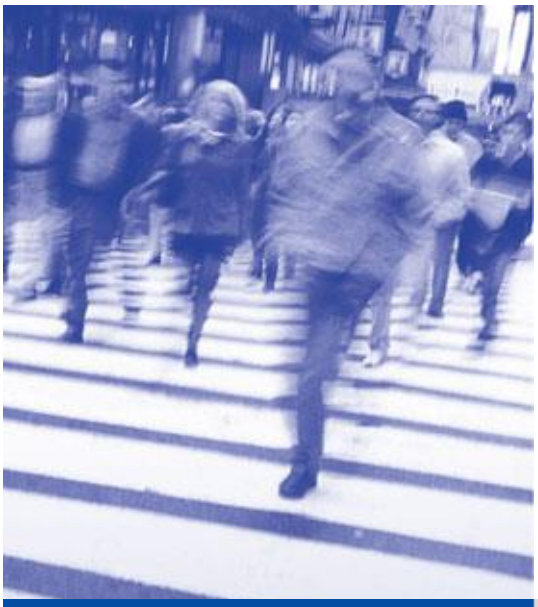

2020 CiViTAS
Cleaner and better transport in cities

DESTINATIONS

D7.2. Implementation Report for Measures Related to Public Transport Enhancement

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Responsible Author(s): Antonio Artiles (Guaguas)	
Responsible Co-Author(s): Jordi Casas (Cinesi) Rethymno: Natalia Kiriakopoulou, NatasaThomadaki, Manos Papagiannakis, Thomas Papadogiannis, Nikos Vovos (RETH), Eleni Farmaki, Stavroula Tournaki (TUC) Malta: Ritianne Buhagiar (TM), Alexandra Ellul (TM) Madeira: Andreia Quintal (HF), Claudia Henriques, Fábio Pereira (AREAM), José Augusto Vieira (CMF) Elba: R. Bellini (Memex), M. Ribaudo (PF), F. Andreucci (PF), R. Cecchini (PF), A. Mercantelli (Rio) Limassol: Christina Kanellaki, Fiorentina Poulli (LTC)	
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Status:	Final
Dissemination level:	Public

2020 CiViTAS
Cleaner and better transport in cities
DESTINATIONS

THE CIVITAS INITIATIVE
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Abstract

Innovative sustainable urban mobility demonstrations can only be assured with good planning and sound foundations. In this regard, CIVITAS measures are delivered through a tried and tested approach comprising three stages: Design, Implementation and Operations. This report focuses on the second of these and hence updates on the details of measure Implementation across the six sites.

Project Partners

Organisation	Abbreviation	Country
Horários do Funchal, Transportes Públicos	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
Authority for Transport in Malta	TM	MT
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 (South) Ltd	VECTOS	UK
Conférence des régions Périphériques Maritimes d'Europe	CPMR	BE

Document History

Date	Persons	Action	Status	Diss. Level
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25-8-18	Antonio Artiles, Guaguas	Sent D7.2 to TM for Peer review stage 1	Draft	PC, SC, TC
25-8-18	Ritianne Buhagiar	Peer review stage 1	Draft	PC, SC, TC
29-8-18	Antonio Artiles, Guaguas	Sent D7.2 to Vectos for Peer review stage 2	Draft	PC, SC, TC
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Status: Draft, Final, Approved, and Submitted (to European Commission).

Dissemination Level: PC = Project Coordinator, SC=Site Coordinator, TC=Technical Coordinator, EM=Evaluation Manager, EC=European Commission.

Site abbreviations:

ELB - Elba
LIM – Limassol
LPA – Las Palmas de Gran Canaria
MAL – Malta
MAD - Madeira
RET – Rethymno

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Executive Summary

This report details the results of demo setup, implementation activities, ITS deployment and supporting actions for all the sites as outputs of T7.3 and T7.8. It also looks ahead to the implementation phases of the various measures across the six project sites and within the measure categories.

Chapter 1 introduces the WP7 objectives and peculiarities and provides a description of the measures per cluster category.

Chapters 2, 3 and 4 present the implementation of each individual measure, grouped into the three identified clusters. This structure allows for immediate comparisons to be made about the implementation work in different sites and hence experience and knowledge to be exchanged.

1 Introduction

1.1 Overall DESTINATIONS Objectives

WP7 aims at designing, implementing and demonstrating the sites' measures targeted for the improvement of public transport (PT) service as backbone for sustainable and attractive tourist destinations.

The main objectives and tasks of WP7 activities are:

- To design, implement and demonstrate new/enhanced PT services in terms of flexibility, routing and timetables properly targeted to comply with tourist mobility and well integrated in the overall mobility offer of the sites (all sites).

- To design, implement, deploy and demonstrate ITS-enabled solutions to increase the attractiveness of PT towards the tourist and leisure transport demand:

- Info-services to offer easy and common access to integrated information on PT and tourism services removing the barriers for PT use for leisure trips (Madeira, Las Palmas de Gran Canaria, Elba, Limassol); and
- Smart payment systems to increase the flexibility of the PT offer for tourists (i.e. access to promotional tariff) and to facilitate the interoperability of payment tools (i.e. sale of bundles of services package) (Madeira, Elba).

- To enable the adoption/extension of electric and low emission fleets to increase the attractive potential of the sites in terms of sustainable destinations and to support the take up of innovative PT services suitable for leisure demand (Madeira, Las Palmas de Gran Canaria, Rethymno, Limassol).

In order to provide the activities related to site coordination, the measures have been clustered as follows:

(1) Improve PT services, introducing new lines and increasing the quality of service.
(2) Introduce clean vehicles, clean fuels and efficient driving for PT fleets.
(3) Improve integrated mobility and tourism travel information and payment services. In particular, measures in this cluster will play a relevant role in the project answering mobility needs (flexibility, improved accessibility, integrated access to mobility and transport info, etc.) generated by tourist demand and residents.

1.2 WP7 Structure and Tasks

Overall, WP7 activities are broken down into a number of cross-site and vertical tasks addressing the specific phases and operations of the piloting life cycle.

- Task 7.1 Cross-site coordination of pilots targeted to PT enhancement.
- Task 7.2 User-needs analysis, stakeholders' involvement, service requirements and supporting technologies design for pilots targeted to PT enhancement.
- Task 7.3 Site preparation, solution deployment supporting actions and demo setup for pilots for PT enhancement.
- Task 7.4 Demonstration of improved PT services for tourists and residents.
- Task 7.5 Demonstration of electric, hybrid and liquefied petroleum gas (LPG) buses (and eco-driving).
- Task 7.6 Demonstration of integrated mobility and tourism information and payment services.
- Task 7.7 Data collection for ex-ante, process and impact evaluation of piloting for PT enhancement.
- Task 7.8 Local dissemination and communication of piloting for PT enhancement.

1.3 Task 7.3

Task 7.3 Site preparation, solution deployment supporting actions and demo setup for pilots for PT enhancement.

Site-related activities will include the setup of new enhanced PT services, the implementation of ITS systems and solutions (supporting data collection, communications and information exchange services, on-board equipment, payment platforms, open data sets, smartphone Apps, etc.) including the integration of local operating systems.

1.4 Objectives of Deliverable 7.2

In this context, Deliverable D7.2 will detail the results of demo setup, implementation activities, ITS deployment and supporting actions for all the sites as outputs of T7.3 and T7.

2 Implementation of Improved Public Transport Services for Tourists and Residents

2.1 MAD 7.2 Attractive public transport

The main objective of measure MAD 7.2 is to improve the attractiveness of PT in Funchal. Better image and information of PT and promotional activities are being developed to demonstrate to tourists and residents the benefits of using PT.

Sites preparation, solutions deployment, supporting actions and demo setups

Redesigned bus stops

- Together with the work developed under measure MAD7.3, a new way to inform passengers at bus stops was defined: Include the name and photos of the main touristic points reached from the bus stop.
- Change the layout of timetables (only one direction).
- New layout of the information regarding service changes, including information in English and, when possible, a map.
- The most important information to be on the right side (sales outlets, ticket prices and conditions, promotion of information tools).

As described in measure MAD7.3, the system to produce the new timetables is in progress and not concluded yet. After that, Horários do Funchal (HF) can change the bus stops' information.

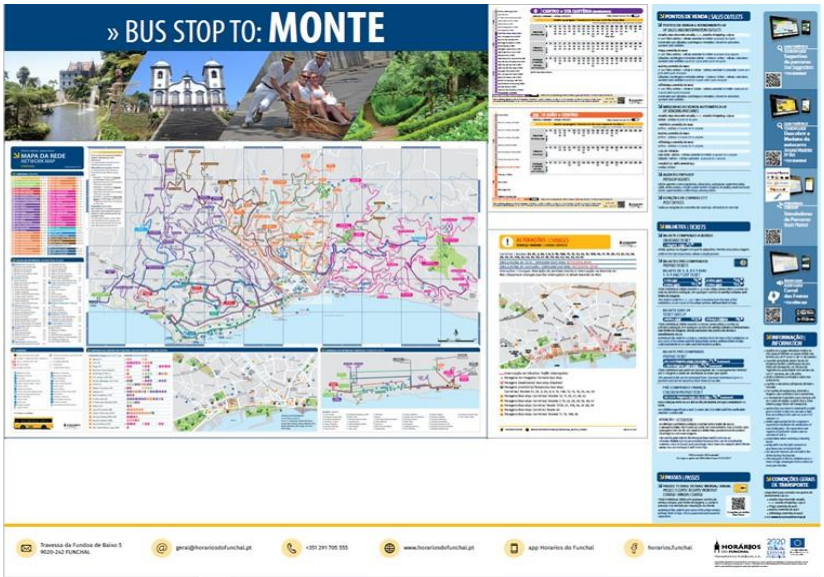


Figure 1: MAD 7.2 - Information at a Bus Stop

Tendering process to improve bus stop accessibilities

CMF (municipality) is developing the specifications for the tendering process in order to subcontract the public works that will be carried out at some bus stops to improve their accessibility, following the assessment. It is expected to be launched after summer 2018.

Videos of panoramic bus trips

HF contacted audio visual production companies to develop the concept of the videos to promote PT to tourists and residents. HF is preparing the tender process for the videos.

Restyling of 4 public transport information offices

HF studied the situation of the sales and information offices. It was found that in one office, situated in a shopping centre, it is necessary to have a queue management system due to the high demand and the variety of services done in the office. With this system, the customers could wait in the coffee shops or supermarket. In some periods, like the beginning of the school period, there is a large turnout to this point of sale.

HF is defining the technical requirements to launch the tender soon. It intends to have a monitor that can show some promotional videos, some advertising, internal or external news. The system will provide statistics that HF can use to plan a better customer service.

Local organisational and operational measures

Videos

HF made an agreement with the organization of “Miss Portuguese Madeira”. The winner of the contest will participate in a short video promoting the use of PT.

Marketing activities

Figure 2: MAD 7.2 - HF Gadgets

Horários do Funchal prepared some gadgets to promote the use of PT and the DESTINATIONS project, during events such as European Mobility Week or the school visits to the PT station.

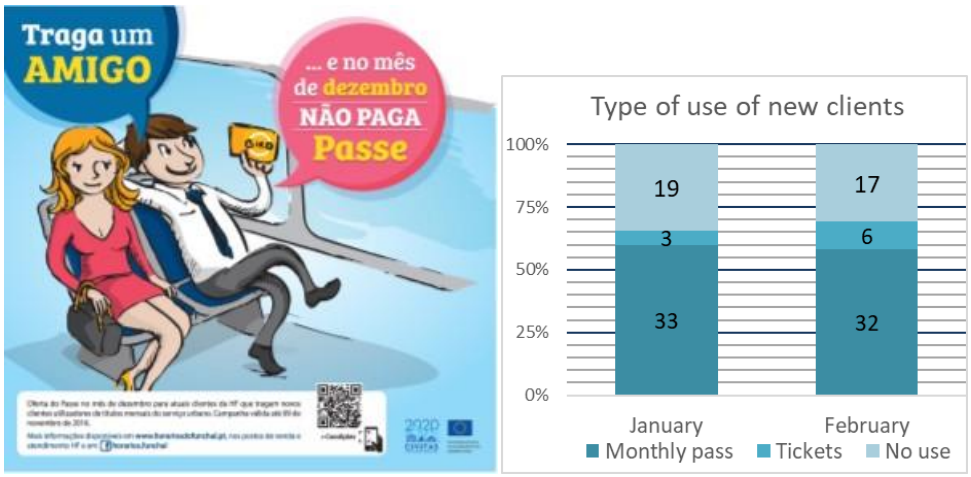


Figure 3: MAD 7.2 - Campaign Bring a Friend

As reported in the previous deliverable, HF developed some promotional activities.

HF evaluated the campaign “Bring a friend” (“Traga um amigo”) of 2016. Existing clients (monthly pass users) that introduced a new client to the service in October or November, had their pass for December free of charge. For October, there were 35 new clients and for November, there were20 new clients. In total, 55 existing monthly pass users (from a total of 20.400) brought new clients.

The “Social Pass II” was the most used (51%); this is the pass dedicated to workers without specific social contribution. The clients that brought new clients comprised 75% females and 25% males, of which 58% use the “Social Pass II”. The new clients were 56% female and 47% male. When analysing the new clients after the promotional period, only 60% continued to use the monthly pass. Some people used the card to purchase pre-paid tickets. However, 31% did not use the card which suggests they did not use PT.

HF has learned lessons from this campaign for future reference:

- The need to ask permission from participants for future contact, this will allow:
  - Questions about their mode of transport before the campaign;
  - Understanding of their awareness about the campaign; and
  - Questions about the intention to use PT in the future.

- Develop the campaign “Bring a tourist friend”, specially dedicated to local accommodation. Madeira residents that introduce a new client such as a tourist staying in local accommodation that uses daily tickets could receive a discount.
- Extend the campaign to new clients that introduce another new client; they could divide the discount.

