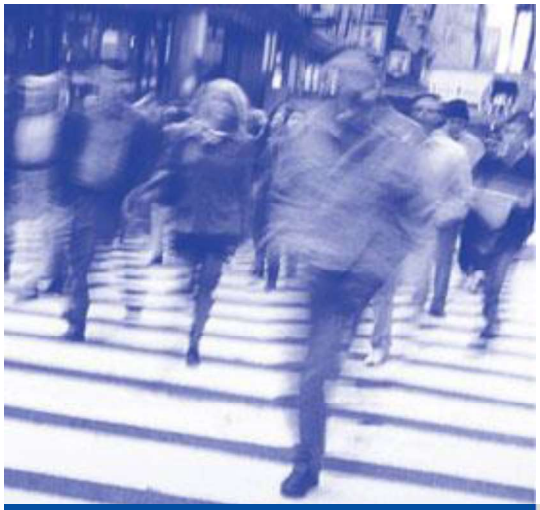

2020 CiViTAS
Cleaner and better transport in cities

DESTINATIONS

D10.3

Result of Knowledge and Best Practice Transferring Jam

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2020 CiViTAS
Cleaner and better transport in cities
DESTINATIONS

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Abstract

This Deliverable summarises the conclusions of the Task 10.3 on Business case replication, which aims at sharing experiences among stakeholders on a sub-set of DESTINATIONS measures, delivering guidance to replicate the related business models in different contexts. The background of the analysis is described in the Deliverable 8.7 on the most promising business models, issued in October 2019.

In such a Deliverable, the key results of the analysis consisted in the identification of clusters of potential business models, resulting from the classification of the most promising business models in four clusters:

(1) Cluster 1 - Public transport information systems
(2) Cluster 2 - Integrated payments solutions for mobility
(3) Cluster 3 - Public e-bike-system
(4) Cluster 4 - Building a sharing mobility culture

Building on that, the transferring jam session has deepened the analysis of the pre-conditions for replicability, sharing experiences and building consensus among the main actors of the clusters on pros and cons of the most promising business models. Despite some changes in the methodological approach underpinning the transferring jam session caused by the COVID-19 outbreak, this Deliverable takes into account the contributions from Measure Leaders and participants to the four clusters of potential business models, resulting in a series of recommendations for their replication.

Project Partners

Organisation	Abbreviation	Country
Horários do Funchal, Transportes Públicos, SA	HF	PT
Agência Regional da Energia e Ambiente da Região Autónoma da Madeira	AREAM	PT
Câmara Municipal do Funchal	CMF	PT
Secretaria Regional da Economia Turismo e Cultura	SRETC	PT
Agência Regional para o Desenvolvimento da Investigação, Tecnologia e Inovação	ARDITI	PT
Limassol Tourism Development and Promotion Company Ltd	LTC	CY
Municipality of Limassol	LIMA	CY
Stratagem Energy Ltd	STRATA	CY
Dimos Rethimnis	RETH	EL
The Research Committee of the Technical University of Crete	TUC	EL
Comune Di Rio	Rio	IT
Comune Di Portoferraio	PF	IT
MemEx S.R.L.	MEMEX	IT
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Valletta Kunsilli Lokali – Valletta Local Council	VLC	MT

Universita ta' Malta	UoM	MT
Ministry of Tourism	MOT	MT
Guaguas Municipales Sociedad Anonima	Guaguas	ES
CINESI S.L consultoria de transport	CINESI	ES
Ayutamiento de Las Palmas de Gran Canaria	LPGC	ES
Ingeniería Electrónica Canaria S.L	INELCAN	ES
Sociedad Municipal de Aparcamientos de Las Palmas de Gran Canaria	SAGULPA	ES
Istituto di Studi per l'Integrazione dei Sistemi	ISINNOVA	IT
European Integrated Project	EIP	RO
Sustainable Services	GV21	ES
Vectos GmbH	VECTOS	DE
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Glossary

AVM	Automatic Vehicle Monitoring
IA	Innovation Actions
EV	Electric vehicle
GHGs	Green House Gases
TPL	Local Public Transport
SUMP	Sustainable Urban Mobility Plan
PT	Public Transport

1 Executive Summary

The knowledge transferring jam sessions of promising business models for tourists and residents have focused on two types of solutions. First, solutions aimed at increasing the use of road public transport (bus), both providing more information to the users, which may include advertisements for local events of interest for tourists and residents, and favouring integrated payment solutions such as smart cards, making tourists and residents moving effortless across the local public transport network. Also, on solutions aimed at promoting slow transport modalities through the use of bicycles, both traditional and electric, in isolation as well as shared, responding in that to a general trend (the so-called slow tourism), which tries to combine attention to local lifestyles and sustainability.

The two types of solutions were identified after questionnaires were distributed among experts and policy makers in the six DESTINATIONS sites, discussing replicability of solutions and aiming at determining the replication potential of solutions/measures. The discussion has considered and pondered local specific factors that influence the applicability of the solutions. The methodology was based on the analysis of 3 specific dimensions: socio-economic, institutional and technological.

As a result of the discussion, four clusters of measures have been identified:

(1) Public transport information systems (Limassol)

(2) Integrated payments solutions for mobility (Las Palmas)

(3) Public e-bike system (Las Palmas)

(4) Building a sharing mobility culture (Rethymno)

The following conclusions for each cluster in terms of pre-conditions for replicability can be drawn:

- **Solutions aiming at increasing the use of road public transport (bus**): **Cluster 1) PT traveller information systems**. To reap the full benefit from commercial advertisements an appropriate regulative framework must be established by public transport operators. Such a framework should harmonise (and integrate) several types of information, combining space and role of private commercial advertisements, public transport information and touristic information.
- **Solutions aiming at increasing the use of road public transport (bus): Cluster 2) integrated payment solutions.** Competition with other transport options is a crucial issue, with particular reference to the tourists' demand, for which touristic buses, taxis, excursionist tours, exert an important role in meeting transport demand, e.g. demand from cruisers. Road public transport should diversify sale channels (traditionally based on residents' needs) trying to capture tourists' demand providing added value- of the customer journey, in combination with other transport modes (cruise).
- **Solutions aimed at promoting slow transport modalities: Cluster 3) e-bike systems**. Bicycle services alone (electrical or traditional) are rarely profitable services, at least in the long-period. Cyclical demand, lowest in

winter times, difficulties from geography and urban configurations, lack of tradition and cultural habits, may hamper reaching a critical mass for making the service economically sustainable. The solution is in the integration of bicycles in the mobility system, favouring intermodality and using digital technologies..

- **Solutions aimed at promoting slow transport modalities: Cluster 4**) **Shared mobility**. The key barrier to the development of shared mobility services, e.g. e-bike and e-scooters, is not technological (applications are mature and widely commercialised) but organisational and institutional. The capability to involve stakeholders, including private transport operators, is important. Regulations need to allocate responsibilities between the public domain and the private operators, generally responsible for the operation and maintenance of the system.

For each cluster it was also possible to find and study during the session a set of strengths and weakness per busines model.

2 The transferring jam session: methodology and impacts of the COVID-19 outbreak

As for the DESTINATIONS description of work, originally the transferring jam session was conceived as a “two-day meeting”, to enable a deep understanding of failures and success points for the different business models, and finally drawing lessons and tips to replicate business models in other cities.

In preparation of the transferring jam session, preliminary work led to the analysis of potential replicability of business models, identifying the following four clusters of measures:

(1) Public transport information systems (Limassol)
(2) Integrated payments solutions for mobility (Las Palmas)
(3) Public e-bike system (Las Palmas)
(4) Building a sharing mobility culture (Rethymno)

For each of these clusters, the indications provided by the DESTINATIONS stakeholders on major potentiality for replication (considering and pondering socio-cultural, institutional and technological factors) led to the following composition of participants:

- Public transport information systems (Limassol): Las Palmas, Madeira and Elba
- Integrated payments solutions for mobility (Las Palmas): Elba and Madeira
- Public e-bike system (Las Palmas): Rethymno, Elba and Madeira
- Building a sharing mobility culture (Rethymno): Elba, Limassol and Madeira

In such a context, the transferring jam session should have been organised as depicted in Figure 1. Two parallel sessions were envisaged, involving all Measure Leaders and participants to four clusters of promising business models. The work underlying the transferring jam session should have been carried out in two stages:

1) First stage: downstream work. Measure Leaders (Limassol for LIM 7.3 Public transport information systems (Cluster 1), Las Palmas for LPA 7.4 Integrated payments solutions for mobility (Cluster 2) and LPA 4.1 Public e-bike system (Cluster 3), Rethymno for RET 4.2 Building a sharing mobility culture, (Cluster 4) discuss separately pros and cons of the measure business models with the DESTINATIONS sites (participants) that have shown interest in terms of potential replicability in their sites.

2) Second stage: upstream work. To close the knowledge transferring jam session, each cluster should have presented their replicable business models in the plenum session. The resulting outcomes from the discussion, taking each site needs and requirements into account, should have represented the knowledge basis for drawing conclusions on business model replicability.

