline	Monitoring indicator	Comments			
1	Identification of target companies and definition of use cases, based on the results of 5.2.4 - Research into relevant initiatives		VGP – Instant System	VGP, IS	Social	05/2024	Agreements with participating companies				
2	Analysis of potential impact of selected incentives		VGP	VGP, IS	Technical	01/2025	List of KPIs and baselines				
3	Initialisation phase – definition of technical requirements		Instant System	VGP, IS	Technical	07/2024	Functional and technical requirements of the FDM payment system				
4	Development of the digital service (MaaS for enterprises Emy)		Instant System	VGP, IS	Software	10/2025	Configuration of the app for each company				
5	Training mobility managers		Instant System	VGP, IS	Technical	11/2025	Training performed				
6	Planning of the pilot and testing of the demo		Instant System	VGP, IS	Social	01/2025	Pilot ready to start				
		LAUNCH OF THE DEMO (Q1 2025)									