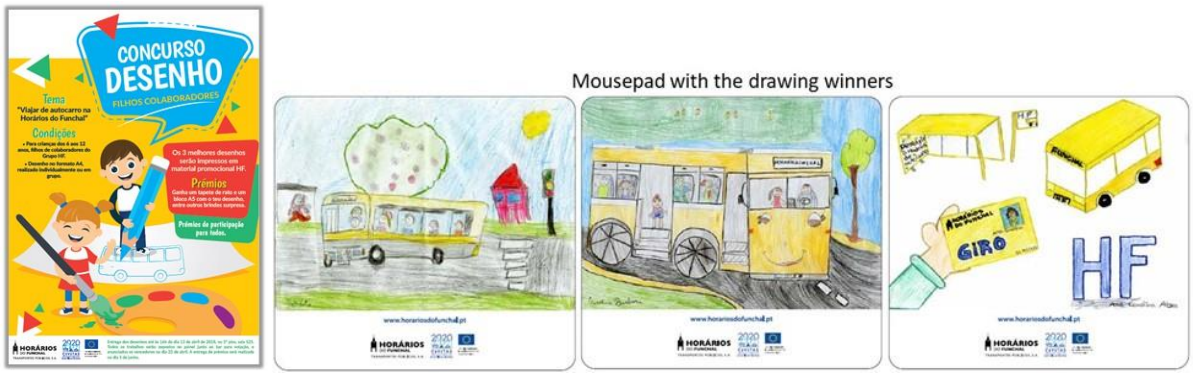


Figure 4: MAD 7.2 - Drawing Contest

HF developed an internal campaign with the staff's children, aged between 6 and 12 years, inviting the children to draw with the theme "Travel by bus with Horários do Funchal". After receiving the drawings, HF staff voted on the best. The three winning drawings will be used on advertisement material, mousepads and notepads. The winning children will receive one exemplar of each with their drawing.

This was an important campaign to promote PT inside the company and family.

2.2 LPA 7.1 Communication for the introduction of the Bus Rapid Transit (BRT)

Sites preparation, solutions deployment, supporting actions and demo setups

Las Palmas de Gran Canaria is implementing a BRT that will connect two important points in the low part of the city where 33% of the urban PT demand is located.

The construction of a BRT might cause some inconvenience to neighbours and visitors. For this reason, the main objective of this measure is to carry out a communication campaign in order to raise awareness of the importance and scope of the project, given that the BRT will bring economic and environmental benefits as well as contributing to an eco-friendly city where pedestrians are the main players.

Tendering for a 3D film

A 3D film to promote BRT system (of about seven minutes) is being recorded. Furthermore, in order to present the film on social media and other communication platforms, the film will be also available in other versions like full or ultra-high definition (Full HD or 4K).

The Municipality of Las Palmas de Gran and Guaguas Municipales need to work in a coordinated way (so a communication commission has been established where periodical meetings are held) together with the police department, the media and Geursa (the municipal company in charge of drafting the project).

Shooting a 3D film is a very complex and specialized task. It is necessary to follow the recommendations of a company with experience and knowledge in this sector. The services

of a company were contracted to prepare the tender documentation to support Guaguas Municipales during the tender process and to track the works of 3D film production.

In order to create a great 3D BRT production, a comprehensive and multidisciplinary team is needed. For that reason, the staff is composed of several professionals as film producer, light and sound technicians, actors, makeup artists, musicians, etc. Technical equipment such as a camera car, HD drones, movie set, etc. are being used.

The 3D film is expected to be shown to the general audience by the European Mobility Week September 2018.

Local organizational and operational measures

In addition, dedicated information sessions for target users such as elderly people, journalists, students, neighbourhood associations and meetings with stakeholders are being carried out.

In order to support these meetings and sessions with visual material, a short video (about two minutes) was recorded to explain the advantages of the BRT (BRT's official tradename in Las Palmas de Gran Canaria is MetroGuagua) and other promotional material was produced.

Figure 5: LPA 7.1 - BRT Promotional Video

Meetings and dedicated sessions for target users

For the introduction of this new system, Guaguas Municipales and the Municipality of Las Palmas de Gran Canaria have carried out several activities such as:

- Presentation of the commercial tradename for the new BRT system of Las Palmas de Gran Canaria (MetroGuagua) in a public event on 24th November 2016.
- Meetings and events about BRT and CIVITAS DESTINATIONS projects all over the city during European Mobility Week 2017.
- Several meetings focused on stakeholders and target groups:
  - Neighbourhood Associations (Mesa y López, Cono Sur and Ciudad Jardín) in November2017.
  - Schools (Salesianos and Teresiano) located close to the BRT route in November2017.
  - Nursing home representatives in November2017.
  - Professional Industrial Engineers Associations in November2017.
  - Professional Civil Engineers Associations in November2017.
  - Professional Architects Associations in November2017.
  - Las Palmas de Gran Canaria University manager in November2017.

- Association of Economic and Financial Experts “Real Sociedad Económica de Amigos del Pais” in December2017.
- Municipal markets representatives in March2018.
- Sport facilities managers in April2018.
- Hospitals and medical centres managers.
- Shopping centres and commercial areas managers in April2018.

2.3 RET 7.2 Improved PT for tourist and citizens

The main objective of measure RET 7.2 is to improve the PT service in Rethymno, both for residents and tourists, with better-designed routes, schedules and increased comfort. The measure involves user satisfaction surveys that are completed by residents and visitors.

The implementation of the measure consists of the following steps:

(1) User needs analysis in two temporal stages – winter (off touristic period) and summer (high touristic period)- to measure satisfaction levels and identify needs and expectations.
(2) Spatio-temporal assessment of the existing PT routes.
(3) Transport needs analysis of the cruise visitors.
(4) Redesign and rescheduling of PT routes based on the user needs analysis and the assessment of the existing PT routes.
(5) Operation of the new PT routes; a thematic route for the cruise visitors is also included.
(6) New equipment to make PT more attractive (such as informative bus stops, bike racks).
(7) PT users’ satisfaction surveys (after the launch of new routes and redesigned schedules).
(8) Suggestions for PT services optimization based on users’ surveys and stakeholders’ consultation findings.
(9) Communication activities (promotional material, informational packages).

Site preparation, solutions deployment, supporting actions and demo setup

The first and crucial step was the user needs analysis study to highlight commuters’ needs. The methodological framework of this study was based on:

(1) Literature review of commuters’ needs in Rethymno.
(2) Online research about Rethymno‘s tourist destinations and key points of interest.
(3) Structured interviews with stakeholders.
(4) Initial survey through questionnaires to locals (not necessarily PT users) on the evaluation criteria for the PT use (**survey 1**).
(5) Targeted questionnaires for PT users, locals (**survey 2**) and visitors (**survey 3**), about evaluation criteria for the PT use during also SUMP survey.
(6) PT counting/measurements to record accuracy on bus arrival time, number of passengers, bus occupancy rates, commuters per stop.
(7) Analysis of surveys and on field measurements- Recommendation report: Conclusions about users’ needs and PT evaluation criteria.

The literature review on commuters’ needs and the online research to gather relevant information through online sites, databases and tools are completed, providing initial insights for the PT users’ basic needs and interests.

The structured interviews were conducted with the method of targeted sampling to a) Rethymno citizens, PT users, b) citizens visually impaired, c) Taxi drivers, d) citizen cyclists, e) CEO of the PT Operator, f) locals working on the tourist industry. The interviewees were asked about issues related to daily travel needs, use of PT – advantages and disadvantages, features of PT that would increase its attractiveness.

The surveys to citizens (1 and 2) were organized in June 2017 and in February 2018 and received 134 and 407 responses respectively. Survey3 is being repeated during the summer period (July – August 2018) aiming to reach visitors using PT.

Surveys 1, 2 and 3 examine and prioritize the following evaluation criteria for PT use: Spatial coverage of PT service; Perceived personal security; Reliability of PT service; Door to door PT service duration; Frequency of PT services; Accessibility; Ease of PT use; Information; Cost; Comfort; Friendliness; Attractiveness and Social interaction while using PT infrastructure. The prioritization of the criteria consisted of the base for the Assessment of PT services study.

ΕΜΠ - Μονάδα Βιώσιμης Κινητικότητας
Δήμος Ρεθύμνης
Ευρωπαϊκό Πρόγραμμα 'CIVITAS DESTINATIONS'

ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ ΙΚΑΝΟΠΟΙΗΣΗΣ
ΑΠΟ ΤΗ ΔΗΜΟΣΙΑ ΣΥΓΚΟΙΝΩΝΙΑ

ΗΜΕΡΟΜΗΝΙΑ: ΩΡΑ: ΣΤΑΣΗ:
ΟΝΟΜΑΤΕΠΩΝΥΜΟ ΕΡΕΥΝΗΤΗ:

Α. Ειδικές ερωτήσεις

1. Σε ποιο βαθμό θεωρείτε πως σας εξυπηρετούν οι στάσεις της δημόσιας συγκοινωνίας;

1Α. Βαθμολογήστε την ποιότητα εξυπηρέτησης των στάσεων της δημόσιας συγκοινωνίας συνολικά (κυκλώστε έναν αριθμό)

1 2 3 4 5

1: δεν με εξυπηρετούν καθόλου - 5: με εξυπηρετούν πάρα πολύ

1Β. Βαθμολογήστε τα παρακάτω ζητήματα σχετικά με τις στάσεις της δημόσιας συγκοινωνίας από το 1 έως το 5 (κυκλώστε έναν αριθμό)

ΒΑΘΜΟΛΟΓΗΣΗ ΚΡΙΤΗΡΙΩΝ ΓΙΑ ΤΙΣ ΣΤΑΣΕΙΣ

Απόσταση της κατοικίας σας/τόπου διαμονής από τη στάση	1	2	3	4	5
Απόσταση της στάσης που θα κατεβείτε από τον τελικό προορισμό σας	1	2	3	4	5
Χρόνος αναμονής στη στάση	1	2	3	4	5
Κρουνοί ακρίβειας των δρομολογίων	1	2	3	4	5
Συνθέσεις περπατήματος προς και από τις στάσεις (πεζοδρόμια, εμπόδια, αστικός εξοπλισμός)	1	2	3	4	5
Επαρκής φωτισμός στάσης	1	2	3	4	5
Προστασία από καιρικά φαινόμενα (πχ. ύπαρξη στεγάστρου για βροχή)	1	2	3	4	5

1: δεν είναι σημαντικό - 5: είναι πολύ σημαντικό

2. Σε ποιο βαθμό θεωρείτε ότι οι συνθήκες του περπατήματός σας μέχρι τις στάσεις του λεωφορείου είναι ικανοποιητικές;

2Α. Ικανοποίηση από τις συνθήκες του περπατήματός σας μέχρι τις στάσεις συνολικά (κυκλώστε έναν αριθμό)

1 2 3 4 5

1: καθόλου ικανοποιητικές - 5: πάρα πολύ ικανοποιητικές

2Β. Βαθμολογήστε τα παρακάτω ζητήματα σχετικά με τις συνθήκες περπατήματος προς τη στάση του λεωφορείου από το 1 έως το 5 (κυκλώστε έναν αριθμό)

Ύπαρξη πεζοδρομίου	1	2	3	4	5
Κατάσταση πεζοδρομίων (οδοστρωμα, λακκούβες, σκαλοπάτια)	1	2	3	4	5
Πλάτος πεζοδρομίων	1	2	3	4	5
Κατάσταση διασταυρώσεων (διαβάσεις – σήμανση κ.λπ.)	1	2	3	4	5
Οδική ασφάλεια	1	2	3	4	5
Αισθητική του δρόμου (πράσινο κ.λπ.)	1	2	3	4	5
Ατομοσφαιρική ρύπανση	1	2	3	4	5
Θόρυβος	1	2	3	4	5
Επαρκές φωτισμός στη διαδρομή προς και από τις στάσεις	1	2	3	4	5
Ευκολία χρήσης/ προσπελασιμότητα των πεζοδρομίων από εμποδίζοντα άτομα- ράμπες (ηλικιωμένοι, γονείς με καρότσι, ΑΜΕΑ)	1	2	3	4	5
Άλλο, Σημειώστε:	1	2	3	4	5

1: δεν είναι σημαντικό - 5: είναι πολύ σημαντικό

3. Σε ποιο βαθμό θεωρείτε ικανοποιητική τη δημόσια συγκοινωνία ως προς τα παρακάτω κριτήρια; (κυκλώστε έναν αριθμό)

Την καθαριότητα των λεωφορείων	1	2	3	4	5
Την καθαριότητα των στάσεων	1	2	3	4	5
Την παροχή πληροφοριών για τις διαδρομές	1	2	3	4	5
Την παροχή εάλωψης δρομολογίων	1	2	3	4	5
Την συχνότητα δρομολογίων	1	2	3	4	5
Την συμπεριφορά / ευγένεια του οδηγού	1	2	3	4	5
Την ικανότητα / οδική συμπεριφορά του οδηγού	1	2	3	4	5
Άλλο, Σημειώστε:	1	2	3	4	5

1: καθόλου ικανοποιητική - 5: πάρα πολύ ικανοποιητική

4. Σημειώστε την σειρά για την οποία χρησιμοποιείτε συχνά τη δημόσια συγκοινωνία (σημειώστε τους 2 συχνότερους σκοπούς/ λόγους μετακίνησης)

□ Εργασία
□ Εκπαίδευση- σχολείο
□ Αγορές
□ Αναψυχή
□ Υγεία

Figure 6: RET 7.2 - Surveys to Local PT Users

Each criterion has been thoroughly examined and combined with the indicators adopted by the CIVITAS DESTINATIONS project. In February 2018, ten counter men followed a specific methodology (simple random sampling method) to record: a. bus arrival time, b. bus occupancy, c. number of passengers, d. commuters per stop on 136 bus lines.

The results of the conducted studies demonstrated that the most important criterion for users is the spatial coverage followed by the temporal coverage. Consequently, PT plan will be rescheduled, and new routes will be introduced based on the main findings of the user needs analysis. The redesign and rescheduling of PT routes are ongoing and aim to respond to the real needs of citizens across the year and to serve tourists' points of interest, key attractions and cultural events during the touristic period, including also a thematic route for cruise visitors.

The proposed new PT routes, as depicted in the map below in coloured polylines, were set under consultation in June 2018 (workshop). The participating stakeholders supported the

need for better spatial coverage of PT routes and increased frequency. The map below shows also the existing routes (blue polyline).

Figure 7: RET7.2 - Map of the Existing and New Proposed PT Routes

Several one-to-one meetings have been organized with the PT operator (KTEL) – which is a private company – about the design of the new routes and schedules. It is critical to underline that the proposed new PT routes are going to be optimized based on the scheduled survey of visitor PT users.

Figure 8: RET 7.2 - Workshop on PT Routes

Workshop was conducted to highlight the measures which could enhance and increase the cruise tourism. The study included structured telephone interviews to six local tourism stakeholders: Union of Licensed Tourist Guides of Crete, PT operator, TUI Hellas (Crete department), Municipal Tourism Office, Port Authority, Advisor of the Municipal Port Authority, Association of Cruise Ship and Maritime Managers.

The purpose of the interviews was to gain information on the interests of cruise tourists and as a next step to engage these stakeholders in the dissemination process regarding the new

mobility services for cruise visitors. A new thematic route for cruise visitors is going to be designed and launched in cooperation with the PT operator, KTEL, and, thus, provide more options to visit points of interest using tailored PT routes.