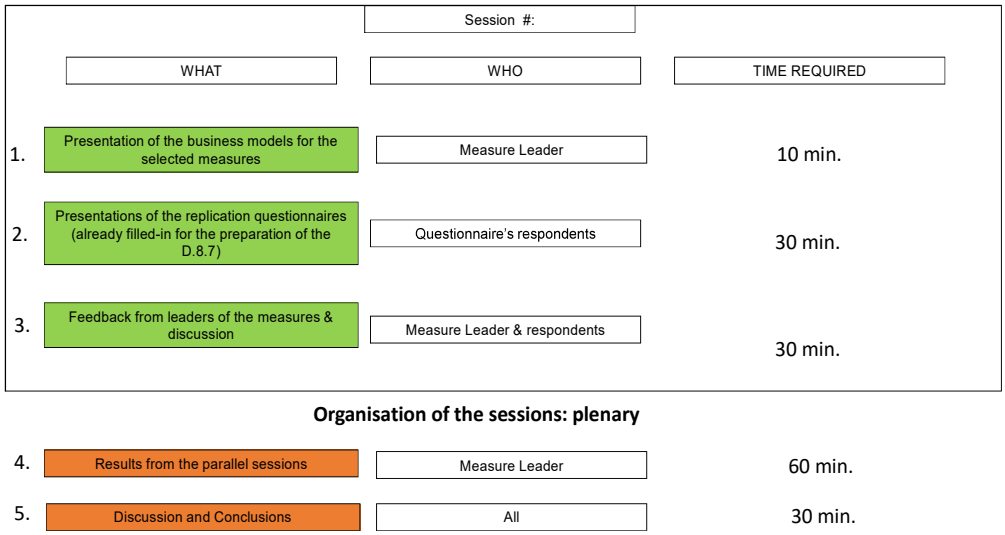

Figure 1: The transferring jam session before COVID-19

However, the outbreak of the COVID-19 in February 2020 radically changed the plan. The project meeting in March 2020, where the transferring jam session should have taken place, was cancelled and a new plan was elaborated, in order to find alternative approaches to the transferring jam session as originally conceived.

The new approach replacing the original plan is based on three stages:

Collect information from each Measure Leader about the Business Models key barriers and opportunities.

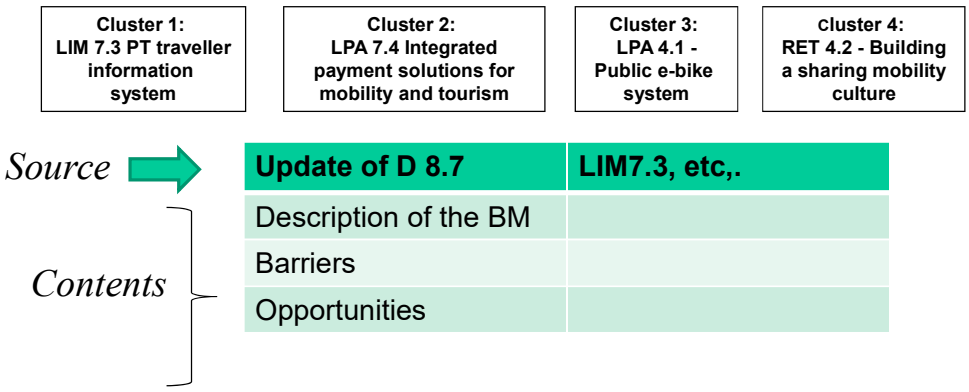

Figure 2: Information about barriers and opportunities

Collect information from the Cluster participants about the main factors enabling/hampering the replicability of the four measures business models in their sites.

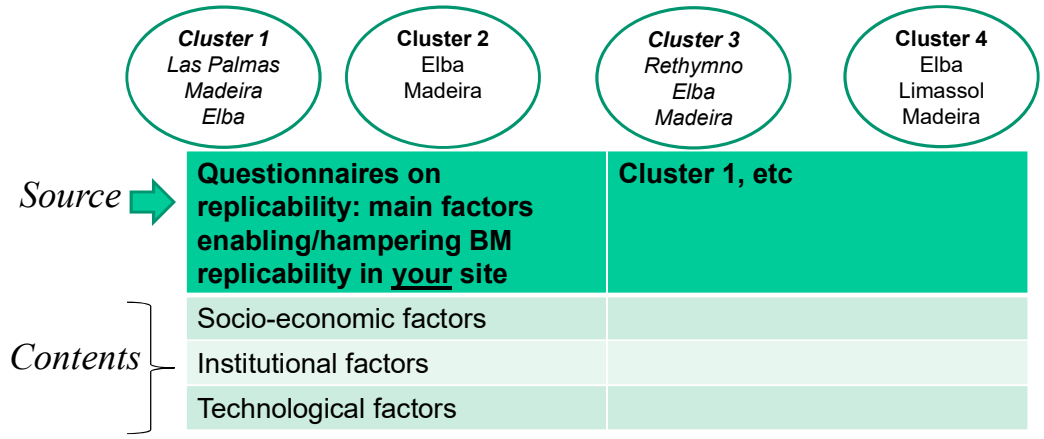

Figure 3: Information about main factors enabling/hampering the replicability

And organise four on-line seminars for each cluster, in which Measure Leaders and participants to the clusters discuss how to overcome barriers for the replication of the measure business models in their sites. The discussion is conducted according to a list of topics, as emerging from the contributions formulated in the stages 1 and 2, summarised in the next figure in terms of favouring and opposing factors to the business model implementation.

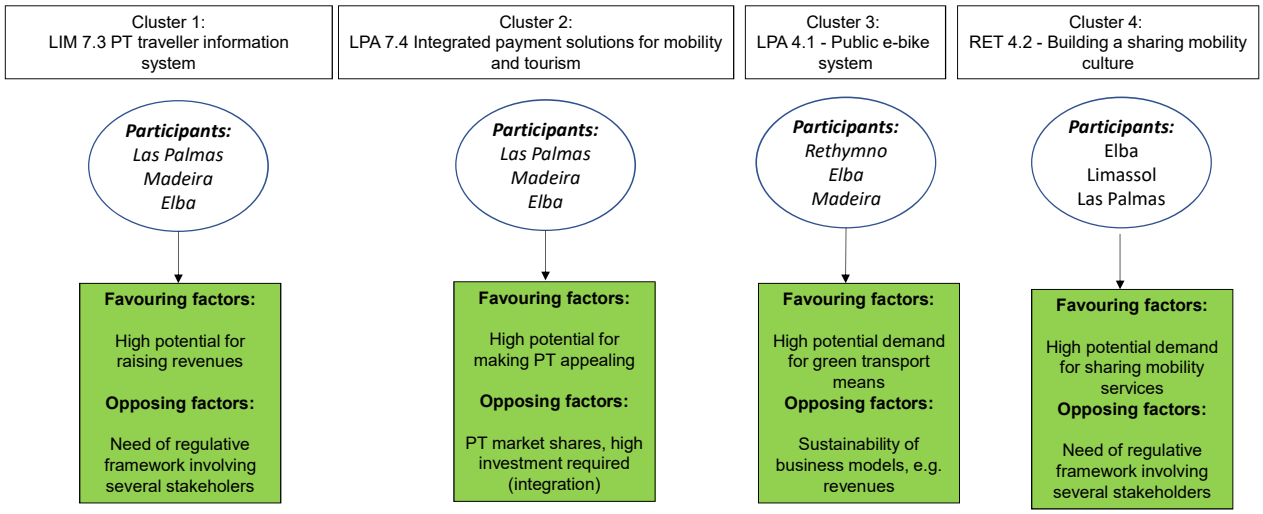

Figure 4: Favouring and hampering factors to the implementation of the business models

The next chapters discuss in detail the information delivered by each Measure Leader and the feedback from the participants (chapters 3-6), summarising the outcomes from the on-line sessions in chapter 7 and drawing finally conclusions in chapter 8.

The conclusions stress a possible path to replicability, in the form of recommendations for the implementation of the four business models corresponding to DESTINATIONS measures in the field of public transport and slow mobility.

3 Cluster analysis

For each cluster, this chapter deals with the discussion held on the potential of business model replicability. The discussion has been conducted according to two points of view: 1) description of the business models from the Measure Leaders and 2) opinions of the participants on barriers and opportunities for their implementation/replication in the different DESTINATIONS sites.

In the following sections, each cluster shows firstly the Measure Leader description of business model and then the opinions of the participants. For each cluster, Measure Leaders and participants are the following:

(1) Cluster 1: Christina Kanellaki (Limassol Tourism), leader of the DESTINATIONS measure LIM 7.3 - PT traveller information system, Participants to this cluster include:

- Antonio Artiles del Toro - Guaguas Muncipales - (Las Palmas)
- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini – MEMEX - (Elba)

(2) Cluster 2: Antonio Artiles del Toro (GUAGUAS, Las Palmas), leader of the LPA 7.4 - Integrated payment solutions for mobility and tourism. Participants to this cluster include:

- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini - MEMEX - (Elba)
- Federica Andreucci (Portoferraio Municipality - Elba -)

(3) Cluster 3: César García - SAGULPA - Las Palmas leader of the LPA 4.1 - Public e-bike system. Participants to this cluster include:

- Jordi Casas - CINESI - Las Palmas
- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini - MEMEX - (Elba)
- Maria Aryblia (TUC - Rethymno - Crete)

(4) Cluster 4: Thomas Papadogiannis - Rethymno Municipality leader of the RET 4.2 - Building a sharing mobility culture. Participants to this cluster include

- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini – MEMEX - (Elba)
- Christina Kanellaki – Limassol Tourism

3.1 Cluster 1: PT traveller information systems

Cluster 1: Measure leader introduction to the business model

Measure Leader: Christina Kanellaki (Limassol Tourism)

Figure 5: PT traveller information systems in Limassol: displays on buses and at bus stops/ web content management system

Section 1: Description of the Business Model

(1) Description of Business Model

Within the framework of CIVITAS DESTINATIONS, Limassol Tourism (LTC) installed a user friendly telematic system aiming to make PT more attractive for residents and tourists, which includes:

- Twenty-five Electronic Bus Stop Displays with photovoltaic system installed to provide real time information to passengers.

A central system has been placed to provide the relevant information based on GPS sensors on the buses and the necessary software. The central system is located at the offices of Limassol's Bus Company that will operate and maintain the system.

- Twenty-five on-board TFT Displays for location-based information inside buses, informing the PT users about the following stops, so that they (especially tourists) know where to get off the bus, the end of route, ticket purchasing, etc. Visible and noticeable signs noting the bus stop name have been placed at bus stops.