Setup of new enhanced PT services

In order to design and set up the new enhanced PT services, some preparatory activities were completed while others are ongoing in terms of PT routes' schedules, infrastructure, ticketing options and promotional material. The needs analysis in combination with the consultation events and the stakeholders' workshops, which will be organized until the end of 2018, will lead to the final proposed PT routes with temporal and spatial coverage changes.

In order to successfully introduce the new thematic routes, which were defined in cooperation with KTEL, inspiring promotional material will be designed to be distributed in key points in the city, including:

(1) Information packages for cruise visitors, promotional panels at cruise ships and port.
(2) Proposals for ecological walks and bio food alternatives.
(3) Attractive PT timetable panels in hotels and main touristic points.

Within the measure, the organization of eco and safe driving sessions for PT drivers is also foreseen, including the design and distribution of eco and safe driving guidebooks, to improve the skills of professional drivers and promote the road safety culture.

Implementation of ITS systems and solutions

The Municipality of Rethymno is in close cooperation with KTEL in order to identify the optimal informational equipment. The informational equipment could be placed at bus stops, such as electronic signs to inform about waiting times and expected line services in real time and/or on board to provide useful information, such as information about next stops, and other mobility options. Moreover, the possibility to install driving simulation equipment for the training P.T. drivers is under examination, aiming to promote safe driving and eco-driving.

Local organizational and operational measures

A series of meetings have been organized with the PT operator to be engaged in the design procedure for the new routes and the new upgraded stops. In February 2018, during the lab meeting, cooperation between the PT operator and the Municipality was thoroughly discussed to find common ground and establish long-term cooperation. Supporting actions, such as the installation of bike racks on specific routes and potential bike transport services on buses, are being developed in cooperation with the PT operator. Other proposals are also examined, including the improved accuracy of public bus schedules and the possible use of smaller or even mini buses in the city centre to increase flexibility.

Finally, the development of attractive and useful information packages and the new PT services/routes will be supported and promoted by the key tourism stakeholders including the Hoteliers Association, tour operators and the Sustainable Mobility Agency (RET 6.1).

2.4 ELB 7.1 Improve PT services for tourist

The measure ELB 7.1, Improved PT services for tourists, covers a number of actions to improve the PT of tourists to which residents can also benefit.

The main objective is to improve the mobility (tourists and residents) of the island.

In particular, during the summer the excessive use of the private car creates numerous traffic problems with unduly long times to cover some roads.

The improvement of PT through dedicated summer services (e.g. services such as Marebus and Chicchero described below), frequency improvements and inter-communal bus service timetables are intended to encourage residents and tourists to limit their use of private cars. This would benefit the general mobility of the island.

Setup of new enhanced PT services

Portoferraio

A PT service (called “Chicchero”), partially funded by the DESTINATIONS project, with a boat will be activated in 2018 summer season to connect the port of Portoferraio with localities in front of the bay where many tourists stay. As well as being a tourist attraction, this service will contribute greatly to reducing traffic in Portoferraio and connecting roads as it will provide tourists and citizens with a viable alternative to land transport by private car to get to the centre of Portoferraio.

Figure 9: ELB 7.1 - Portoferraio Bay and Chicchero Boat Service (green line)

Rio

A free summer transport service from Rio (called Marebus) to nearby tourist destinations was tested in 2017. The service was very successful with over 5.000 users.It was partially funded by the DESTINATIONS project. The service will be repeated in the next summers.

The free transport service is made with a bus with capacity for 20 people and covers a stretch of approximately 16 km. The bus serves the main settlements and beaches of the municipality of Rio, following the route traced in the figure below, with seven stops eachway.

The service runs every day and covers a time slot from 09.15 to 23:55, providing 12 runs(six each way).

This service is also very important for its contribution to the reduction of private traffic in Rio. As a port of embarkation / disembarkation, Rio suffers in the summer due to car overcrowding.

Figure 10: ELB 7.1 - Marebus Service in Rio Municipality

Implementation of ITS systems and solutions

The AVM system (Automatic Vehicle Monitoring) allows the operator of a fleet (e.g.PT buses) to know the location of each circulating vehicle. It also allows the driver to know if the vehicle is on time at various stops. An important app feature for users is the possibility of the system giving citizens real time arrival information at each bus stop. On Elba, the AVM system demonstration will start at the end of the 2018 summer season. A large promotion activity is foreseen (social media, local press etc.) to illustrate the app's real-time information feature to the users so that it is downloaded and used by both locals and tourists. In turn, it is expected to increase the use of PT.

A dissemination on the Chicchero and Marebus summer services was made to launch the two services and will be continued during the summer on all local media and on the local project website. Moreover, illustrative leaflets and schedules will be distributed in all tourist concentration points such as tourist agencies, hotels and various meeting places.

Local organizational and operational measures

On the basis of the two signed collaboration agreements between the Elba municipalities (Rio and Portoferraio) and the PT companies, Tiemme (mainland) and CTT Nord (Elba), several actions have been undertaken to improve the service.

Tiemme

- Better coordination between bus departure times from the train station to the port with train arrival times.
- Installation of bus shelters for waiting passengers at the port of Piombino.

Figure 11:ELB 7.1 - Bus Shelter under Construction in Piombino Port Area

CTT Nord

- There will be wide collaboration on the design of the Elba SUMP. In order to make the transport service more effective and better used compared to the existing situation, it is envisaged that two main lines will be implemented and connected to the various key centres. This will be supplemented by secondary lines with greater frequency.
- Real time information of users via an app. CTT North already has an AVM system on board its Elba vehicles, but at the moment does not provide information to users through specific panels or an app. As agreed, CTT Nord has undertaken to provide this app service by the end of summer 2018. CTT Nord will also include the commissioning of six real time information panels. The app for users' real time information will be in Italian and English in order to be used by citizen and tourists.

  This system will be of great help to improve the punctuality of buses as part of wider aspirations to increase the efficiency of public services.
- Indication of routes and bus stops for better tourist information will be activated on vehicles by the end of the 2018 summer season.
- Supply the main hotels with travel tickets and special forms of subscription called ElbaCard (1 day or 6 days) in order to facilitate their purchase (and therefore the use of PT) by their customers.
- Information campaign, in cooperation with CTT North, dedicated to hotels, to raise knowledge about local PT services and additional services (how to know timetable, app, Elba Card, website and so on) and to convince them to sell tickets and the Elba Card and act as small information points about TPL. This campaign is effective also for WP6.

Training and management team

The training activities regarding AVM system will be carried out directly by CTT towards its staff. No training is foreseen for users of the app's real time information. However, a large-scale information campaign is required for awareness raising.

A working group made up of representatives of the two transport companies (Tiemme and CTT) and the two municipalities (Portoferraio and Rio) of Elba will manage and monitor the various planned actions.

The technical departments of Portoferraio and Rio municipalities will directly manage the boat service in Portoferraio bay and Marebus in Rio.

2.5 LIM 7.1 Improvement of PT routes, time tables, ticket procedure and bike transportation on buses to make the transport more attractive.

This measure aims to provide PT services that serves the needs of tourists and local people. Better designed routes and timetable adjustments ensure that PT is convenient and attractive to potential users. There is a need to combine cycling with the use of PT by installing bike racks on buses. This will allow cyclists to combine sustainable mobility modes for their leisure trips. Bike racks will enable the combination of cycling and PT.

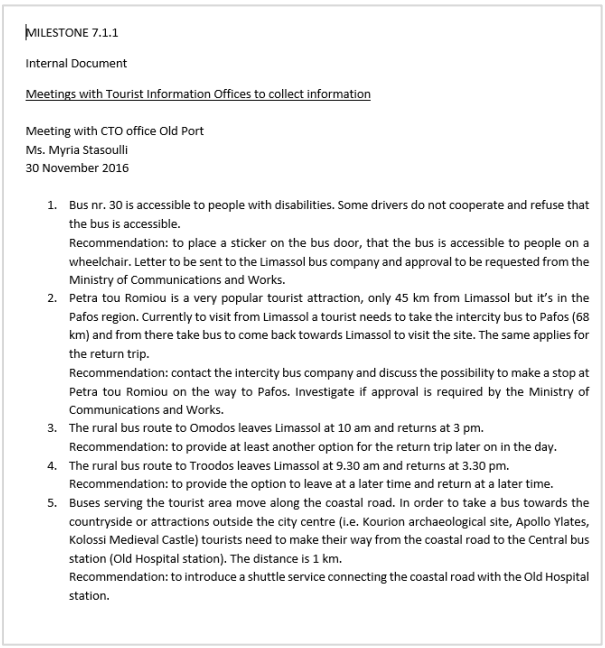
Site preparation, solutions deployment, supporting actions and demo setup

Procurement acquisition process

Tender documents were published according to the public procurement laws of Cyprus with deadline 20/12/2017 and one tender was received. The procurement process for the acquisition of bike racks has been completed. The contract has been signed with the winning bidder, Next Bike, and the measure is in the implementation stage. Bike racks will be installed until the end of July 2018.

Site preparation and implementation activities

Several meetings between the Cyprus Tourism Organization, Limassol Tourism Company, Limassol Bus Company and the representative of the Ministry of Communication and Works took place in which the recorded complaints from tourists regarding the use of PT were presented. Suggestions and solutions have been made for improvement on PT routes and timetables. Changes to PT timetables and routes have been introduced.



MILESTONE 7.1.1

Internal Document

Meetings with Tourist Information Offices to collect information

Meeting with CTO office Old Port
Ms. Myria Stasoulli
30 November 2016

1. Bus nr. 30 is accessible to people with disabilities. Some drivers do not cooperate and refuse that the bus is accessible.
   Recommendation: to place a sticker on the bus door, that the bus is accessible to people on a wheelchair. Letter to be sent to the Limassol bus company and approval to be requested from the Ministry of Communications and Works.
2. Petra tou Romiou is a very popular tourist attraction, only 45 km from Limassol but it's in the Pafos region. Currently to visit from Limassol a tourist needs to take the intercity bus to Pafos (68 km) and from there take bus to come back towards Limassol to visit the site. The same applies for the return trip.
   Recommendation: contact the intercity bus company and discuss the possibility to make a stop at Petra tou Romiou on the way to Pafos. Investigate if approval is required by the Ministry of Communications and Works.
3. The rural bus route to Omodos leaves Limassol at 10 am and returns at 3 pm.
   Recommendation: to provide at least another option for the return trip later on in the day.
4. The rural bus route to Troodos leaves Limassol at 9.30 am and returns at 3.30 pm.
   Recommendation: to provide the option to leave at a later time and return at a later time.
5. Buses serving the tourist area move along the coastal road. In order to take a bus towards the countryside or attractions outside the city centre (i.e. Kourion archaeological site, Apollo Ylates, Kolossi Medieval Castle) tourists need to make their way from the coastal road to the Central bus station (Old Hospital station). The distance is 1 km.
   Recommendation: to introduce a shuttle service connecting the coastal road with the Old Hospital station.

Figure 12: LIM 7.1 - Meeting Minutes with CTO and Ministry of Communication and Work

Figure 13: LIM 7.1 - Map of PT Routes in Limassol

Additionally, meetings with the Ministry of Communication and Works and Limassol Bus Company took place to determine specifications on bike racks.

The procurement process for purchasing the bike racks is complete. The winning bidder has signed the contract and the measure is in the implementation stage. The winning bidder, Next Bike Cyprus, is in the process of arranging the details for the purchase of the bike racks.

Data Collection

Data has been collected by carrying out surveys, estimations and through secondary data collection for ex-ante evaluation. The procedure to estimate the data is measured through:

- The level of acceptance and awareness, namely the residents / tourists, satisfaction index (%) of citizens with the transport system, and awareness of the measure.
- The number of improved PT routes.
- A new impact on the environment is being calculated through the measurement of CO_2emissions, traffic noise and energy consumption based on the data collected.

2.6 MAL 7.1 Integration of ferries into the Public Transport

Site preparation, solutions deployment, supporting actions and demo setup

Soon after the DESTINATIONS project commenced, Transport Malta compiled a list of stakeholders that will be impacted by this measure as well as those entities who could assist with baseline data collection; baseline analysis and user needs analysis. In Month 8, consultations with these stakeholders were initiated with the priority of collecting baseline data as well as designing the specifications to be included in the tender for the Options Analysis and CBA.

The tender to contract a team of experts, including economists and engineers, to carry out this study was prepared and published. These experts will study other possibilities of connecting the Marsamxett ferry landing site with central Valletta, avoiding ferry users having to climb the discouraging hill to reach the centre. Such expertise, which is not available in-house at

Transport Malta, is expected to be subcontracted in the coming weeks (tender is currently at evaluation stage). The study that will be prepared following the award of this tender will identify technological requirements, interventions and their costs as well as an estimation of costs and feasibility analysis for all the identified options of connecting the ferry landing site with Valletta city centre.

In January 2018, Malta Public Transport (MPT) launched a circular route connecting the Marsamxett ferry landing site to the main bus terminus in Valletta. This was done from the company's own investment and due to the influence of the DESTINATIONS project, the stakeholder meetings and the promotion of sustainable mobility. The awareness and effectiveness of this new route will be evaluated through surveys with the general public. For this, a separate tender was published by Transport Malta for the data collection and analysis. The evaluation process has been concluded and the tender awarded. This being a new service, the baseline data will be taken from the patronage data that MPT will be providing and which is available from the launch of the service.

In parallel, a marketing plan is being designed in order to plan the relevant promotions that will inform the public of the new link between the ferry landing site and central Valletta as well as encourage its use.

Data will be collected to evaluate the measure based on the determined social impact indicators and the service utilisation.

The impact on society will be measured through surveys carried out at two intervals; following the launch of the circular route and towards the end of the project when the service would have been in operation for around 30 months. These surveys will elicit:

- The level of awareness, in terms of the percentage of citizens and tourists that are aware of the new route and services provided to connect the ferry landing site in Marsamxett Harbour to central Valletta. The level of awareness after the measure implementation is expected to increase by 10%.

- The level of users' satisfaction with the new bus route, in terms of the percentage of users that are satisfied with the new service and infrastructure. The level of satisfaction of the users after the measure implementation is expected to be 20% of respondents who are completely satisfied.

Patronage data will also be made available by the service provider to present the average occupancy of the route connecting the ferry landing site to central Valletta, for the remaining project lifetime.

Setup of new enhanced PT services

The idea at project inception stage was to pilot a new PT route connecting the ferry landing site in Marsamxett with central Valletta. The objective of this is to further integrate the ferry transport with the overall PT system. This integration would facilitate a modal shift from land to sea transport, thus reducing congestion and the resulting emissions and journey delays which are more pronounced in the Valletta region.

Since the very start of the DESTINATIONS project, Transport Malta has embarked on promoting sustainable transport through stakeholder meetings, workshops and one-to-one meetings with key stakeholders. Taking this up, MPT who operates scheduled bus transport, has independently launched the route which was planned to be piloted as part of DESTINATIONS from its own investment.

The new circular route, which operates every 30 minutes, connects the ferry landing sites on each side of the Valletta peninsula with the main bus terminus right outside the city. The route was put in operation in January 2018. Furthermore, the ticketing system adopted for this route has been included as part of the RFID card system operated by the public transport operator and includes ticketing options for both the national bus network, the inner-harbour ferry services and the vertical connections from the ferry landing site on the other side of the city to Valletta centre.

Further to the service being provided by MPT described above, an electric trolley bus service has also started operating at the ferry landing site as of January 2018. This is a privately operated service which makes use of a full electric, low floor open passenger trolley. This service operates on demand with no fixed schedule and is stationed adjacent to the point where passengers disembark the ferry. The service targets tourists touring Valletta and the Three Cities.

Despite the fact that the piloting can be considered complete without any financial input from DESTINATIONS, this does not impact the planned Options Analysis and Cost Benefit Analysis that would look into other connection options from the ferry landing site to central Valletta. A tender to contract a team of experts to carry out this study has been published and is currently being evaluated. These experts will study other possibilities, of a more permanent nature, to connect the Marsamxett ferry landing site with central Valletta. More specifically, the study would present all identified, possible connection options while assessing the feasibility of each option. The experts will further study each of the options and identify the most feasible with a full CBA to be conducted on this option.

2.7 Collaboration among DESTINATIONS Sites/partners

Measure Title	Best Practice description in the implementation of the measure	Description of a specific expertise needed for the demonstration phase	Identified Synergies (please indicate measure/s)
MAD 7.2 Attractive public transport	Lessons learnt from the “Bring a friend” campaign.	Solutions for better public transport offices (design, and service conditions).	RET7.2, ELB7.1, LIM7.1
LPA7.1 Communication for the introduction of the Bus Rapid Transit (BRT)	Dedicated sessions for target users and stakeholders to increase awareness among citizens and stakeholders.		MAD 7.2, RET 7.2
RET 7.2 Improved PT for tourist and citizens	Identification of transport needs of the guests from cruises; how to build assessment studies for existing PT services; methods, questionnaires, lessons learnt (tourists, citizens).	Efficient campaigns/ materials to drive behavioural change regarding eco/safe driving. Business models related to innovative PT services. Examples of products/services about smart/attractive bus stops – signage; relevant equipment.	MAL 7.1. MAD 7.2, LIM 7.1, ELB 7.1 RET 6.1
ELB 7.1 Improve PT services for tourist	Agreement between PT companies and Portoferraio Rio municipalities.	No specific expertise needed for demonstration phase.	LIM 7.1
LIM 7.1 Improvement of PT routes, time tables, ticket procedure and bike transportation on buses to make the transport more attractive.			
MAL 7.1 Integration of ferries into the Public Transport			

Table 1: Cross Site Collaborations, regarding implementation of improved public transport services for tourists and residents

3 Implementation of Electric, Hybrid and LPG Buses (and Eco-Driving)

3.1 MAD 7.1 Electrical vehicles and clean fuels for public transport and urban fleet

The main objective of measure MAD 7.1 is to study the best solutions to decrease the energy consumption of PT fleet.

Site preparation, solutions deployment, supporting actions and demo setup

Acquisition of 4 electric/hybrid buses:

It was prepared and launched the tender to purchase hybrid-plug bus. There were no responses to this tender.

AREAM had some meetings with Instituto de Desenvolvimento Regional, the local body which manages the structural funds, to prepare an application to purchase hybrid/electric buses.

Pilot test of electric bus in Madeira

A. Preparation of the pilot test of the electric bus in the Autonomous Region of Madeira carried out in December 2017:

For the pilot test AREAM met with the stakeholders (PT operators, DRET, EEM, AMRAM, Caetanobus, Siemens). A pilot test program and work plan were prepared with the PT operators. A protocol was signed between Caetano Bus, AREAM, Regional Government, PT operators and EEM. All the logistics associated with the pilot test were prepared: transport of the bus between harbours Leixões-Madeira-Leixões and Madeira-Porto Santo island-Madeira; installation of e-charging points at PT operator sites; insurance for maritime bus transport, etc.

A communication plan, the graphic design and vinyl for the electric bus characterization was developed with reference to the DESTINATIONSCIVITAS project and Horizon2020 Programme.

Regarding the evaluation, the methodology to monitor and evaluate the pilot test was defined.

B. Demonstration of the electric bus in Madeira and Porto Santo:

The bus drivers of the three PT operators received training on the electric bus.

The daily trips carried out by the electric bus in the various PT operators were accompanied by a technician from AREAM, who gave technical assistance to drivers and carried out the collection of information (kilometres, battery consumption and regeneration in breaking).

The logistics associated with the electric bus demonstration (3 different PT operators, e-chargers' installation, lines planning, etc.) were organized by AREAM.

C. Technical report of the electric bus demonstration

After the pilot test, there was a period of analysis of collected data during the pilot test and evaluation of e-bus performance in Madeira and Porto Santo Islands concerning energy consumption, environmental impacts and economic feasibility of electric bus, in the several lines where the bus has operated.

The pilot test results were elaborated in the technical report with a preliminary economic feasibility study in Portuguese and English. This report was disseminated to PT operators and local stakeholders of electric mobility.

D. Preparation of technical visits to electric bus manufacturers' facilities, to be held between June and October 2017: BYD (China), IRIZAR (Spain) and CaetanoBus (Portugal)

Introduction of electric buses in PT fleets in Madeira

AREAM established contacts with manufacturers of e-charge stations for e-buses. There was a meeting with Irizar to gather information on electric buses in the market and on e-charging systems for electric buses (Jema) (13 December 2017).

The meeting with Siemens gathered information on pantographs available in the market and assessed the compatibility of different batteries and electric buses on the market (8 February 2018). Siemens developed the study on the required charging infrastructure for electric buses on the routes in the pilot test.

A feasibility study is being carried out, for the electrification of two routes of HF with the installation of the pantograph chargers' station. This study has the support of Madeira Electricity Company (EEM) to estimate the annual electricity and maintenance costs of the pantograph chargers' station.

Setup of new enhanced PT services

On board equipment to monitor drivers' behaviour

Driver behaviour can determine fuel consumption. HF intends to improve the performance of the drivers, having continuous drivers' training in eco drive. To monitor drivers' actions in real time and with reports of the drivers' performance, HF purchased the Fleet management system of Trackm8 (https://www.trakm8.com/fleet-management/fleet-management-driver-behaviour), with equipment for 20 buses and the key for 90 drivers (the driver must present his key to the console for identification).

Figure 14: MAD 7.1 - On Board Driver Performance Console

To select the 20 buses where was installed the system, HF chose buses that operates in different bus routes covering all the Funchal network. This system was tested in the buses to mobility impaired users. However, as these routes were short distance with lots of stops, they were not suitable for analysis. The service was tested in areas with very narrow streets and steep gradients, but this service has atypical conditions and is therefore not suitable for evaluation.

From January 2018, the system has been tested in regular buses, and it was found necessary to calibrate it. For example, it was verified that in one situation when the driver accelerated significantly the system did not register it. In other instances, the system registered a non-existent problem.

HF informed the bus drivers that the system was in a test and improvement phase. This resulted in two different reactions. On one hand, some drivers accepted monitoring and were enthusiastic about the system, asking about their performance and if they could improve it. In contrast, some drivers did not accept it and did not present the key; some even tried to destroy the onboard console.

The web portal of the system allows for a vast variety of reports, per driver or per bus, for different periods, and permits reports to be automatically sent by e-mail.

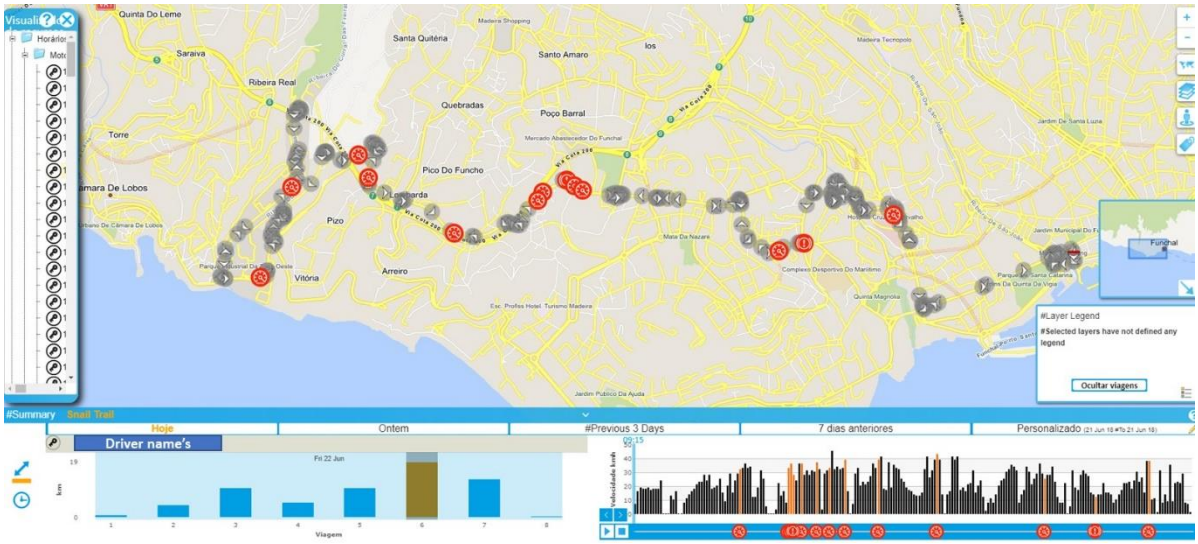


Figure 15: MAD 7.1 - Example of Report per Drive and Geographic Information

It is also possible to see drivers' behaviour in real time. All the information is available in the web portal and in a mobile application that enables the HF training team to check the situation at any place including inside the bus.

During this test phase, the HF training team has informed bus drivers about idle time, excess velocity and instances where it happened. In addition, the app gives more information to prepare the training sessions.

Tyre Pressure monitoring systems

- Finalization of tender to purchase the wireless tyre pressure management system and begin the installation of the sensors in the 50 buses.

Figure 16: MAD 7.1 - Yard Reader Station

- Driving safety and comfort are directly related to the condition of the tyres. Buses with under-inflated tyres cause higher fuel consumption, increase their carbon dioxide emissions and cost more money. HF purchased the tyre monitoring system from Continental
- (https://www.continental-tires.com/transport/tire-monitoring/conticonnect).

The system is composed of the following elements:

- 50 buses equipped with six tyre pressure sensors, the sensor is mounted onto the inner lining of a tyre in order to collect data. It should be noted that the installation of sensors follows a logic of opportunity, that is, when there is a need for tyre replacement.
- 4 yard reader station, it is the connectivity component that receives the data from the tyre sensors within a yard and transmits it via cellular connection to the backend. They are installed at the fleet's washing bay.

Tire ID	Axle	Tires	Pressure (bar)	Temperature °F	Comp. Pressure @68°F (bar)	TTM-ID	Warning	RCP	L
1	1	1	7.1	64	7.1	5F5E03A0	No warnings	7.6	
2	1	2	7.2	64	7.2	5FB8888B	No warnings	7.6	
3	2	1	7.4	64	7.4	4FE65569	No warnings	7.6	
4	2	2	6.7	63	6.8	5FB89F99	Low pressure	7.6	
5	2	3	7.2	63	7.3	5FB885A0	No warnings	7.6	
6	2	4	7.2	64	7.2	4EDDF4EA	No warnings	7.6	

Figure 17: MAD 7.1 - Web Portal, Example of Warning

- Web portal, the interface where you can proactively monitor tyre conditions on all of your vehicles.

The tyre pressure sensors are being installed in the newest buses, assuming that the old ones will be replaced in the near future. To minimize the human resources and the immobilization time of the buses, the installation occurs when it is necessary to change the tyres, so it is a long process.

Local organizational and operational measures

Promotion and dissemination of pilot test of electric bus in Madeira

- Elaboration of a promotional video for the pilot test
- (https://www.youtube.com/channel/UCPsNWsg1UOxddR_iTzaONgQ).
- Public presentation of the electric bus in Madeira on December 7, 2017.
- Public presentation of the electric bus in Porto Santo, December 15, 2017.
- Organization of a free of charge circuit for residents and visitorsin December 31, 2017. Around 240 inhabitants and tourists travelled by electric bus under this action.
- These events were promoted atthe regional, national and European levels: Local media (TV, radio, press, online and social media), CIVITAS web site, CIVITAS Initiative LinkedIn, and electric mobility users and partners webpages and social media (AREAM and Regional Government).
- Press releases to the media: RTP Madeira, DN Madeira, Jornal da Madeira, FunchalNotícias, TransportesemRevista, UVE, Ambiente Magazine, Revista dos Elétricos, Verdes sobreRodas, Madeira Electric Vehicles Facebook group and local radio Antena 1 and Antena 3.
- Dissemination in RTP Madeira programmes: "AlertaVerde" and “Madeira Viva”.

3.2 LPA 7.2 Hybrid buses in the urban bus fleet

Guaguas Municipales, the urban PT company of Las Palmas de Gran Canaria, has a fleet of 242 buses with an average age of 10 years. Of those buses, 241 are diesel units and just one is a hybrid bus.

In order to reduce CO_2 emissions, fuel consumption, improve general air quality levels, contribute towards the reduction of congestion and to promote sustainable mobility, Guaguas Municipales will acquire within the CIVITAS DESTINATIONS project three hybrid buses for urban PT services to replace the oldest diesel vehicles.

Site preparation, solutions deployment, supporting actions and demo setup

The tasks that have been carried out were the definition of specifications and preparation of tender documentation after an analysis of the hybrid buses market. In that sense, some trips were carried out to familiarize with the main features of these kind of eco-friendly buses.

After that, the tender documentation was drafted and the tender process was launched on 26/05/2017 in *The Official Journal of the European Union* for the acquisition of three hybrid buses for the urban PT fleet of Guaguas Municipales. On 28/08/2017 the evaluation team for the procurement of three hybrid buses met with companies that took part in the tender process. There were no adequate candidates, so technical specifications were revised and modified and the tender was published again.

Finally, the tender process was awarded in December 2017. Only two companies submitted a tender and Vectia won the process because it presented best value for money and complied with all the technical requirements.