- A content Management System - Back Office Tool to provide information about POI (Points of Interest), nearby attractions and following event. The system has been designed for both tourists and residents in mind, making their travelling around using PT more efficient in terms of time and comfort. PT information provided will be user friendly for visitors, since along with the PT information, tourist information will be provided enabling visitors to plan accordingly and make the best of the PT routes available.

(2) On-Board TFT Displays Features

The on-Board TFT Displays include a text communication provided by Content Management System, connecting routes information in intermediate stops, multimedia content such as lines, routes, Points of Interest (POIs), stops, campaigns, logos, date/time, and route names and codes.

The Content of the On-board Display is automatically updated in two languages English and Greek and includes location-based information to the passengers. Additionally, it shows the starting point and the origin of the bus as well as intermediate 4 stops with connecting route information.

The Display has been designed to show multimedia files for campaigns and Points of Interest (POIs), depending on priorities that will be provided through the content management system.

(3) Web Content Management System

This Web Content Management System is a web-based application that allows to configure parameters on the multimedia basis that needs to be shown on the on-board display. The layout of the application includes the Tool Menu, the Entity Panel and messenger panel.

It allows to select specific contents in the on-board displays. Through the web content management system all text messages and information can be uploaded to the displays either as text messages or videos/photos and allows to monitor the status of the communication.

A campaign or event can be scheduled at particular time and duration and uploaded to the displays of all fleet or selected vehicles.

(4) Content management System

Content Management system shall be used for the assigning multimedia content, configuration of the parameters for the multimedia and for sending text messages to the on-board display and stop solar display. The Operator can use this application to inform passengers on buses and at bus stops for specific conditions such as traffic congestions.

(5) Electronic Photovoltaic/ Solar Display System

A system with 25 Bus Stop Displays for PT installed in Limassol Region. LCD display brings a new dimension into public transport information. The LCD, based on bi-stable technology, requires power only on display update of information thus, its power source is a small solar panel adequate to achieve autonomy for many days (i.e. 72 hours of autonomy without backlight in the display and 1 route announcement when bus arrived) even in unfavourable solar radiation conditions.

Bus stop displays are able to provide accurate information about estimated bus arrivals at the respective bus stops. Displays show the estimated time based on the information received from the PT telematics through SIRI.

The Displays show the information in two languages (English/Greek) and their interface is capable to show arrival/departure real time information. The display also provides information regarding the route number, destination and bus stop name.

(6) Key stakeholders' engagement

The Ministry of Transport, Communication & Works worked very closely with LTC providing permissions, specifications in order the displays to be compatible with the national system. Limassol Bus Company, the Regions' PT operator, was a strong stakeholder as they gave the permissions for the installation of the equipment in its 25 buses. Finally, municipalities and communities of all Limassol Region were involved in order to give their permission for the displays to be installed at bus stops in their boundaries, stressing the importance of a coherent regulatory framework and national and local level.

(7) Cost structure

The CIVITAS DESTINATIONS funding was an opportunity to create an innovative Telematic System in Cyprus. integrating the short-term revenues earned from the advertisement on the on-board displays.

Beyond the allocation of funding from CIVITAS DESTINATIONS, additional funding has been secured for more electronic bus stop signs in the wider region to connect up with the city for greater long-term impact. €150,000 ERDF funding has been secured

and used to install 15 more displays, through the EY-KINISI project (Interreg V- A, Greece - Cyprus Program "2014-2020").

Section 2: Barriers

Although LTC faced minor problems due to delays in procurement process. the difficulties faced at the beginning of the implementation were solved and the awarded company responded on time according to the timeline.

Section 3: Opportunities

The New Telematic services upgraded the existing PT system, in Limassol City, giving users (residents and tourist) the flexibility to design their trips by providing accurate travelling information at bus stops and on buses. In addition, passengers will have the opportunity to be informed for events and campaigns that will take place in Limassol Region.

3.1.1. Cluster 1: Participants' assessment of replicability - Elba

Socio-economic factors

Enabling

- Appreciation by tourists of the information system on-board in the buses
- Positive economic return for tourist and commercial activities which are punctually illustrated along the bus route.
- Greater use of public transport for ground information at various stops.

Hampering

- There are some Apps that provide information on various Elba routes, therefore, the need to provide on-board information is limited.
- In Elba, Local Public Transport (TPL) is monitored through the Automatic Vehicle Monitoring (AVM) system with the related App to give the bus arrival with real time information.

Institutional factors

Enabling

- The Elba municipalities are in favor of both the information system on the buses and the totems at the bus stops in order to provide information on bus timetables and local tourist attractions.
- There is a good and efficient relationship of collaboration between the TPL provider and the municipalities of Elba to agree on the creation of ancillary transport services.
- Private subjects, who have an interest in advertising their activities, can contribute to the costs for the realization.

Hampering

The implementation and maintenance / updating of the information service on-board provides an economic commitment to which the municipalities can hardly contribute since it is not considered as priority.

Technological factors

Enabling

- The information system technology for both on the buses and by totems at bus stops is mature and widely commercialized.

Hampering

- The power supply with solar panels may be not efficient, for it can be difficult to find traditional power supply in some bus stops. In addition, during winter time, solar panels cannot properly work.

3.1.2. Cluster 1: Participants' assessment of replicability – Las Palmas

Socio-economic factors

Enabling

- Maintenance and total costs of solar powered real time information system are lower than conventional equipment connected to the electric grid. Indeed, although the equipment costs are initially more expensive than conventional equipment connected to the electric grid, the final costs that include equipment, infrastructure cost and installation and permission times required for working on public streets made the solar powered option much more attractive and feasible.
- Real time information service is highly scored by customers.

Hampering

- Some real time information equipment installed at isolated bus stops are susceptible of vandalism.

Institutional factors

Enabling

- Las Palmas de Gran Canaria Municipality as well as Regional Government are fostering urban public transport services The Regional Government of Gran Canaria Island has installed over 100 more panels (with other resources beyond CIVITAS DESTINATIONS) all over the island for the interurban public transport services.

Hampering

- - N/A

Technological factors

Enabling

- Real time information system powered by solar energy is mature and already experimented in Gran Canaria, with local maintenance services.

Hampering

- Guaguas Municipales has several bus models types, so the installation of real time information screens on-board need to be adapted to each different model.

3.1.3. Cluster 1: Participants' assessment of replicability - Madeira

Socio-economic factors

Travel information on street

Enabling

- In Madeira Horários do Funchal implemented a travel information system to inform about public transport service. The service was mainly focused on resident's needs. The information infrastructure is only used to inform about bus arrivals, and it cannot be explored for commercial purposes. A private company can manage such business rising potential high revenues with a commercial approach. Potentially, such information system can also be relevant for tourists, in order to disseminate relevant information to reach historical sites in the city.

Hampering

- The high cost of the informational infrastructure can be an obstacle for the award of the service to a private company. The maintenance cost can be really high with the need of clear and detailed maintenance contracts.
- To grant a constant update of Touristic information is a time-consuming task. Also, to combine transport with touristic information in an understandable and clear way is quite challenging task.

Travel information on-board

Enabling

- In Madeira Horários do Funchal has no on-board information system in urban fleet. The information system could be used as commercial space to promote other services or other kind of commercial suggestions. In this way the PT company could rise revenues.
- There are evident synergies between transport and tourism market. Both sectors can benefit from an integrated information system. Public transport information system can be valuable outdoors to promote complementary services. A cross selling discount in gift shops or touristic services can boost such information system.

Hampering

- Budget restriction limited the installation of such equipment in all public transport fleet.
- The cost of the system is not only related to the hardware but also related to the content preparation and the need to keep the information updated and available to the public.

Institutional factors

Travel information on street

Enabling

- Better Information for the tourist about mobility is a topic relevant for touristic regions like Madeira. In Madeira, the Public Transport company installed in 2007 a digital panel system to inform tourist about public transport next bus. The Panels can only show such information with no integration with others. The panels proved to be a powerful informative tool which can improve the quality of the information for residents and tourists regarding sustainable mobility options.

Hampering

- In Madeira the public transport information system cannot include commercial spaces to promote third private companies. On-street billboard commercials license is directly awarded by the Municipality to a provider also in charge of the shelter network maintenance. Such outdoor concession was awarded to a local company with limited time concession period. To allow an integrated information/promotional panel infrastructure, the actual municipality regulation could be updated to allow the integration between public transport information, touristic information and commercial promotion in one unique provider.

Travel information on-board

Enabling

- The accessibility national regulations oblige busses to provide visual and audio information to passengers with physical limitations. Such on-board information system is considered relevant to support social inclusion and accessibility in public transport.
- Public transport Service contract could define specific obligation to extend such equipment in all the fleet, but the actual contract has no reference to this issue

Hampering

- No institutional hampers to introduce such solution. On-board the Public transport are not compulsory in the service contract.

Technological factors

Travel information on street

Enabling

- Horários do Funchal is experiencing a technological transition considering the information and ticketing system was purchased in 2007. After a long period of time all the technological equipment and platforms are facing problems of technical failures due to difficulty to replace certain parts and to manage new features. So, the regional public transport company is open to new solutions to maximize the information to users.

Hampering

- The information system Horários do Funchal is now being procured and will be completely integrated in the ticketing system platform. The system implemented in Limassol may represent for Madeira an inspiration, but evident difficulties to implement the information system, as it is, in our region must be overcome.

Travel information on-board

Enabling

- Information system on-board is a Key aspect for Horarios do Funchal and such system represents the perfect support to residents and tourists.

Hampering

- The system has to be compatible with the technical setting available in the fleet of Horarios do Funchal.
- The technical adaptation of the fleet (mainly pre-euro and euro I buses) make the replication of Limassol's solution in Madeira costly and technically difficult to adopt.

The following table summarises the Cluster 1 conclusions.

Cluster 1: PT traveller information systems		
Enabling factors	Socio-economic factors	Potential sources of revenues from advertisement
	Institutional factors	Public transport operators usually owned by municipality
	Technological factors	Mature technologies available
Hampering factors	Socio-economic factors	Budget limitation
	Institutional factors	Need of a coherent regulatory framework, e.g. use of commercial space in public transport network

	Technological factors	Need to harmonise technical requirements in public fleet

Table 1: Cluster 1: PT traveller information systems: enabling and hampering factors for business model replicability

3.2 Cluster 2: Integrated payment solutions

Cluster 2: Measure leader introduction to the business model

Measure Leader: Antonio Artiles del Toro

Figure 6: Integrated payment solutions in Las Palmas: Touristic Urban Public Transport Tickets

Section 1: Description of the Business Model

(1) Description of Business Model

Guaguas Municipales is the urban public transport company of Las Palmas de Gran Canaria. Despite Canary Islands economy mainly depends on the tourism industry, the city urban public transport operator has focused its service to solve citizens and residents' needs, without taking into account that tourism could have special mobility needs.

Within Civitas Destinations project, Guaguas Municipales has developed two urban public transport tickets focused on the tourism market.1 and 3-day ticket without trip limits called "Live", so tourists could move around the city and enjoy their vacations such as residents and citizens do.

Stakeholders involved

Guaguas Municipales through the tourism board has been put in touch with hoteliers' associations and businesses related to the tourism market in order to find a good sale network.

Provided tourism is a highly developed market in Canary Islands, it has been difficult to reach the tourist without a big investment.

In Las Palmas de Gran Canaria, cruisers are one of the main generators of tourism mobility. Nonetheless, there is a huge mobility industry already developed around them such as excursions buses, bike excursions, tourist guides, tourist bus and taxis. To compete against all of them to get a share of travellers is quite complicate.

The main idea since the beginning has been to find businesses that are aware of sustainable mobility and eco-friendly activities. The development of these services is a priority in a city like Las Palmas de Gran Canaria, so they consider that selling urban public transport products is a kind of offering a better service to their customers.

Section 2: Barriers

Provided tourism is a highly developed market in Canary Islands, it has been difficult to reach the tourists without a big investment.

In Las Palmas de Gran Canaria, cruisers are one of the main generators of tourism mobility. Nonetheless, there is a huge mobility industry already developed around them such as excursions buses, bike excursions, tourist guides, tourist bus and taxis. To compete against all of them to get a share of travellers is quite complicate.

Furthermore, the sale channels as well as the communication network of the urban public transport company is mainly focused on residents and citizens.

Section 3: Opportunities

Yellow buses from Guaguas Municipales are easily identified driving all over the city. Wherever a tourist would like to go in Las Palmas de Gran Canaria the use of Public Transport would be a viable option. It could be said that Guaguas Municipales is a symbol in the City (most of the Erasmus students tries to get a souvenir from Guaguas Municipales before they leave the city).

Commuting with Public Transport is the best way to explore the city in economic, attractive and sustainable terms

3.2.1. Cluster 2: Participants' assessment of replicability - Elba

Socio-economic factors

External Vending Machine

Enabling

- In Elba it is possible to buy your bus ticket at the ticket office in Portoferraio or at few shops and hotels; otherwise you can buy it from the driver or using a mobile phone, with highest cost. Tourists and residents would really appreciate the possibility to buy bus tickets in advance by a vending machine if no extra charges are required.
- In any case, due to the fact that not many ticket sale points are available on the island, introduction of vending machines would be, in general, a good practice in the concept of making the LPT offer more complete in terms of services and infrastructures and, as a consequence, to increase the level of people appreciation of public transport

Hampering

- The risk of the machine damage due to vandalism is really concrete. In Elba there is a vending machine in the Port Area, nearby the bus terminal that has been damaged several times causing extra-costs to the operator. To avoid this problem, the vending machine should be equipped with a video surveillance device.

Tourist card

Enabling

- Travel tickets very much suited to the passengers' need are a goal that the public transport operator should always aim for, in order to increase customers' satisfaction and encourage the use of public transport. The tourist card is certainly very effective in this sense, because it could entail money- and time-saving as well as comfort of not having to buy and obliterate the ticket at every bus trip. On the Island of Elba, a tourist card very similar to the one experimented in Las Palmas has been introduced for this purpose: a one-day or five-day ticket dedicated in particular to tourists that was appreciated for the mentioned reasons.
- The fact that the tourist card was sold with a city map is a very interesting and easily replicable good practice.

Hampering

- As has already been tested on the Island of Elba, the one-day tourist card is not considered particularly useful and convenient, because the territory is not small to visit several tourist destinations in few hours.

Institutional factors

External Vending Machine

Enabling

- No relevant institutional obstacles are foreseen. The Municipalities and the LPT operator have both the common the goal of improving the public transport services to benefit tourists and residents, in order to reduce the use of private car and increase the livability of the territory. The introduction of a vending machine can contribute to achieve this goal.

Hampering

- Narrow streets and very little space for bus stops characterized the Island of Elba. The eventual installation of external vending machine requires a very accurate and forward-looking design of public space usage.

Tourist card

Enabling

- To facilitate the use of tourist card on the Island of Elba, the informal agreement among the two municipalities of Portoferraio and Rio, the public transport operator CTT Nord and the Hoteliers Association proved to be vital. The agreement established that the hotels would sell the Elba Card to tourists directly from their receptions, which would also function as information office on public transport.

Technological factors

External Vending Machine

Enabling

- The introduction of a vending machine would be a good solution as long as it is accessible to public and easy to use.

Hampering

- As it is frequently experienced, on the island there aren't qualified technicians able to repair the machine if a problem occurs. This would cause an economic and time loss, to the disadvantage the transport company and passengers as well.

Tourist card

- In the future, purchasing the electric tourist card via a smartphone, could be useful and more convenient for users.

The following table summarises the Cluster 2 conclusions.

Cluster 2: Integrated payment solutions		
Enabling factors	Socio-economic factors	Potential sources of revenues from selling tickets through new distribution channels
	Institutional factors	Public transport operators usually owned by municipality
	Technological factors	No relevant technological barriers
Hampering factors	Socio-economic factors	Investment may be relevant if automatic payments with smart card are concerned
	Institutional factors	Agreement with private operators as hotelier associations, to find sale channels addressing tourists.
	Technological factors	Not relevant

Table 2: Cluster 2: Integrated payment solutions: enabling and hampering factors for business model replicability

3.3 Cluster 3: E-Bike systems

Cluster 3: Measure leader introduction to the business model

Measure Leader: César García (Sagulpa)

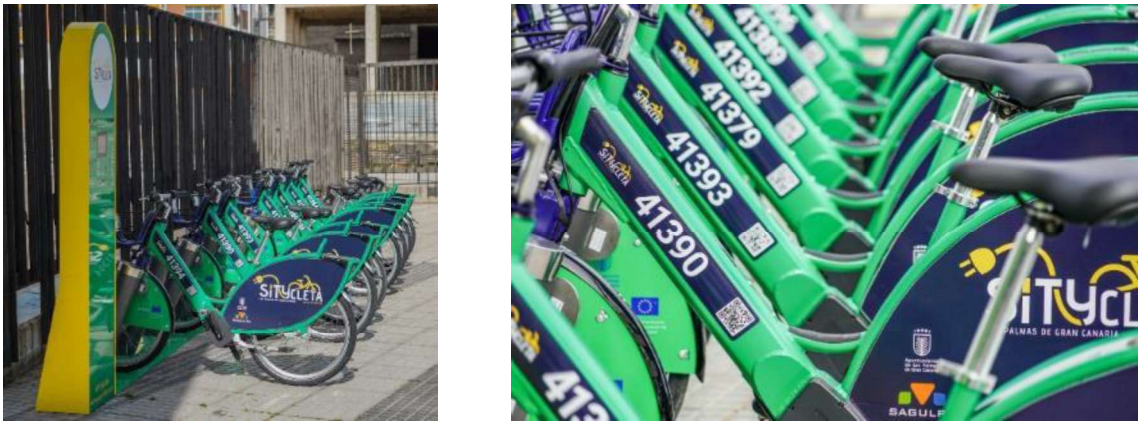

Figure 7: E-bike systems in Las Palmas: the Sítycleta e-bikes

Section 1: Description of the Business Model

(1) Customer segments

The Sítycleta aims to offer a sustainable mobility service to three main targets groups:

- **Residents in Las Palmas de Gran Canaria**: besides offering a-high-quality mobility service to residents, the Sítycleta contributes to enhance the attractiveness of the city in many ways (stations are well integrated into the public space, etc.).

- **Commuters from other parts of the island of Gran Canaria**: some stations are located nearby the most important transport hubs of the city (park&ride *El Rincón*, main bus stations such as *Santa Catalina*, *San Telmo* or *El Teatro*) in order to foster multimodality. The Sítycleta aims to be the mobility service for first/last mile trips of this target group.

- **Tourists**: the system is very tourist-friendly because it is easy to get registered and to use it. For instance, the registration is free of charge and tourists have to confirm their payment method (that can be a credit card) only before the first rental. The system requires a deposit of 1 € which can be used in all fare types.

(2) Value proposition

The Sítycleta is station-based bike sharing (SBBS) system that includes 40 bike stations (with a capacity of 10 bikes per station) – 5 of them with smart totems placed at touristic areas that offer real time information –, 35 solar-powered smart signs, 375 smart bikes with a solar-powered on-board computer that connects to the central servers with GPRS, 20 e-bikes and 2 adapted bikes accessible for physically impaired people.

The Sítycleta service is based on the key following features:

- **High-quality equipment:** the bikes are resistant to salty air (thanks to the Aluminium frame and anti-corrosion treatment) and have an electronic anti-theft mechanism in the front fork controlled by an on-board computer. The former bike sharing scheme (LPAbyBike) had a quite high vandalism rate (an average of 200

incidents per year were registered and 7 bikes were stolen every month). The mix of the anti-theft mechanism and the on-board computer that allows real-time tracking of the bicycles contributed to a reduction of the vandalism rate (only 40 incidents were registered in 2019 compared to over 230,000 usage of bikes).