The delivery process started in early August 2018, when they were to be dispatched from the factory. These buses were delivered in Las Palmas de Gran Canaria by the fourth week of August 2018, and the training course for maintenance staff and drivers was carried out in the last week of August.

In order to make the most of its eco-friendly features, lines 1, 2 and 17 located in the low part of the city have been selected for testing the units. Old diesel units are being analysed in order to be replaced by the new hybrid ones.

The tasks that will be carried out once the buses start working in real operation will be to test and check them in normal conditions. The PT company will check the fuel saving, maintenance services and Guaguas Municipales' staff and customer satisfaction.

The main features of the hybrid buses that need to comply with requirements collected in the tender documentation launched on 26/05/2017 in *The Official Journal of the European Union*:

Accessibility:

Buses must have a continuous low platform. This means a low floor throughout the entire useful surface of the vehicle with three doors and a ramp for access of people with reduced mobility.

Dimensions:

Length: 12 m width: 2.5 -2.55 m and height: 3.5 m

Engine:

The engine must comply with the emission limits according to EURO regulations in force at the time of delivery of the vehicles.

Figure 18: LPA 7.2 - Hybrid Bus

3.3 RET 7.1 Introducing electric vehicle for PT

Measure highlights / innovations / successes to date.

The Municipality of Rethymno is the first Greek Municipality that has introduced an e-car with zero CO_2 emissions in its fleet. The circulation of the e-car by the staff of the Technical Department of Rethymno will consist of a moving promotional element for electromobility over and above the traditional promotional actions.

The measure is also innovative for the whole prefecture area, since Rethymno will launch the first e-vehicle in the local PT company's fleet and provide alternative, clean transport options to visitors and citizens.

Site preparation, solutions deployment, supporting actions and demo setup

Introducing a clean mini bus in the public fleet

An extensive market survey for the specifications of the electric bus, the available technology assessment and identification of e-bus providers has been conducted, concluding that the cost of purchasing an electric bus significantly exceeds the foreseen budget. Therefore, due to this obstacle, it was decided that the mini e-bus should be leased instead of purchased.

The procurement process required the electric bus's compliance with the current local and European legal framework to operate in Greece. According to the specifications, the mini bus should have a minimum capacity of 15 passengers, a ramp to facilitate disabled access and folding seats to provide sufficient space for at least one wheelchair.

After private consultations, the local PT operator has shown interest in leasing the electric mini bus to the Municipality for eight hours per day. Due to the legal framework, the PT operator is the only company that can serve a PT route. The involvement of the PT operator in the lease will ensure the efficient operation of the route and the measure's sustainability after the project's end. The procurement process for the lease of the mini bus is still ongoing and will be completed in August 2018.

A new route of high interest for locals and visitors will be launched. Alternative scenarios of the new pilot route for the e-bus operation were presented and debated during the European Mobility Week 2017 with residents' and tourists' participation during Design Days events (Figure 19). The initial feedback from these participatory events were considered during the design phase and the mini e-bus route was developed in cooperation with the local PT Operator and transport planners to ensure sustainability. The new route has been designed to serve a linear bus line along the beach, connecting the main parking sites and key tourist attractions and points of interest within the city centre and will be served by the e-bus for eight hours during the day.

Figure 19: RET 7.1 - Examining E-bus Route Scenarios during "Design Days" Events

Procurement and launch of the first e-car in the municipal fleet

The Technical Department of the Municipality of Rethymno was going to purchase a car to meet the need for external works. The Municipality chose to purchase an electric car instead of a standard one although it is more expensive, to enforce the message about sustainable mobility, while most of the expenses are covered by the Municipality's budget.

An extensive market survey was conducted for the electric car to define the required specifications for the call for tenders. The procurement process has been completed, identifying the most suitable solution to serve the needs of the Technical Department. The signage has been designed meticulously by TUC to promote electromobility and the CIVITAS DESTINATIONS project.

Setup of new enhanced PT services

The design of the new route is completed and will be introduced right after the lease of the e-bus. It is crucial for the success of the measure to ensure that the new route will continue to operate after the pilot period and have a long-term impact in the area, leading to the uptake of electromobility. A business plan will be developed for the PT operator to undertake the operation, improvement and maintenance of the route and e-vehicles.

The mini bus route has been developed in cooperation with the local PT Operator, to ensure the route's sustainability.

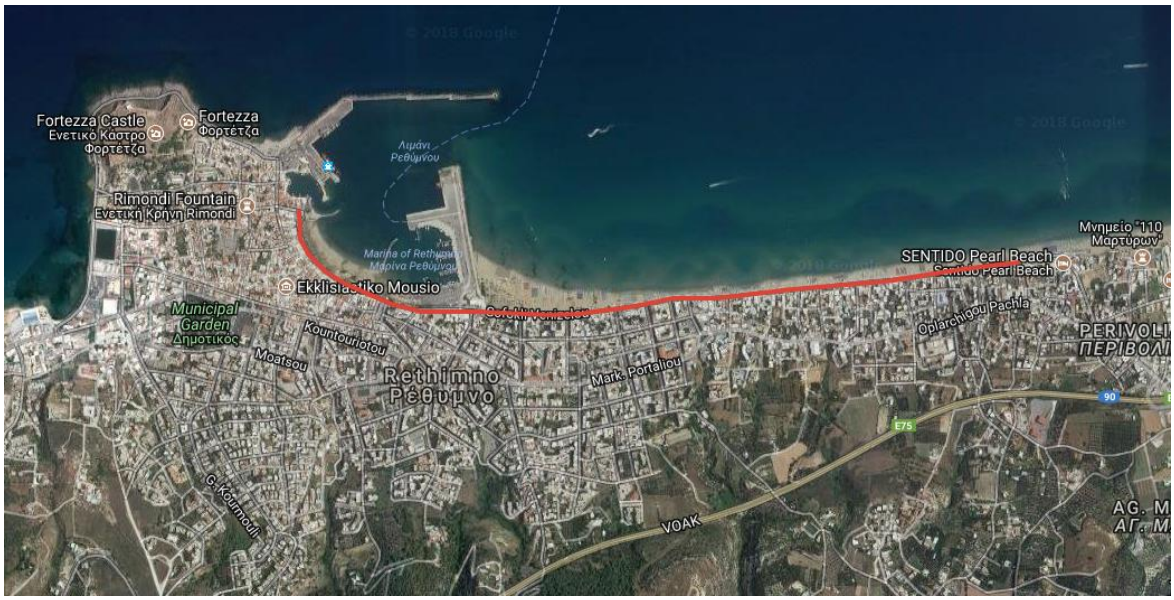


Figure 20: RET 7.1 - The Designed New Pilot Route for the Operation of the Mini E-bus

Extensive research of best practices for the promotion of electric vehicles has been conducted and a promotional campaign has started with press releases, social media articles and posts published regarding the launch of the municipal e-car (Figure 21).

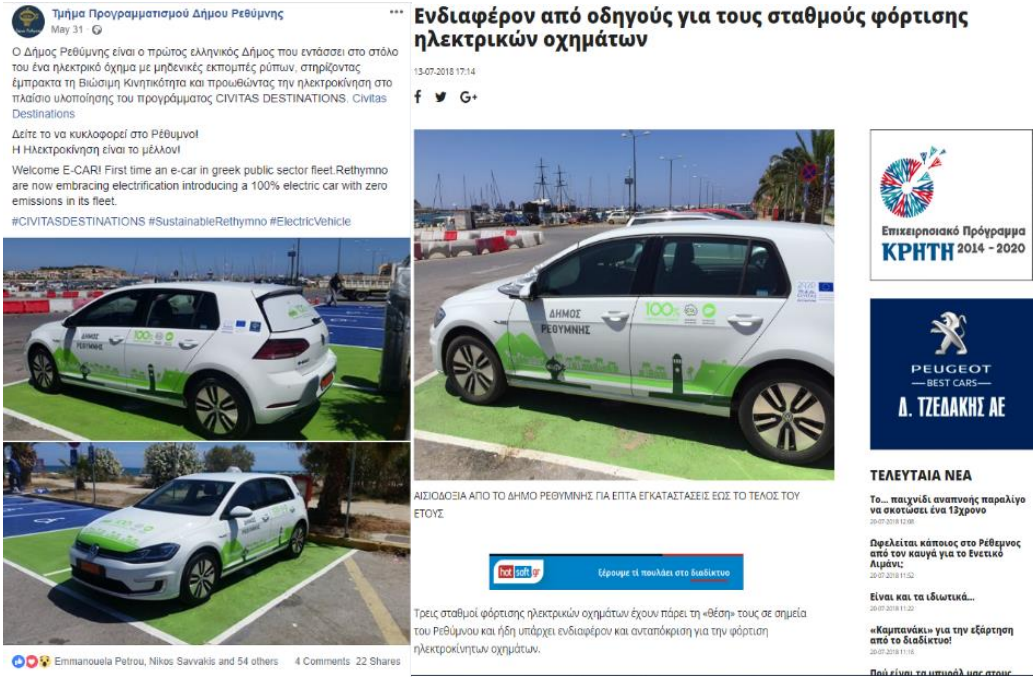


Figure 21: RET 7.1 - Articles and Posts on Social Media and Online Press Promoting the Municipal Electric Car

Rethymno Municipality, supported by TUC, held on-spot exhibitions (Figure 22) of EVs and charging stations, along with test drives of electric cars and e-bikes to create awareness and interest during European Mobility Week 2017.

Figure 22: RET 7.1 - On-spot Exhibitions and Test Drives of Electric Cars during the National DESTINATIONS Public Eventand EMW

Local organisational and operational measures

For the implementation of this measure, cooperation is well established with the local PT operator and other transport planners, as well as with hoteliers, travel agents, tourism stakeholders and citizens' associations. The Municipality has already held closed meetings with the PT operator and reached agreement on the specifications and requirements regarding the lease and operation of the e-bus. The mini bus will be leased until the end of August 2020.The PT operator is keen to continue the bus route service beyond the agreed leased hours and the measure's pilot operation period.

During the open public consultations with tourism stakeholders (February 2018 and June 2018), the new electric bus route was presented and embraced by all relevant stakeholders.

Figure 23: RET 7.1 - Targeted Meetings with the PT Operator and Stakeholders' Consultation Event (June 2018)

3.4 LIM 7.2 Creation of an electric bus hop-on hop-off service in the old town.

This measure was designed to implement a hop-on hop-off bus service offering visitors and residents the chance to follow a route to visit a significant number of museums, archaeological sites and other landmarks in Limassol city centre. The service will be a circular route covering approximately 9km across the city centre of Limassol with a total of 15 stops at tourist attractions where service users will be able to get off the bus, spend time at the places of interest and get on the next bus to continue the tour using the same bus ticket. However, due

to difficulties to purchase the hybrid or electric buses, a new design was made to purchase 30 electric bikes with 30 docks, instead of buses, and create a new route to act as a hop-on hop-off service for e-bikes. A new route will be selected to pass from several landmarks of Limassol town.

Site preparation, solutions deployment, supporting actions and demo setup

Procurement acquisition process

The tender documents, for the purchasing of two hybrid buses, were published in the national gazette in 2/8/2017 with a deadline in 20/9/2017. Due to a lack of tenders, the procurement procedure was cancelled.

Site preparation

For the implementation of the measure LTC was held several meetings with the Limassol Bus Company and the Ministry of Communication and Works to design the specifications and to obtain permissions. The hop-on hop-off route has been planned out in cooperation with the Cyprus Tourism.

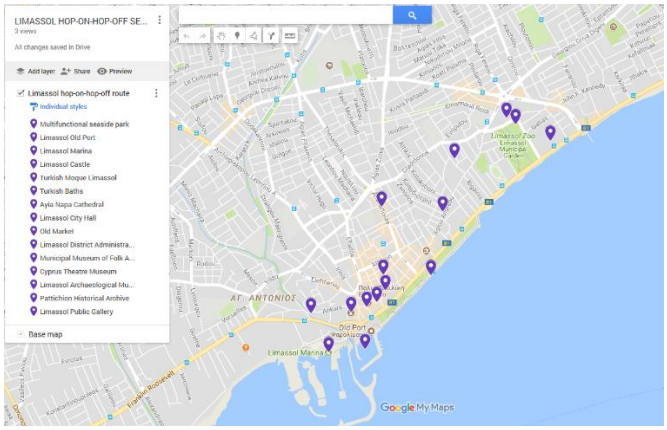


Figure 24: LIM 7.2 - The Limassol Hop-on Hop-off Service Bus Route

Due to the lack of tenders, further research took place to re-determine specifications.

For the purchasing of audio guides, LTC decided to create an application audio guide that can be downloaded to mobiles.

Implementation of ITS systems and solutions

1. **Hybrid buses**

The hybrid buses will be low floor, category M3-Class I, with 25 seats (according to the EU guidelines 2001-85/EK). The weight will be determined per EU standards. The dimensions will be 9m length, 2.5m wide and 3m height.

The minimum power output of the diesel engine (power and torque) must be:

- Low power: 138kW (12,5kW/ton of GVW) and high torque: 715Nm (65Nm/tone of GVW)

The hybrid drive system includes an integrated powertrain control system as well as an electric motor of the same or better power and torque of the diesel engine.

2. Audio guide application

The Audio Guide Application will be a tool that will run in every available browser and mobile device. The user can have access in all landmarks and interesting points of Limassol city. Useful descriptions, photos and audio guides for each point will be presented. Using GPS, the application will also recognize the location of the user and will be able to guide though the map following the best route via smart phones. It will offer two different available guide options. Firstly, following the point of interest on the map and secondly by a list in categories and sub-categories. The application will use the latest technologies and will be a very user-friendly tool.

Risks and identified solutions

Due to budget constraints LTC cannot proceed with the implementation of this measure. LTC tried to find different options such as to lease EURO 6 but cannot proceed with this option due to the lack of expected impact to lower emissions. The following suggested solutions are presented below:

- to create three new bike sharing stations with 30 electric bikes – 30 docks.
- to create a new route to act as a hop-on hop-off service for e- bikes
- the route that will be selected will pass through several landmarks of Limassol town.

Data collection procedure

Data has been collected by carrying out surveys, estimations and through secondary data collection for ex-ante evaluation. The procedure to estimate the data is measured through:

- The number of hybrid buses and number of tours per day
- A new impact on the environment is being calculated through the measurement of CO_2emissions, traffic noise and energy consumption based on the data collected.