- **Digital-based service:** the bikes are equipped with an on-board GPS device that allows self-tracking and location in real time.

(3) Channel

The Sítycleta service is sold to our customers through different channels. The sign up could be done using the following channels:

- **WEBSITE**: https://secure.nextbike.net/de/en/register/
- **APP**: by downloading the app on Apple Store or Play Store and then registering via smartphone: https://play.google.com/store/apps/details?id=de.nextbike.sitycleta&hl=ca
- **TERMINAL**: if a potential new user does not have a phone in hand, he/she can register directly at the terminal (smart totems placed in some stations).
- **HOTLINE**: our customer services is happy to help you register (calling 010).

Upon confirming the payment method, customers are automatically charged 1€. This 1€ is the customers' starting credit, they can use it for their first ride. After debit via credit card the customer account is activated immediately. Customers can change their payment method anytime.

Being a digital-based mobility service helped Sagulpa to integrate the new bike scheme into the overall urban mobility system. For instance, users can register/log in at the stations by using the same contactless card they use to ride urban buses.

The Sítycleta service is available in several languages from 7 am to 11 pm, 7 days a week.

(4) Customer relationship

Sagulpa tries to get new customers with an active communication strategy with information campaigns and raising-awareness activities (online tutorials, social media, public events, etc.).

Sagulpa tries to keep their customers with a high-quality customer service.

(5) Revenue stream

Sagulpa generates revenue in two different ways:

- Fares. Annual, weekly and monthly tariffs are available, as well as tariffsf for occasional use for any user who wants to have the opportunity to enjoy the bike-sharing system: https://www.sitycleta.com/en/prices/

- Sponsorships. Sagulpa reached an agreement with four companies for the sponsorship of the Sítycleta bike sharing scheme. Each sponsor pays 11.000 Euro/year for advertisements on the bicycles, the stations and the app. In 2019 this sponsorship had only covered 3% of the overall costs of the system.

Sagulpa is concerned about the financial sustainability of the system in the long term (revenues only covered 44% of the overall costs of the system in 2019).

(6) Key resources

The key strategic assets that are required to make our business model work are described below:

- **Physical**. The Sítycleta systems is managed from Sagulpa's headquarters in Las Palmas de Gran Canaria. All areas involved in planning and operating the system are located there (expect maintenance services): management, customer services, administrative services, etc. The maintenance of the bicycles is done in an industrial unit located in the outskirts of Las Palma de Gran Canaria. Three electric vans are involved in the rebalancing and maintenance operations.

- **Intellectual**. The data gathered by the on-board computers makes the management of the system easier (availability of bikes at each station, favourite routes and stations, average trip times, etc.). It also helps Sagulpa to optimize the efficiency of its rebalancing operations to serve the maximal demand as possible.

- **Human**. Sagulpa's staff is the key resource of the Sítycleta system thanks to their high commitment, creativity and knowledge.

- **Financial**. The allocation of funding for the Sítycleta is assured in the short term because revenue earned from parking management is used to fund this new sustainable mobility service (push & pull strategy).

(7) Key activities

The key activities that are absolutely vital to delivering Sítycleta's value proposition are described below:

- Keeping the digital service running.
- Rebalancing and maintaining the bikes.
- Customer service.

(8) Key partnerships

Sagulpa is a private company fully owned by the Municipality of Las Palmas de Gran Canaria, responsible for all operations involved in offering a bike sharing scheme to both residents and tourists (maintenance, rebalancing, customer service, etc.). Besides this, Sagulpa is also in charge of some other public services such as the parking management, off-street parking facilities, public tow, etc.

NEXTBIKE is the key partner of Sagulpa in order to run the service. NEXTBIKE is a European market leader and bike sharing pioneer that won the tender to supply the stations, bicycles and spares. Moreover, NEXTBIKE also provides the back-end app.

(9) Cost structure

The CIVITAS DESTINATIONS funding was an opportunity to overcome some capital costs barriers to replace the former LPAbyBike (the Municipality of Las Palmas de Gran Canaria and Sagulpa were struggling to allocate enough budget to purchase all the necessary equipment) and launch a new bike sharing scheme (Sítycleta).

Revenue earned from parking management is used to fund this new sustainable mobility service (push & pull strategy). Despite the allocation of funding for the Sítycleta is assured in the short term — Sagulpa is concerned about the financial sustainability of the system in the long term (revenues only covered 44% of the overall costs of the system in 2019).

Section 2: Barriers

Sagulpa is facing problems to achieve profitability due to the low maturity of services and technologies behind the Sítycleta sharing scheme. Sagulpa is trying to overcome this problem by integrating its all mobility services (on-street parking scheme, bike sharing scheme, e-charging stations, etc.) in a single App. The first stage of this integration has been accomplished in May 2019 with the update of the parking management App (https://www.youtube.com/watch?v=7RqjqCN2-0s)

Section 3: Opportunities

The on-board tracking system makes the system more flexible, making the transition from station-based sharing scheme (first stage) to free-floating easier (second stage). In fact, the main barrier to switch from station-based to free-floating is not technological but the fear to disordered parking of shared bikes in the narrow streets of the flat area of the city.

3.3.1. Cluster 3: Participants' assessment of replicability - Elba

Socio-economic factors

Enabling

- According to several surveys, stakeholders' consultations (including the local Forum of Young People), bicycle is a mode of transport very appreciated that should be incentivized and facilitated at best from municipalities and public decision makers. In many people's view bike sharing system is one of the possibilities to reach this goal and to increase the number of bikers, both tourists and citizens.
- A bike sharing system could partially solve traffic congestions and parking problems nearby the most popular beaches, improving the general quality of tourists' stay.
- The introduction of a bike sharing system, increasing the number of bikers in the territory, could also have positive impacts on air quality and general healthy state.

Hampering

- Economic obstacles could occur due to the fact that the Municipalities of the Elba Island are quite small and can hardly afford the costs. The seasonality of tourism, very high on summer but extremely little or absent in low season, would prevent a constant income to support the service.
- The bike sharing system to be eventually introduced on Elba should have a strong anti-theft and anti-vandalism mechanism, as the one experimented in Las Palmas, due to the fact that even if this phenomenon is not so frequent on the island, it should not be neglected.

Institutional factors

Enabling

- Not relevant

Hampering

- The use of a single card both for bike sharing system and the LPT would be very appreciated by public, but at the moment seems to be very complicated due to the fact that different companies would manage the two services.
- Although many people have expressed their appreciation for a more bike-friendly city/island, there are still many others who use private car very often, even for short trips. The introduction of bike sharing systems would require investments and interventions on the roads (for example the creation of cycle paths), which should be widely agreed.

Technological factors

Enabling

- As for Las Palmas, also for some cities of Elba Island such as Portoferraio and Rio, the problem of making the service suitable for people living in high neighborhoods will arise. For this reason, it would be necessary that at least some of the bicycles were electric. In conclusion, a station in the upper part of the city equipped with e-bikes would be very appreciated and successful.
- Considering the corrosive action of salt and atmospheric agents on the Island, the good practice of Las Palmas to choose bicycles in aluminum and with anti-corrosive treatment would be necessary and extremely useful to make the vehicles last over time.

Hampering

- The size of the Island of Elba (223km2) and the distances between the 7 Municipalities, would probably make it difficult to introduce a bike sharing on the whole Island. However, some municipalities, such as Portoferraio and Rio could benefit from it.
- The bike sharing system would not make sense without preventive works aimed to make the urban areas more suited to this mode of transport. Nowadays there are few cycle paths or safe routes in the whole island (except for hiking trails) and the roads are narrow and mainly occupied by cars.

3.3.2. Cluster 3: Participants' assessment of replicability - Madeira

Socio-economic factors

Enabling

- Citizens are more and more aware of climate change, so they demand the introduction of eco-friendly mobility solutions. Residents and tourists are more open to electric mobility solutions, such as electric private and public transport modes.

Hampering

- There is no tradition of using bicycle as a mode of transport in Madeira. From the census 2011, the modal share for bicycle or motorbike was only 1.18%. Considering the sample of 600 workers of HF, only around 0,5% uses bicycle as mode of transport. Also, from the surveys applied at the airport and port of Funchal it was possible to understand that almost no tourists use bicycle to move around: 2019 surveys: airport - 1 tourist in 199; port - 0 tourists in 212.

Institutional factors

Enabling

- This solution is in line with the Action Plan for Sustainable Mobility of the Autonomous Region of Madeira (SUMP ARM) already approved, answering specifically to Investment Priority 4 that aims "the promotion of low-carbon strategies for all types of territories, including urban areas, including the promotion of sustainable multimodal urban mobility and adaptation measures relevant to mitigation", foreseeing the financing for the "soft modes", such as, the construction of pedestrian and cycle paths and the implementation of public bicycles;
- In January 2020 a project for the new Cycle Network was approved, which will extend the cycle network by 2.5km, at one of the main touristic areas in Funchal. It is partially financed by the MADEIRA 14-20 program.
- With DESTINATIONS (MAD 4.1 and MAD 7.1), the local team has been working to provide sustainable mobility, promoting the use of more energy efficient vehicles, in public and private sectors, through awareness campaigns, demonstration programs with buses, installation of EV charging points and incentive schemes.

Hampering

- During MIMOSA project, the Municipality of Funchal tried to establish an electronic bicycles and scooters rental service (2009-2011), but without success. By then 3 tender processes were launched but no proposals for implementation were received, due to the requirements of the solution and financial constraints.
- Also, HF implemented a Bus&Bike measure under MIMOSA, but by then, the increase on the usage of bicycle was only 0,7%. The measure is no longer in operation due to low usage rate and technical issues related with the racks that caused constrains during the bus washing process, causing damages on the rack infrastructures.