3.5 Collaboration among DESTINATIONS Sites/partners

Measure Title	Best Practice description in the implementation of the measure	Description of a specific expertise needed for the demonstration phase	Identified Synergies (please indicate measure)
MAD 7.1 Electrical vehicles and clean fuels for public transport and urban fleet.	Results dissemination among partners of the pilot test of e-buses in Madeira and Porto Santo.		Synergies with LPA 7.2, RET7.1 and LIM7.2
LPA 7.2 Hybrid buses in the urban bus fleet.			MAD 7.1, RET 7.1,
RET 7.1 Introducing electric vehicle for PT.	The demonstration of e-vehicles aims to have a multiplier effect; it could be replicated to other Greek municipalities, to support the uptake of e-mobility modes. The circulation of the municipality owned e-car consists a strong moving promotional element with a direct impact on citizens' awareness.	Successful examples- business models of e-buses integration in PT fleets. Best practices for promotional campaigns and materials for both PT and private e-vehicles	MAD 7.1, LIM 7.2, LPA 7.2,
LIM 7.2 Creation of an electric bus hop-on hop-off service in the old town.			

Table 2: Cross Site Collaborations, regarding implementation of electric, hybrid and LPG buses (and eco-driving)

4 Implementation of Integrated Mobility and Tourism Information and Payment Service

4.1 MAD 7.3 Smart PT traveller information service

The main objective of this measure is to improve the mobility information for all types of users, promoting the use of sustainable modes among tourists and residents.

Site preparation, solutions deployment, supporting actions and demo setup

On street information panels

The old information panels that HF provided in the city use monochrome LED lamps and the communication in real time is made through GSM. Technically, the panels are outdated because they do not allow more flexibility in the presentation of information to the passenger, nor do they include any kind of mechanism that facilitates the reading of information by people with disabilities.

Figure 25: MAD 7.3 - Current Information Panels

After analysing the market for information panels and studying the case of Guaguas, the public transport operator of Las Palmas de Gran Canaria, HF, with the cooperation of ARDITI, defined that the main requirements for the information panels are:

- Accessible to all PT users, including passengers with disabilities.
- Self-sustainable in energy terms.
- Up-to-date information consistent with the reality of the network.

HF decided to purchase five new information panels with the best technology options. The system shall be composed of:

- an energy component (a photovoltaic panel, a charger and a battery;
- memory so that the information to be displayed on the panels can be stored;
- audio files to be played in the audio system and device configurations;
- a long-range wireless communication system;
- the LED panel for providing information in a graphical way; and
- the built-in audio system for playing information and a button to trigger the start of audio information.

Device settings must be made remotely from the network via the Internet (e.g. local WIFI) or mobile data network (3G / 4G / 5G), but an interface must also be locally available to physically connect a device to setup or diagnostic tasks (e.g. USB port to connect a computer).

The equipment will have a card reader that allows PT users to check their balance.

To reuse the current material, HF will restore 35 of the old information panels:

- Using the physical structure of the old panel.
- Replacing the LED lamp panel.
- Including audio system.
- Including of photovoltaic system with battery.

Figure 26: MAD 7.3 - Components of the New Information Panel with Photovoltaic Power

PT selling kiosks

In discussions with regional partners, it was found necessary to promote the use of PT at the main entrance of the island, namely the airport and the port of Funchal. The staff of the tourist information office in the city centre indicated that when tourists ask for information regarding PT they want not only to know where to buy it, but also information materials like maps, guides and timetables.

So, HF intended to purchase a machine that not only sells tickets, but that also sells information materials, as a mobility package. However, this type of machines requires a lot of maintenance issues (e.g. electronic issues), that HF cannot deal with (it will be necessary to have employees with training in using these machines). Besides that, in Madeira there is only one company that sells the machine and provide the maintenance.

Scheduling optimization software

The principle of this measure and also measure MAD7.4PT open and smart ticketing system is to integrate all the planning, operating and information systems. The scheduling optimization software is the base system where the operator defines the service (bus stops, bus lines, timetables), and then the operator assigns the drivers (with the specific rules of each driver, as holidays or hours of service), and the buses with a connection to the maintenance service to know which bus is available. This system also registers the service realized, making it possible to compare the service planned and the service performed.

This system can export data for:

- Information services: General Transit Feed Specification (GTFS), timetables, maps of service and interesting points, bus stops information; and
- Operating support service that connects with the ticketing system.

Website

HF's website is an old tool and it is not responsive. It has a section in English, with the main information, but it is not easy to use as reported by tourists in the survey conducted at the airport.

HF defined the requirements for the new website. The most important are:

- Web design responsive;
- Techniques SEO (Search Engine Optimization);
- Bilingual, at least;
- Client area;
- Content Management Platform; and
- Bus service information through Google maps.

The website is being developed with HF's human resources, and will be connected with the information platform developed in measure MAD2.1.

HF app

The new app that HF intends to develop will be integrated with the ticketing system, allowing the mobile phone as a mode of payment. The requirements for the app are similar to the website, and some information will be available in the offline mode. The requirements for the integration with the ticketing system are being developed, and are dependent on the developments under measure 7.4.

HF app special needs

HF had studied the requests of the people with special needs, including the blind and deaf, to give them better information services. HF planned a system that would allow the establishment of an automatic communication line without any intervention by the passenger. The system is divided into two subsystems complementing with the development of an app for android and iPhone systems.

- Subsystem at bus stop

Passengers with special needs will carry an RFID device, which will be personalized to the passenger depending on their type of disability.

The subsystem at bus stops will have an accessibility services module (MSA), an RFID transmitter base whose purpose is to detect the presence of passengers carrying an RFID reader, an Information Panel with GSM communication system, in order to establish communication with the exploitation system and consequently with the buses that use the bus stop.

When the bus is approaching the bus stop, the MSA should warn passengers with disabilities about which is the next bus. Depending on the type of disability, the warning must be different. In the case of a passenger whose RFID is configured as a "blind passenger," the warning must be audible. As the bus is closer to the stop, the buzzer should be increased. For a deaf passenger, the same logic applies, but in this case for a signal light / information panel.

- Subsystem on the bus

The subsystem on the bus includes a MSA, which will provide real time information to the passengers with RFID tags on board. When the passenger boards the bus, he is automatically detected by the RFID reader on the bus, and the driver must be informed of the presence of these passengers. In case the passenger has the app NextStop installed on their smartphone, it must automatically pair with the on-board console in order to have access to all travel data.

- AppNextStop

In addition to general information about the PT service, the app should make a connection via wireless technology with the on-board console. All useful information about the trip should be transmitted to the app (e.g. the next stop information so the passenger knows when to leave the bus).

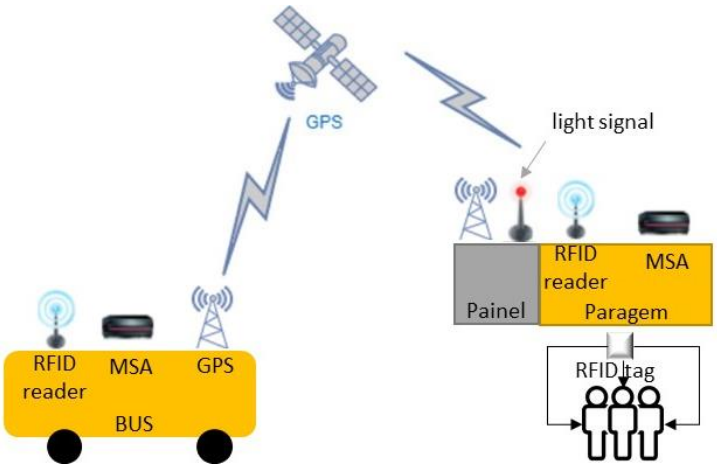


Figure 27: MAD 7.3 - Architecture

Implementation of ITS systems and solutions

The activities of this measure are being planned or developed, only the scheduling optimization software have been installed and started to be used.

Scheduling optimization software

One of the main advantages of this tool is the possibility of producing the timetables directly from the base data, avoiding human resources editing the image of the timetable.

From past surveys, HF received some comments like “The bus arrival time at the bus stop was not very clear”. With this new system, HF will provide timetables at bus stops, according to the planned service.

When testing the production of the timetables, it was found necessary to correct some information in the system (some bus stops was missing, or some trips have special conditions like deviations if the driver is asked). More time is needed to verify all the data, and then provide the new information to the public (timetables and GTFS).

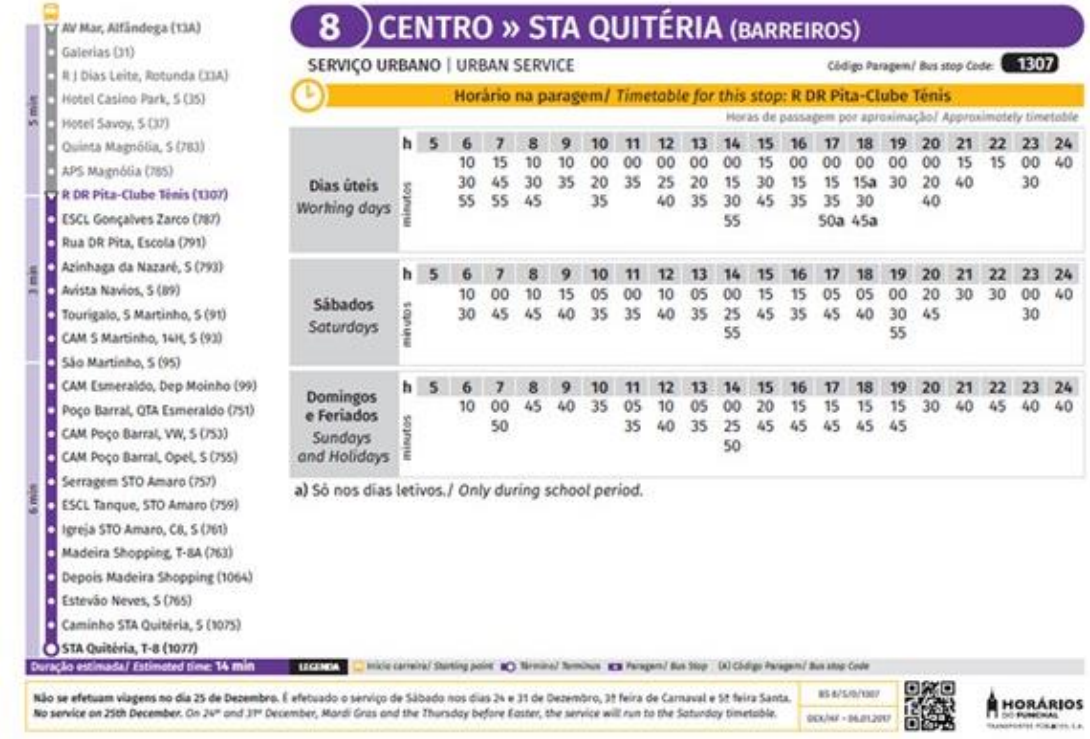


Figure 28: MAD 7.3 - New Timetable at Bus Stop

4.2 MAD 7.4 Public Transport open and smart ticketing system

As referred in MAD 7.3, the principle of these two measures is to integrate all the planning, operating and information systems. The current ticketing system has two main disadvantages:

- Not user friendly for customers; and
- Not efficient for PT operators.

Site preparation, solutions deployment, supporting actions and demo setup

Customers' opinion

It is important to refer that, currently, in Madeira Island are five PT operators, HF as urban service, and four more PT companies for interurban service (one of them part of the group HF). Each one has their ticketing system without any integration between them (excluding the case of the group HF).

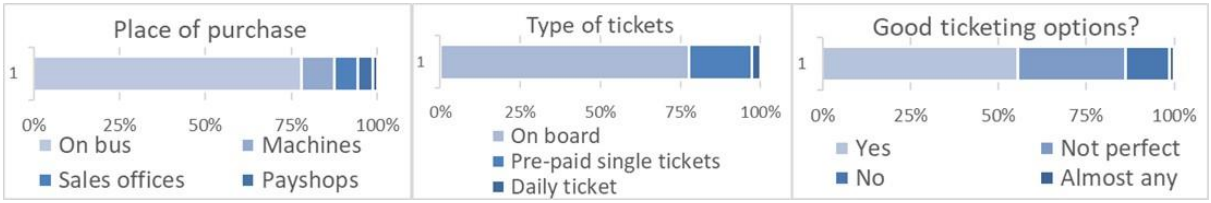


Figure 29: MAD 7.4 - Survey on Airport2017

It was reported in past surveys, and also by the regional partners that tourists get confused with so many transport operators and no possibility to purchase the tickets one time only. The tourists also mentioned their interest in having access to touristic attractions, like gardens and museums, using the PT ticket. The residents also expressed their dissatisfaction with the ticketing system, for pre-paid tickets they must have one card for each PT operator.

People do not feel comfortable with using new methods of payment in Portugal. However, thinking about the future and the youngest users it is important to provide easier methods of payment. A good dissemination campaign with an explanation about the use of new methods of payment will be necessary.

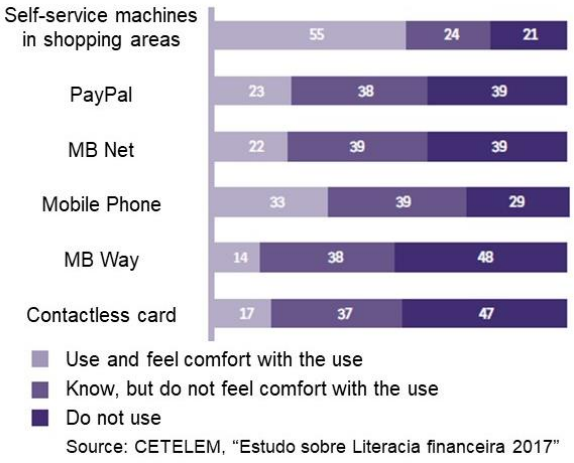


Figure 30: MAD 7.4 - Comfort in Using Methods of Payment in Portugal 2017

Current system

Buses are highly technological tools which can collect and manage enormous data sources (ticketing, passenger counting, AVM, etc.). On board equipment is becoming complex and there is the need to integrate tools and functions for the operator and the customer, too.

The data collected have some problems. For example, it is not easy to estimate how many passengers used a certain bus stop.