Technological factors

Enabling

- Madeira population is open to innovative solutions that aim to provide sustainable mobility.

Hampering

- The Regional orography and weather are definitely a challenge as Madeira is characterized by very steep and narrow streets with very humid climate. Such factors would require a technological perspective, robust equipment and infrastructures, with enhanced capacity to deal with the unique orography.

3.3.3. Cluster 3: Participants' assessment of replicability - Rethymno

Socio-economic factors

Enabling

- Great acceptance by potential users of the sharing systems especially tourists and students.
- Eco – friendly and entertaining alternative mobility solution both for commuting and sightseeing.
- Positive economic return for tourist and commercial activities that can be developed on the e-bikes and the e-scooters.

Hampering

- There is significant opposition from various stakeholders (taxi drivers, car rental companies)
- Pedestrians and car drivers are disturbed by the misuse and sometimes the unsafe driving of the sharing system users.
- Large numbers of e-bikes and e-scooters abandoned on pavements and parking spaces disturbing the pedestrians and the city's functionality.

Institutional factors

Enabling

- Rethymno Municipality is in favor of the e-bike sharing systems in order to provide sustainable alternative mobility solutions.
- There is a good collaboration between the Bike Sharing System provider and the municipality to agree on the regulatory framework until a national regulatory framework is published.

Hampering

- The lack of national regulatory framework causes multiple problems and obstacles in the operation and regulation of the systems.

Technological factors

Enabling

- The information system technology for the Bike Sharing System is mature and widely commercialized.

Hampering

- The obligatory use of smartphones makes it difficult for elderly people to use the systems.

The following table summarises the Cluster 3 conclusions.

Cluster 3: E-Bike systems		
Enabling factors	Socio-economic factors	Biking is becoming increasingly popular among tourists.
	Institutional factors	Integration with local transport policy and mobility strategy
	Technological factors	No relevant technological barriers
Hampering factors	Socio-economic factors	Long-term economic sustainability of business model may be undermined by lack of revenues
	Institutional factors	Stakeholders involvement, e.g. educational campaigns, may be needed to raise awareness
	Technological factors	Not relevant.

Table 3: Cluster 3: E-bike systems: enabling and hampering factors for business model replicability

3.4 Cluster 4: Sharing mobility culture

Cluster 4: Measure Leader introduction to the business model

Measure Leader: Thomas Papadogiannis (Rethymno Municipality)

Figure 8: Sharing mobility culture in Rethymno: dock less e-bikes and e-scooters

Section 1: Description of the Business Model

Both e-bike (Bikeazy) and e-scooter (Lime) sharing systems operating in the city of Rethymno Municipality provide an alternative mobility solution for the locals and visitors of the city. Both systems are free floating and the user can locate and use the e-bikes / e-scooters using the dedicated app of each provider. The free-floating sharing systems are a convenient and easy-to-access service since the users can locate a vehicle and rent it for a ride, releasing it at the end of its ride/on its final destination with no need to search for an available docking station nearby. On the other hand, vehicles need to be continuously redistributed during the day, in order to avoid large numbers of scooters and bicycles gathered in popular destinations.

(1) Customer segments

The main target groups of the sharing mobility systems are:

- Local residents offering a green micro-mobility alternative solution for their everyday commuting needs mainly near city centre where traffic congestion is noted and there is limited parking space.
- Students attending lessons in the University of Rethymno. The mobility sharing systems operating in Rethymno provide an affordable alternative mobility solution to university students traveling to or from the local university which lies about 15km outside the city of Rethymno.
- Tourists visiting the city of Rethymno. Both systems are actually tourist oriented since tourists are the vast majority of the customers. Both e-bikes and e-scooters are an excellent solution for commuting from/to the hotels into the municipality area, going an entertaining and fun journey through the historic city center and the city's coastal road.

(2) Type of stakeholders involved

During the design phase multiple consultations were held with major touristic stakeholders in Rethymno in order to accommodate and promote the use of the systems. The most important stakeholders involved are the Hoteliers association and the Association of rental rooms and apartments. During the consultation phase there were also negotiations with the law enforcement services such as the Traffic Police Department and the Port Authority responsible for the beach.

(3) Cost structure/revenues
Both systems are operated by private companies that were responsible for the total cost of the system and receiving the total amount of revenues.

(4) Sales channels
Both systems mainly operated with the use of a tailor-made mobile Application to register and pay via their smart phones.

(5) Revenue stream
Both systems are completely managed by private companies responsible for the operation and the maintenance of the systems. Rethymno Municipality actively supports the operation of the systems and promotes the use of e-bikes and e-scooters while also monitors and regulates the operation of the systems in order to avoid the misuse of them (vehicles overloading on pavements, use of vehicles on forbidden and pedestrianised zones etc.).

Section 2: Barriers

The key barrier faced in the BM implementation is the lack of regulatory framework, which is one of the reasons behind the strong opposition from taxis drivers, car rentals companies, etc. In addition, there were and still are plenty of legislative issues to be solved. In Greece there is still lack of a proper and modern legislation for the proper use of electric scooters and electric bikes and especially for sharing mobility systems making it exceedingly difficult to define a framework of operation accepted from all parties involved.

Section 3: Opportunities

The central government has announced that a legislative framework is to be published very soon to provide a modern regulatory framework for the operation of the mobility systems and the circulation of the e-scooters and e-bikes in Greek cities. We believe that the regulatory framework will put an end in the disputing among different stakeholders and will provide us with a useful tool to reassure the safety of the pedestrians and the convenience of the mobility sharing system users.

3.4.1. Cluster 4: Participants' assessment of replicability - Elba

Socio-economic factors

Enabling

- The creation of an e-bike sharing system in Portoferraio would be appreciated by both tourists and residents for local trips
- An e-bike sharing base installed on the outskirts of PF in a car park, would be appreciated by non-residents in Portoferraio (park and ride) and could reduce the presence of private cars in the centre
- A communication campaign to disseminate and promote the use of the Public Bike System will be very useful for the measure success

Hampering

- The dimensions of Portoferraio and Rio are too small in order to install a free-floating system. A dock system would be economically sustainable during the summer season in Portoferraio.
- Rio's morphology hinders the use of e-bikes
- The morphology of the cities (many climbs) allow a limited number of scooters

Institutional factors

Enabling

- The Elba municipalities are keen on increased use of both public and private electric means of transport and are open to collaborate with private subjects for the implementation of public sharing systems.
- The Elba municipalities are very favorable to the greater use of electric bike also by private.
- The Elba municipalities can actively collaborate with private stakeholders for the promotion (advertising campaigns, conferences, demonstrations, events, etc.) of the use of public electric vehicles.

Hampering

- The dimensions of Portoferraio and Rio are too small to lose to a free-floating System. Rio's morphology hinders the use of e-bikes

Technological factors

Enabling

- The technology for dock station or free-floating e-bike sharing system is very mature and experimented.
- Many materials and examples are available for advertising campaigns to promote the use of e-bikes

Hampering

- N/A

3.4.2. Cluster 4: Participants' assessment of replicability - Las Palmas

Socio-economic factors

Enabling

- Traditionally, factors such as its insularity, the distance from the European continent and the lack of raw materials have constituted important disadvantages for the development of the Canary Islands' economy. In fact, its economy relies too much in the service sector, especially in those activities related to tourism. Despite the GDP in purchasing power standard (PPS) per inhabitant has been slowly increasing in recent years, it is still below the national and EU average. This weak economy has led to an increased interest in activities that supplement income and provide access to goods and services, rather than ownership, because of the lower costs involved.
- The rise of sharing economy as a lifestyle trend, particularly among the youngsters. The dense population of people in an increasingly urban society enables sharing with less friction while a desire or necessity for more independent lifestyles with part-time work attracts people to the sharing economy.

- The traffic congestion is severe in Las Palmas de Gran Canaria, partly because roads and other forms of transport infrastructure are inadequate and in disrepair, and partly because traffic patterns are complex. In that sense, shared mobility services will probably do the most to satisfy rising demand for mobility in the coming years.

Hampering

- The city (as well as the whole region) suffers from clear weaknesses caused mainly by the fragile innovative and environmental systems of the islands. The business ecosystem of the Canary Islands relies heavily on the geographical location and the particular characteristics of the archipelago.
- Based on the results of the Regional Innovation Scoreboard 2019 (RIS 2019), Canarias ranks as a "Modest + Innovator", with innovation performance increasing over time.

Institutional factors

Enabling

- The University of Las Palmas de Gran Canaria is the main public research, technological development and innovation agent in the city and the whole island.
- The Canary Islands Government has created the Canarian Spaces and Technology Parks, conceived as physical spaces in which knowledge-based companies have the environment needed to engage in high productivity and high value-added activities.

Hampering

- The Canary Islands institutional framework is quite complex, and it is difficult to prioritize policies that are suitable for all islands. The legislative power is exercised by the Canarian parliament, while the Canarian government is the executive power. The region has seven island councils or 'Cabildos' (one per island) which, according to the Statute, "are the Units of government, administration and representation of each island". Local government corresponds to the town halls).
- The cumbersome bureaucracy makes it difficult to attract companies.

Technological factors

Enabling

- The two main providers of mobility services in the city (Guaguas Municipales and Sagulpa) have a high technological profile.
- The broadband diffusion in the Canary Islands is high: 99% of the households had internet access in 2017, the same as the national average (Eurostat, 2019).

Hampering

- N/A

3.4.3. Cluster 4: Participants' assessment of replicability - Limassol

Socio-economic factors

Enabling

- Residents and Tourists will appreciate all services by the use of the extended bike sharing system.
- Increase the number of Bike Sharing System users.
- Increase the number of bikes and e-bikes available for rent

Hampering

- Registration procedure is not very easy and sometimes the users had to contact the Bike Sharing Company's head offices for guidance.

Institutional factors

Enabling

- There is good collaboration between LTC and all Municipalities in Limassol Region that gave the appropriate permissions for the installation of the new bike sharing system.

Hampering

- LTC collaborated with local authorities to hold the appropriate permissions for the installation of new equipment. This may cause some delays.

Technological factors

Enabling

- The new bike sharing services attract more tourists as it is very easy to use and connects more points of interest in Limassol Region.
- The BS Company collaborates with more than 600 shops in Limassol Region that can provide a special card for the use of BS services.

Hampering

- Sometimes the mobile roaming system does not work properly so users have problems with the 3D Security system.

The following table summarises the Cluster 4 conclusions.

Cluster 4: Sharing mobility culture		
Enabling factors	Socio-economic factors	Sharing economy is rising as a modern and young life-style trend.
	Institutional factors	An appropriate legislative framework is needed, to regulate shared services terms of use
	Technological factors	Availability of mature technologies
Hampering factors	Socio-economic factors	The role of private operators is important for a service management: need for the municipality to reach agreement and ensuring level playing field.
	Institutional factors	To overcome opposition from stakeholders in the mobility sector (taxis, private operators, etc)
	Technological factors	Not relevant.

Table 4: Cluster 4: Sharing mobility culture: enabling and hampering factors for business model replicability

4 On-line sessions

4.1. Cluster 1: PT traveller information systems

The Cluster 1 on-line session was held on June 23rd 2020, with the following participants:

- Christina Kanellaki – Limassol Tourism - (Measure Leader)
- Antonio Artiles del Toro - Guaguas Muncipales - (Las Palmas)
- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini – MEMEX - (Elba)

The discussion was steered by ISINNOVA – Riccardo Enei and Stefano Proietti – on the basis of a list of topics, as emerging from the Measure Leader description of business model and the participants' identifications of factors hampering (-) and enabling (+) the business model application. The identification of hampering and enabling factors followed the framework adopted in the analysis of business model replication (D. 8.7): the three dimensions of socio-economic, institutional and technological domains are deemed to influence the business model applicability, and therefore are considered as criteria for the identification of the most relevant factors.

Socio-economic domain

(1) (+) High potential for raising revenues, e.g. commercial advertisements for events of interest to tourism and residents as well, etc.

(2) (-) Investment and maintenance costs, which can be high according to the complex set of interventions carried out by PT Limassol traveller information system.

(3) (-) Vandalism, which can hamper the installation of real-time information equipment at bus stops.

Discussion:

The discussion on the socio-economic factors stressed two aspects:

(1) Raising revenues from commercial advertisements needs an appropriate regulative framework. The positive experience of Limassol is based on a tight collaboration between local and national stakeholders, i.e. the Ministry of Transport, regional and local PT operators and local municipality, making regulation for channelling commercial advertisements on public bus possible and effective.;

(2) Investment and maintenance costs may be high. The PT Limassol traveller information system benefits of an architecture (a content management system, a network of displays on and off the buses, a real-time information system based on GPS sensors) which requires upfront investment. On the other hand, the use of real-time information systems powered by solar displays makes maintenance costs lower than the traditional equipment connected to the electric grid.

Institutional domain

(1) (-) Rules and regulation for allowing commercial spaces, tourist/resident public information.

Discussion:

As stressed in the discussion on socio-economic aspects, an appropriate institutional framework is an important component for a successful application of the PT Limassol traveller information system. For example, the experience from Madeira points out that public buses cannot use information systems to convey private commercial advertisements.

Technological domain

(1) (-) Information updating is costly.

(2) (+-) Mixed signals: on the one hand, technologies for PT information systems, both on and off bus are considered mature and available; on the other hand, the PT Limassol traveller information system is based on a complex architecture, which is underpinned by relevant investment (about 1 M € among equipment at bus stops (25), software installation and training).

Discussion:

An important component influencing the technological viability of the business model is the composition and number of PT operators. For example, in Las Palmas and Madeira, the presence of several types of buses may hamper the smooth definition and implementation of common technical settings.

Insights from the transferring jam

The PT Limassol traveller information system is a successful business case, making PT use easier, with potential for raising revenues from commercial advertisements. However, the replicability in different context is subjected to the following pre-condition: collaboration among stakeholders at different levels (national, regional and local), in order to define a level playing field for private operators and willingness to develop a complex technical architecture, involving the capability to provide real-time information (GPS) and management of information (content management system). In terms of factors reducing implementation costs, the adoption of solar powered equipment is beneficial, in association to a homogeneous bus fleet structures, i.e. similar buses, favouring the installation of equipment and displays with common technical settings.

4.2. Cluster 2: Integrated payment solutions

The session was held on June 23rd 2020, with the following participants:

- Antonio Artiles del Toro - Guaguas Muncipales - Las Palmas (Measure Leader)
- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini – MEMEX - (Elba)
- Federica Andreucci (Portoferraio Municipality – Elba -)

The discussion was steered by ISINNOVA – Riccardo Enei and Stefano Proietti – on the basis of a list of topics, as emerging from the Measure Leader description of business model and the participants' identifications of factors hampering (-) and enabling (+) the business model application. The identification of hampering and enabling factors

followed the framework adopted in the analysis of business model replication (D. 8.7): the three dimensions of socio-economic, institutional and technological domains are deemed to influence the business model applicability, and therefore are considered as criteria for the identification of the most relevant factors.

Socio-economic domain

(1) (+) High potential for integrated tickets (Card) if the network of hoteliers' association can be involved.
(2) (+-) Geographical and socio-economic structure (territorial density) may favour/hamper PT network and accessibility.
(3) (-) The issue of raising market shares for PT (touristic demand).
(4) (-) The installation of vendor machine may favour selling tickets, but vandalism must be faced.
(5) (-) Upfront investments may be high.

Discussion:

The Las Palmas integrated payment solution for mobility and tourism (LIVE) is a smart Touristic Card part of a more general strategy to develop pricing strategies addressing tourism and mobility, in order to capture additional market shares for urban public transport.

The discussion on socio-economic factors stressed two main aspects:

(1) The importance of channel distribution. Given that tourists demand represents one of the most important targets, to engage the distribution network of hoteliers' association would be a key pre-condition.
(2) Market competition with other operators. It is important to stress that tourists' mobility, particularly in islands, is served by a complex supply of transport services (e.g. taxis, tourist guides, tourist buses, etc), all potentially competing with local PT services. It is therefore of primary importance for PT to develop strategies aiming at meeting tourists' demand, whose characteristic depends on local market and needs. For example, in Las Palmas, one of the biggest tourists' demand component is that of cruisers, that must be convinced to use PT on the basis of their specific needs, e.g. smooth direction to historical sites and local attraction, due to lack of time available to stay at destinations.

In some cases, also the specific geographic typology of the destination may shape touristic demand. For example, in Elba the territory is impervious, and it may take too much time to visit all the attractions. Therefore, a PT one-day smart card may be not attractive.

Another socio-economic topic is the required investment level, which depend on the type of smart card. In Las Palmas, the smart card is contactless, needing dedicated vendor machines to be installed in several buses and services. The possibility to pay through smartphones would raise investment costs a lot, due to the need to update payment software, agreement with bank channel, etc. However, it has been stressed that making payment available through Short Message Service would lower management costs.

Institutional domain

(1) (-) Need of an agreement with stakeholders (sales channels) and transport operators.

Discussion:

As stressed in the discussion on socio-economic factors, the most important institutional factor is the capability to ensure a network of channel distribution through agreement (win-win solutions) with stakeholders, in particular hoteliers' associations. In Elba, for example, the agreement between transport operator and hoteliers' associations is considered an important achievement.

Technological domain

(1) Maintenance of vendor machines.
(2) Shortage of qualified staff.

Discussion:

The discussion pointed out that maintenance of vending machines may be a problem, due to lack of qualified technicians in the islands.

Insights from the transferring jam

It can be said that the crucial issue for the sustainability of the Las Palmas integrated payment solution business model is the need to capture tourists' market shares. The indications provided to the participants are important: striving for making PT more appealing for tourists and other market segments means tailoring supply to specific users' needs, finding new potential demand. For example, tailoring mobility services to new demand from Erasmus students (mobility to and from University).

4.3. Cluster 3: E-bike systems

The session was held on June 26th 2020, with the following participants:

- César García – SAGULPA - Las Palmas (Measure Leader)
- Jordi Casas - CINESI - Las Palmas
- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini – MEMEX - (Elba)
- Maria Aryblia (TUC – Rethymno - Crete)

The discussion was steered by ISINNOVA – Riccardo Enei and Stefano Proietti – on the basis of a list of topics, as emerging from the Measure Leader description of business model and the participants' identifications of factors hampering (-) and enabling (+) the business model application. The identification of hampering and enabling factors followed the framework adopted in the analysis of business model replication (D. 8.7): the three dimensions of socio-economic, institutional and technological domains are deemed to influence the business model applicability, and therefore are considered as criteria for the identification of the most relevant factors.

Socio-economic domain

(1) (+) High potential because bicycle is becoming a popular transport mean, demand for eco-friendly services is booming (tourists may be well disposed toward the use of bicycle, naturalistic paths, etc.).
(2) (+-) There are economic thresholds, critical mass of subscribers to be economically sustainable in the long period (in particular, if private operators are involved); integration is the key.
(3) (-) Vandalism.
(4) (-) Geography and territorial landscape.

Discussion:

The socio-economic factors underpinning a sustainable business model for e-bike systems rely on the capability to reach a critical mass of users, overcoming the cyclical demand (e.g., during winter seasons demand is low). The public management of the service may offset low demand: for example, in Las Palmas the service (Sitycleta) is managed by SAGULPA, a private company fully owned by the Municipality of Las Palmas, that can subsidise the service (using revenues from parking management). However, examples of fruitful cooperation with private operators, e.g. the Rethymno e-bike service, show that a strong presence of public operators is not strictly necessary. Rather, high-quality equipment (against vandalism), digital-based services (making user friendly the service) and customer services are considered as key requirements. All these components, however, are destined to raise investment costs.