The current ticketing system of HF is explained in the following image:

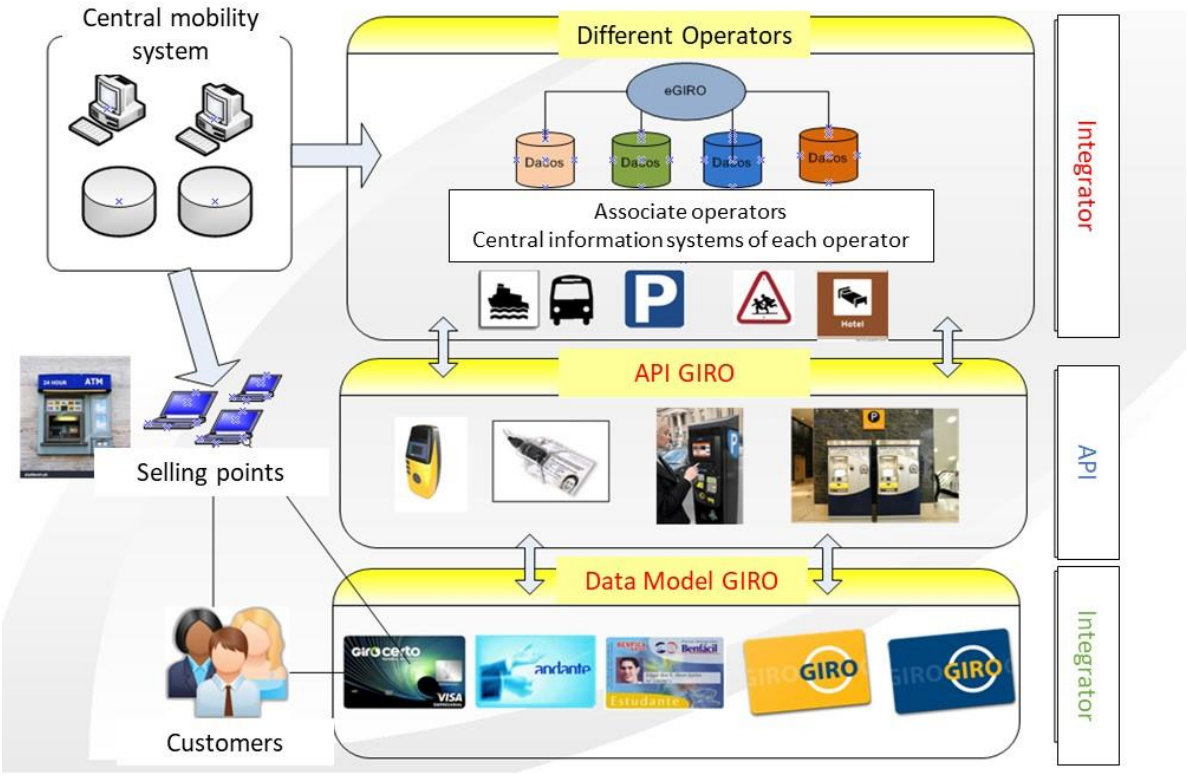


Figure 31: MAD 7.4 - Current Ticketing System

System requirements

Considering the requests collected from HF, and the regional partners, the image below indicates the integrated system to control and pay services.

Besides the innovation in the integration of the equipment on board and the integration of different services, HF intends to provide the ticketing system on mobile phones, and the system must work on mobile phones in offline mode.

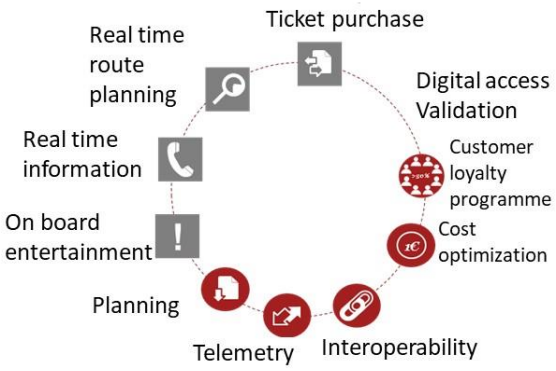


Figure 32: MAD 7.4 - Integrated System to Control and Pay Services

System security

During the preparation phase some cases of fraud in the new technological system was studied:

(1) NFC+HCE
- Advantage: Low distribution and production costs. A lot of compatible equipment available in the market.
- Disadvantage: Strictly rely on Cloud Online system. Only for Android and BlackBerry.
- Security: The data saved on the mobile are exposed to possible attacks.

(2) QR Code
- Advantage: Works on all smartphones.
- Disadvantage: Longer boarding time.
- Security: Easy to fake.

(3) CALYPSO Secure Application Module (SAM)
- Advantage: Performance and security for faster tele-ticketing transactions.
- Disadvantage: More expensive.
- Security: Have a fraud detector system.

Proposal solution

The solution that HF plans to test is the use of the tokenization combined with the Calypso SAM. Tokenization is the process of protecting sensitive data by replacing it with an algorithmically generated number called a token.

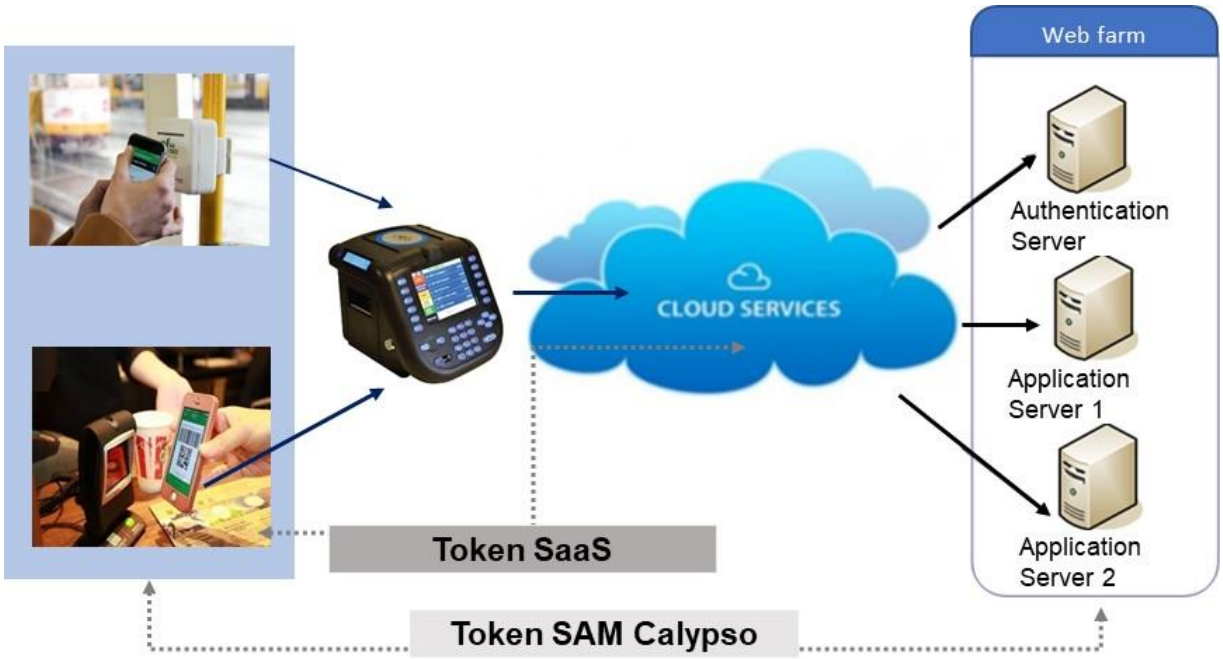


Figure 33: MAD 7.4 - Tokenization

The tender process for the ticketing system is being concluded and prepared for launch. For security reasons, the total ticketing system will not be developed by the same company. The development of the ticketing back office will be separate from the mobile ticketing options.

Promotional activities

As indicated, due to the lack of comfort in using new technologies between customers, it will be necessary to develop a campaign that explain the benefits of the new ticketing. The regional partners will support HF in this activity.

4.3 LPA 7.3 Real time mobility and tourism information service.

Site preparation, solutions deployment, supporting actions and demo setup

After annual surveys related to urban PT customer satisfaction, real time information system was pointed out as an essential issue to take into account, so Guaguas Municipales decided to improve the main bus stops by extending the real time information system at 20 bus stops with screens powered by solar energy.

These equipment are provided with new and innovative functionalities such as devices that allow customer to read the current balance of their contactless smart cards, and electronic devices to allow the visually impaired to have updated arrival times by a voice system. Furthermore, the current urban PT app will be improved to add more information related to the tourism market.

The activities carried out before the installation of real time panels include:

- Drafting the tender documentation (Technical as well as administrative) in order to acquire 20 real time information panels powered by solar energy and supplied with electronic devices to read the current balance of the PT smartcard.
- Launching a tender process on 26/08/2016 in the State official newsletter.
- Awarding the tender in September 2016 to CAPMAR company for presenting the best value for money.
- In parallel to the tender process, a comprehensive study of Guaguas Municipales bus stops was carried out in order to prioritize and choose the bus stops where the real time information panels were going to be installed (this study includes the physical features, number of passengers, number of bus lines serviced, and other characteristics of the studied bus stops).

Figure 34: LPA 7.3Location of Real Time Information Panels Powered by Solar Energy

- After the selection of bus stops, an application to the city council urban planning area was processed, in order to get the applicable working license.

- The structural foundations for the real time information panel were built at each selected bus stop and the real time information panels were installed in March 2017.

Implementation of ITS systems and solutions

The main features of this equipment are:

- Photovoltaic panel.
- Alphanumeric filing system
- Reception and management of information.
- Solar power supply system.
- Access device for information for people with disabilities.
- 16-inch dynamic information display.
- Device to read the current balance.

Figure 35: LPA 7.3 - Real Time Information Panels Powered by Solar Energy

Local organizational and operational measures

After the installation, the activities undertaken include those listed below.

- Carrying out a monitoring study in order to verify that the right works and the installation of the equipment was implemented and that they are in full operation. A compliance report was redacted.
- A track of the right operation of the real time information panels has been carried out.
- Incidents' management (vandalism, maintenance, etc).
- Installation of contactless smartcard readers in real time information panels that already exist on the urban PT stop network.

Operation

The panels are connected with the advanced fleet-management systems of Guaguas Municipales knowing the bus position in real time. The 16-inch dynamic information display shows the updated arrival time.

Figure 36: LPA 7.3 - Real Time Information Display and Solar Panel

Customers can read the current balance of the urban PT smartcard by touching the smartcard on the balance reader, so the remaining amount appears in the screen.

Figure 37: LPA 7.3 - Contactless Smartcard Reader

Furthermore, the current urban PT app will be improved to add more information related to tourism.

Communication

A communication campaign about new real time information panels and contactless smart card readers was carried out. This campaign explains the operation and use of these new real time information panels. This video was shown using social media and it is available on YouTube and Guaguas Municipales webpage.

Figure 38: LPA 7.3 - Real Time Information Promotional Video

4.4 LPA 7.4 Integrated payment solutions for mobility and tourism.

This measure can be divided in two different tasks, acquisition, installation and operation of payment equipment for the BRT and touristic cards.

Acquisition, installation and operation of payment equipment for the BRT.

Site preparation, solutions deployment, supporting actions and demo setup

This task within LPA 7.4 measure will allow the purchase of two external vending machine as well as on board payment equipment.

To date, passengers can pay the urban PT trips by cash (directly to the bus driver) or they can acquire in advance one of the multiple Guaguas Municipales urban PT smart cards and validate them once on the bus. Nowadays, the validation equipment is installed next to the bus driver, so all customers have to get on the bus by the front door.

The main idea for the BRT (MetroGuagua), is that all customers will pay in advance (not only those customers with smart card, but also those that pay by cash) and will be able to get on/off the bus by all the doors, regardless of the bus driver. These measures together with traffic light priority, exclusive BRT lane and the alignment between BRT buses and bus stops will allow the BRT line to be faster, more efficient, punctual and attractive for citizens and visitors. Guaguas Municipales will introduce and test two external vending machines before the BRT system is set up in Las Palmas de Gran Canaria.

The operation of payment equipment is a critical part of day-to-day urban PT operation and new equipment and software will be needed. Part of this new equipment will be tested on existing articulated buses in the Guaguas Municipales fleet to check the adaptability and technical communication between validation points and tickets machines. This will be done to avoid any problems related to payment equipment during the first stages of BRT implementation.

The activities carry out for this task are the following:

- External vending machine
- An ITS company has been contacted to look for information about the next generation ticketing machine regarding urban PT and market analysis.
- Technical specifications for BRT ticketing machines were identified.
- A meeting was held with a company expert in WiFi solutions on trains, buses and other transport to understand the requirements and needs of including this technology on the BRT system.
- The tender process for the acquisition of an external vending machine was launched on 05/03/2018.
- The tender process was awarded in July to DESIC.
- The external ticketing vending machine will be delivered by December 2019.

- Smart card validations equipment.
- Guaguas Municipales is joining efforts with another smart city project called “Inteligencia Azul” and we will acquire smartcard validation equipment based on its technical requirements.

Touristic Cards

Site preparation, solutions deployment, supporting actions and demo setup

Tourism is a fundamental pillar of the Canary Islands' economy, and in the last years, Las Palmas de Gran Canaria has been positioning as a referent regarding to tourism, especially when it comes to cruise (565 cruise ships visited Las Palmas de Gran Canaria in 2017) and conference tourism.

To date, the urban PT service of Las Palmas de Gran Canaria has focused on citizens' and residents' trips without taking into account that tourism could have some special needs regarding urban PT.

For that reason, Guaguas Municipales is going to enlarge its tariff offer to include new types of tickets focusing on tourism and leisure trips. The enlargement of the tariff offer will especially focus on those who come for a short visit (from one to three days) because the average duration of stay in Las Palmas de Gran Canaria is three days and many visitors stay just for one day (cruise passengers or visitors from other municipalities of the island, especially present in the south).

The activities carried out for this task include:

- Drafting a benchmarking report to identify similar solutions (urban PT cards focus on tourism market) in other transport companies at national and European levels that could support Guaguas Municipales in defining commercial and operative solutions.
- Contacting a software development company to ask for the software development that support this kind of contactless transport cards.
- Contacting companies to develop the commercial design and the tradename of the 1-3 day touristic card for urban PT.
- In order to introduce a touristic urban PT in Las Palmas de Gran Canaria, a kick-off training for business model development was carried out in October 2017 and after that successive meetings were held.
- Meetings with stakeholders (hotels, tourism office, etc) to identify those interested in selling the tourist card.

Figure 39: LPA 7.4 - Touristic Urban Public Transport Tickets

Implementation of ITS systems and solution

The main features of the automatic ticketing vending machine are:

- Management of the user interface.
- Maintenance and money (cash) collection management.
- Tickets options (see below):

- Paper ticket.
- Chip-on-paper (pre-coded or coded and printed “on the fly”).
- Recharge of tickets (multi-trips, pass, etc.) coded on smart card.
- Change based on re-circulating circuit (use of coins introduced by the users).
- Possibility of configuring the maximum value of cash change.
- Release of payment receipts.
- Identification of cash level and the need to add coins for change
- Management of the diagnostics:
- Transmission to the central system of the following information: the amount of cash/coins in the machine, pre-alert (paper is finishing) and alert notification (break-in attempt, failure, etc.).