The discussion stressed that another important component for a sustainable business model is the effort towards the integration with the overall urban transport system. For example, in Las Palmas, the user can subscribe to the service using the same smart card to ride urban buses. Other possible ways of integration address intermodality, e.g. integration with parking areas, bus and train station, park&ride schemes, buses, etc.

It should be also considered the influence of geography and urban landscape. In Elba and Madeira, for example, geography conjures against the use of e-bike: impervious destinations, distance, steep and narrow roads.

Institutional domain

(1) Opposition from stakeholders and transport operators.
(2) Need of effective communication strategy, information campaigns, changing habits, etc.

Discussion:

An appropriate institutional framework in terms of reaching an agreement with stakeholders (e.g. opposition from car rental companies and taxi drivers were registered in Rethymno) and effective communication campaigns to promote the transport means are required. In particular, in the case of free-floating services, in which bikes can be left at the point of destination, information campaigns and an efficient regulatory framework are required.

Technological domain

(1) (+) Easy to connect, reliable technology.
(2) (–) The use of smartphones may be uneasy for older people.

Discussion:

The basic requirements of the service are easy to implement (App, GPS, etc), in particular whether a private operator is involved. However, anti-theft and anti-vandalism techniques may increase the challenge. Digital-based techniques may also cause a feeling of discomfort in elderly users.

Insights from the transferring jam

The Las Palmas e-bike service (Sitycleta) proves to be effective and moderately self-sustaining (about 50% of revenues from subscribers and sponsorship in 2019). The strong emphasis on the need of supporting communication strategies, customer services and the overall management of the service (e.g. bike maintenance, rebalancing of supply to meet demand) is also confirmed by the Rethymno e-bike service. The key message to the participants is that the business model should try to integrate e-bike with other transport solutions, possibly using a common platform (an App).

While technical solutions are available and mature; the most important constraints are organisational and institutional, e.g. rebalancing supply and demand in free-floating services, information campaigns on correct use of e-bikes and anti-vandalism policies.

4.4. Cluster 4: Building a sharing mobility culture

The session was held on July 3rd 2020, with the following participants:

- Thomas Papadogiannis – Rethymno Municipality (Measure Leader)
- Joana Gaudencio - Horarios do Funchal - (Madeira)
- Renato Bellini – MEMEX - (Elba)
- Christina Kanellaki – Limassol Tourism – (Limassol)

The discussion was steered by ISINNOVA – Riccardo Enei and Stefano Proietti – on the basis of a list of topics, as emerging from the Measure Leader description of business model and the participants' identifications of factors hampering (-) and enabling (+) the business model application. The identification of hampering and enabling factors followed the framework adopted in the analysis of business model replication (D. 8.7): the three dimensions of socio-economic, institutional and technological domains are deemed to influence the business model applicability, and therefore are considered as criteria for the identification of the most relevant factors.

<u>Socio-economic domain</u>

(1) (+) High potential because sharing bike and scooter in a free-floating modality is appealing for users (no need to store bike/scooter in a docking station).
(2) (-) Territorial landscape and structure not suitable for free floating.
(3) (+) Dense population, congestion, life-style, may favour sharing economy.

Discussion:

The Rethymno sharing mobility services (e-bike and e-scooters) is a valid example of collaboration between public and private operators. The private operator is in charge for

maintenance and operative aspects of the service, the Municipality supports the service in terms of law enforcement (traffic police, public safety, violation, etc).

As already stressed with reference to e-bike services, sometimes geography can hamper the development of sharing mobility services. For example, in Elba free-floating service would be unsustainable, due to the morphology (scooters) and dimension (too small).

Institutional domain

(1) (-) Private companies are involved: need to have a good governance (contractual issues, etc).
(2) (-) Several stakeholders are involved (opposition from taxi drivers and car rental).
(3) (-) Scooters and bikes need to be redistributed during the day, law enforcement, traffic department.

Discussion:

A part the involvement and collaboration with private operator, stakeholders' engagement (e.g. hoteliers associations, rental rooms associations) has been a key asset in ensuring the implementation of the service. This is particularly true in the light of the strong opposition to shared services from transport operators as taxi drivers or rental cars associations.

Technological domain

(1) (+-) Broadband technology availability is a pre-condition for efficient online services.

Discussion:

The digital approach in the provision of sharing mobility services, e.g. through the use of App, is nowadays a key requirement. Therefore, the presence of a solid infrastructure in terms of communication network is essential. In Limassol, for example, sometime the mobile roaming service is not operating at best, making the use of the shared services problematic.

Insights from the transferring jam

The Rethymno sharing mobility service may provide insights firstly as far as the collaboration with private operators is concerned. The framework for allocation of responsibility in the management and surveillance of the system may be used as inspiration for others. However, the lack of a national framework (in Greece) for shared e-mobility services has been stressed as a potential hindering factor in terms of future development of the services. Secondly, other insights may come from the attention to the stakeholder engagement: as every new mobility services, shared mobility is going to alter market shares of other transport operators, which need to be involved in finding acceptable trade-offs.

5 Conclusions

The knowledge transferring jam sessions of promising business models for tourists and residents focused on two types of solutions:

(1) **Solutions aimed at increasing public transport (bus) use,** both providing more information to the users - including advertisements for intresting local events for tourists and residents, and integrated payment solutions such as smart cards in order to facilitate the use of local Public Transport by tourists and residents;
(2) **Solutions aimed at promoting slow modes of transportation** (i.e. bicycle, both traditional and electric), either in isolation or in sharing systems, following in that the general trend (known as “slow tourism”), which tries to combine local life-styles and sustainability.

These solutions have been selected and classified in four clusters, among a panel of measures addressing several transport policies, e.g. the management of freight transport, the establishement of Mobility Agencies and Green Mobility Awards, the development of travel planners and examples of smart parking[1].

The selection of measures improving public transport and supporting green mobility can be considered as potential example of business model combining sustainable mobility with tourists and residents needs.

The following strengths and weaknessess can be identified according to the Measure Leaders indications and participants feedback, as collected during the transferring jam sessions. The analysis focuses on the pre-conditions in order to make these business models replicable, i.e identifying strenghts and weaknessess to their replication in the DESTINATION sites.

With the necessary caveats, despite the fact that most of the considerations on limitations and potentiality of the business models are related to specific situations in the DESTINATIONS sites, the transferring jam knowledge-base and the related conclusions could be used for replicability in other contexts.

The following table summarises strenghts and weaknessess for the replicability of business models related to the specific measures improving public transpot and promoting green mobility.

[1] The full catalogue of DESTINATIONS Business Models is described in the Del 8.7 of DESTINATIONS “Business Model Catalogue”

Business Models replication		
Type of solutions	Strengths	Weaknesses
Solutions aimed at increasing the use of road public transport (bus)		
1. Integrated payment solutions (tourist smart card).	Easiness, simplicity and fairness. Potential increase of revenues.	Competition with other transport solutions. Increased demand for public transport services.
Solutions aimed at promoting slow transport modalities (i.e. bicycle, both traditional and electric)		
2. E-bike systems (including conventional bikes).	High appreciation from tourists, potential high demand.	Long-term economic sustainability (low revenues) and cross-subsidisation. Geography matters.
3. Shared mobility (e-bikes and e-scooters).	Sharing mobility is popular and appreciated – e.g. free floating schemes. Availability of digital solutions.	Regulative framework (safety, enforcement, security). Agreement with stakeholders (e.g. taxi drivers, rental cars).

Table 5: Business models strengths and weaknesses

In terms of replication, addressing business models strengths and weaknessess in Table 5, the following path to replicability can be identified, by cluster:

- Solutions aimed at increasing the use of public transport (bus): Cluster 1) PT information system. To maximaze the benefit from commercial advertisements, an appropariate regulative framework must be established. Such a framework should harmonise (and integrate) several types of information, combining space and role of private commercial advertisements, public transport information and touristic information. Considering the complexity of the system for providing updated information, e.g. displays, real-time information on traffic conditions, content management system for coordinating information flows, a strong coordination among stakeholders is required (transport operators, municipalities, national and regional government).
- Solutions aiming at increasing the use of road public transport (bus): Cluster 2) integrated payment solutions. Competition with other transport options is a crucial issue, considering that touristic buses, taxis, excursionist tours, etc, exert an important role in meeting transport demand from tourists. Road public transport should diversify sale channels (traditionally based on residents' needs) trying to capture tourists' demand through added value, e,g, tailoring transport solutions to tourists through direct connections to attractions, or providing tickets at an earlier stage of the customer journey, in combination with other transport modes.
- Solutions aim to promote slow transport modalities: Cluster 3) e-bike systems. Bicycle services alone (electrical or traditional) are rarely profitable services, at least in the long-period. Cyclical demand, lowest in winter times, difficulties from geography and urban configurations, lack of tradition and cutural habits, may

hamper to reach a critical mass for making the service economically sustainable. The solution lies in the integration of cycling in the mobility system, favouring intermodality and using digital technologies to make the experience user-friendly and flexible.

- Solutions aimed at promoting slow transport modalities: Cluster 4) Shared mobility. The key barrier to the development of shared mobility services, e.g. e-bike and e-scooters, is not technological (applications are mature and widley commercialised) but organisational and institutional. Free-floating solutions, allowing the user to pick-up and leave the transport mean wherever he/she likes, imply the management of vehicles redistribution to meet demand, negotiation with law enforcement, traffic police and information campaigns to ensure safety to pedestrians and residents. The capability to involve stakeholders, including private transport operators, is equally important. Regulations need to allocate responsibilities between the public domain and the private operators, generally responsible for the operation and maintenance of the system.