The main features of the validators are:

- Smartcard reading at a distance suitable to avoid impacting boarding and users’ operation.
- Time/space validity check.
- Data coding smartcard in order to carry out the on-board control.
- QR code management.
- Credit card payment management.
- Registration of data related to validation and payments.
- Data communication with central system

The main features of the on-board switch/router are:

- Fast Ethernet fibreports
- Reduced dimensions
- Alluminium housing IP31
- CE certification
- Automotive “E” mark (required for on-board installation).

Furthermore, software development will be needed for the technical communication and adaptability of this equipment.

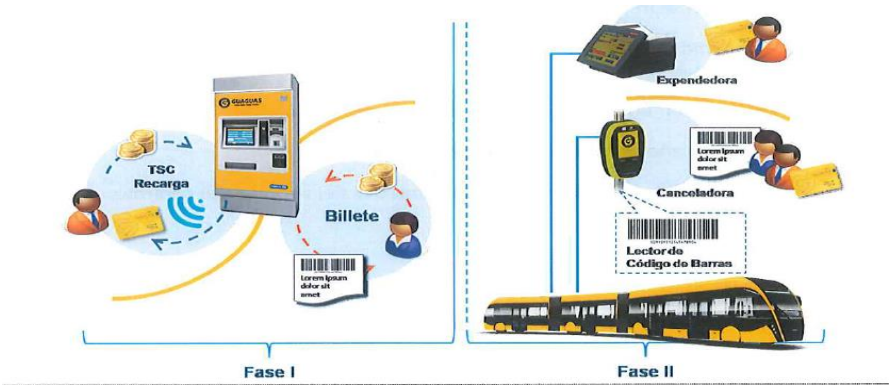


Figure 40: LPA 7.4 - Scheme of the Integrated Payment Solutions

New urban PT tickets focused on tourism market.

To introduce the new kinds of touristic tickets in the current Guaguas Municipales payment and ticketing system, some specifications must be considered.

- It will be implemented using the existing technology “MifareUltralight C cartón”.
- The time period will be 1-3 days and the prices will be 5-6 € (one day) and 12-15 € (three days)
- It will be a single use card (non-rechargeable).
- Touristic urban PT cards will come already coded and activated by the supplier.
- Each PT card will be serigraphed according to its feature.
- Guaguas Municipales would like to sell the touristic card to cruise passengers, because approximately 25,000 cruise passengers a year use PT in Las Palmas.
- It will be introduced by October 2018 (peak season in the Canary Islands)

4.5 ELB 7.2 Integrated payment

As illustrated in the D7.1 report, the realization of a system for the payment of PT integrated with other services (e.g. car parking) is not feasible because there are no services with ICT systems on ELBA. Considering the difficulty of finding bus ticket resale points on the island, it was decided to implement the system of payment of the ticket by SMS, a system much requested by users.

Implementation of ITS systems and solutions

The SMS ticket payment for 10 and 20 Km (the most used in Elba Island) has been in operation since June 2017 with good results particularly during the summer season.

The SMS ticket payment (after considerable efforts by CTT with the telephone companies) for 30 and 40 Km will be activated from July 2018.

Figure 41: ELB 7.2 - SMS Ticket Payment

Local organizational and operational measures

CTT Nord manages this activity in coordination with the commercial department of the mobile telephone companies, and CTT Nord has the data of the number of SMS tickets purchased.

4.6 ELB 7.3 APP for user real time information

Implementation of ITS systems and solutions

The purpose of this measure is to experiment and install on seasonal tourist buses a "light" localization systems (AVL) as an alternative to the standard expensive AVM.

The system designed and implemented allows the validation of PT service performances (e.g. the number of bus journeys made per day and with respect to the scheduled timetable) and the possibility of users knowing the location of the bus through a specific app at any time.

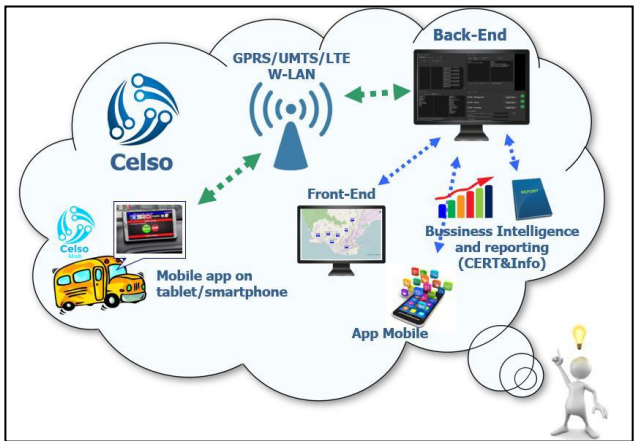


Figure 42: ELB 7.3 - CELSO System

The system will be applied to the Marebus service of Rio and to the boat transport service in Portoferraio bay (service connecting Portoferraio port with some villages of the Portoferraio bay). In June, tests were carried out on the buses on the Rio Marebus routes and on the boat that will operate in the Portoferraio bay.

The results were very positive and the system will be put into operation on the said services starting from this summer giving a valuable service to users.

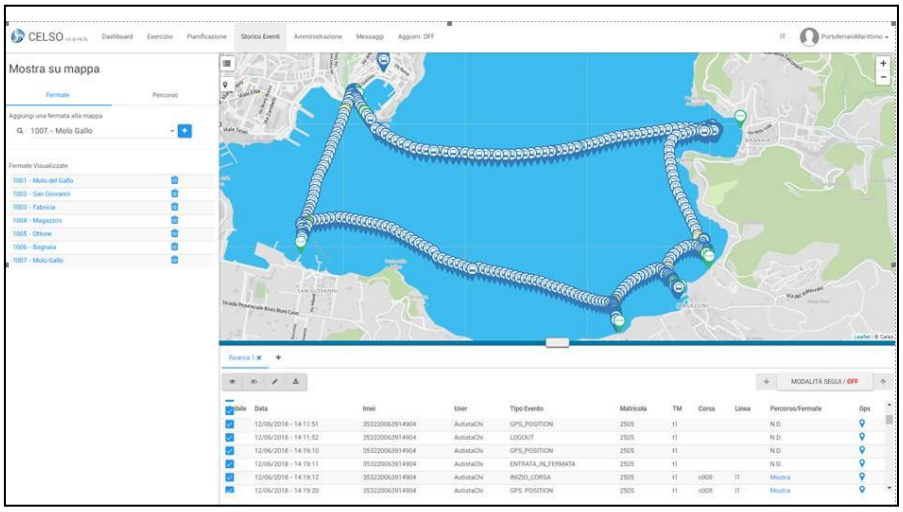


Figure 43: ELB 7.3 - Data of the Tests Carried Out by the Celso System on the Chicchero Boat Service in June 2018

Local organizational and operational measures

A training activity was carried out by Memex in June 2018. Two meetings have been held: one with the operators of the Chicchero service and one with the bus operators. The procedures to be implemented in order to activate the Celso system have been explained with practical examples and simulations of service. The technical departments of Portoferraio and Rio will manage the control of the correct application of the Celso system while Memex will assist the operators with technical problems.

The companies that implement the Chicchero and the Marebus services are appointed to register data such as the number of users for each journey or user comments on the service.

Celso will automatically record data on the daily number of the runs and differences between actual and scheduled services.

The dissemination actions for these services have been illustrated in the ELB 7.1. The Celso system and in particular the functionality of the app (available on both Android and IOS) that informs users of the stops and provides real time information on their mode of transport (bus and small ferry) will be illustrated through announcements at the stops and on the local media.

The Celso system has been positively controlled many times in exercise simulations. Even the practical tests carried out in the field (on the Marebus service buses and on the small Chicchero service ferry) did not reveal any particular problems.

In the case of bad or interrupted operation of the Celso system, the transport service can continue on a regular basis. However, operators will have to manually record the various data, while Memex will intervene promptly to solve the problems.

4.7 LIM 7.3 PT traveller information system

For this measure Limassol will install 25 electronic signs on buses and bus stops connecting the tourist area to the city and old town. The electronic signs will provide information to users regarding waiting time, route and end of the route, ticket purchasing, etc. On buses, the scrolling signs will provide tourist information.

Site preparation, solutions deployment, supporting actions and demo setup

Limassol Municipality has approved the installation of the electric signs in tourist areas and will be responsible for their maintenance. The municipality participated in the process of the identification of bus stop names.

Limassol has identified and named the 25 bus stops where signs will be installed and has determined the technical specifications in collaboration with the Ministry of Communication and Works (Department of Public Works) for the procurement procedure for the scrolling signs, AVL service system and GPS on buses. Additionally, 15 more bus stops in the city of Limassol will be installed from another funding source, thus a total of 40 bus-stops will be installed.

Tender documents were published at 8/12/2017 the deadline for the tenders was 19/1/2018 but due to clarifications that were asked by the economic operators we extended the deadline. No tenders were received and we had to cancel the procedures. New tenders were published with a deadline of 8/6/2018; one tender was received. The opening and evaluation procedure are complete; the tender was awarded to Grupo Mecanica del Vuola Sistemas SA.

Implementation of ITS systems and solutions

The installation of 25 electric signs inside buses and 25 outside of the buses will be completed by June 2018.

Factory Acceptance Test (FAT): The provider shall conduct their own test at their premises.

ICT/Infrastructure supporting solutions

(1) On board TFT Displays for the Provision of Location Based Information – Minimum Technical Specifications

Feature	Value
Size	≥23.6”
Screen	TFT LCD
Aspect ratio	16:9
Resolution	1920x1080
Brightness	≥300cd/m2
Contrast	1000:1
Time Response	5ms
Retro illumination	LED: back light

Feature	Value
Colour system	PAL/NTSC auto
Interface	ETH (M12-8)
Power	24V
Protection	Cristal 4mm
Temperature	-10 to 60ºC
Modem	Minimum HSDPA
Integrated CPU	Cortex A9 Quad Core 1 GHz or simlar
	1GB RAM
	Linux compliance

(2) Alternative Option for On-Board TFT Displays Supply:

i. Twenty-five on-board software licences of multimedia information to passengers' embedded software.

ii. One back office contents manager software license for configuration, operate and reporting purposes for both bus and on-board displays of the system.

iii. Software for diagnosis and configuration tool.

iv. Installation manual.

v. Service of sharing IT infrastructure in control centre (server, MS SQL server, Windows licences, back-up services management, etc.), therefore there is no need to provide a PC for the back office.

vi. Service of surveys, FAT, SAT, pilot and roll-out complete attendance.

vii. Telecommunications services and all communications running costs until the end of the contract, including the Good Operation Guarantee – Free Maintenance Period, and Maintenance Period.

viii. Service of training to awarding authority, MTCW and PT Ops.

Feature	Value
Size	≥23.6"
Screen	TFT LCD
Aspect ratio	16:9
Resolution	1920x1080
Contrast	1000:1
Brightness	≥300cd/m^2
Time Response	5ms
Retro illumination	LED: back light
Colour system	PAL/NTSCauto
Interface	VGA
Power	24V
Protection	Cristal 4mm

Feature	Value
Temperature	-10 to 60ºC

Bus Stop Displays with Photovoltaic System

Feature	Value
Screen Size	>16”
Screen Type	Monochrome Bi-stable ChLCD display technology - to display bus arrival times, messages or notices from Awarding Authority, graphics and time tables.
Screen Resolution	>320x240
Illumination	LED
Contrast	High Contrast ChLCD or e-Paper
Power source	Photovoltaic Panel & Battery with Charge Regulator to prevent battery from over charging or complete draining Battery Guarantee – 5years
Voltage	12V (where Bus Stop Only) – where a bus shelter exists it can be powered by 240V AC
Battery Autonomy	> 3days (calculations to be provided)
Pole or Shelter	Rectangular cross section (20-25cm width, depth determined by the manufacturer but not to exceed the width at any section) or Shelter: • In case of Pole, to incorporate (inbuilt) display area (min 20cm width with 80cm height) for fixed printed information to be read by customers (person height). • To incorporate area on the pole for information such as Stop Name, Stop Number, Logo of the Bus System, Routes serving the stop (display height). • To incorporate internally all electrical wires, lighting, battery units etc. All to be enclosed but easily accessed for maintenance or replacement. The access door to have an anti-vandal lock. • Minimum clearance under screen on pole 2.45m • Material to be stainless steel or hot dip galvanized carbon steel (paint coated light grey - suitable for harsh environment (exposed to salt because of proximity to the sea). All structure and fixings, screws etc shall have life time guarantee against corrosion. • Structure and foundation to meet Structural Design Eurocode requirements for static and dynamic loading (wind and seismic loads). Approval for the design is given by the Public Works Department, MTCW.
Protection	Vandal-proof glass for screen and information display area
Ingress Protection	IP65
Operation Temperature	-20 to +80ºC
GSM/GPRS Modem	GPRS class 10: max. 85.6 kbps (downlink)
GPRS/3G/4G Antenna	Frequency Band must support GPRS/LTE/4G Cypriot spectrum.

Feature	Value
Audio	Messages - to be played for bus arrival. The Prospective Contractors to outline their full approach how that is achieved,

4.8 LIM 7.4 Mobility application and travel planner for smart phones to provide real information

For LIM 7.4, Limassol is responsible for the creation of an interactive mobility application providing real time information and a travel planner. The application allows travellers to determine the nearest bus stations, bike rental stations, bike sharing stations, electric car stations and EV chargers. It also provides options for cycling, walking and hiking routes with descriptions regarding distance, level of difficulty etc. The application includes information and maps for cycling lanes and routes, walking paths and routes, hiking paths and routes. The application also features information on access points to the beach for disabled people.

Site preparation, solutions deployment, supporting actions and demo setup

Procurement acquisition process

The procurement process has been completed. The contract has been signed with the winning bidder, Geomatic Ltd. The mobile application is completed and we are in the pilot phase.

Site preparation

In collaboration with the Ministry of Communication and Works, the technical specifications have been identified to ensure that the mobile application will be compatible with the PT control room of the Ministry to receive real time information.

Implementation of ITS systems and solutions

During the implementation phase we followed the milestones, overlooking the preparation of the application and travel planner. LTC has had several meetings with the Ministry of Communication and Works to design the technical specifications of the mobile application.

The official call for tender has been published and a contractor has been selected for the design of the mobile application. Several meetings have taken place to ensure that the application will operate in line with the contractual agreement.

Text/descriptions and relevant information (distance, level of difficulty, etc) for the application have been prepared. Maps to include and download from the system have been acquired. In April 2018, a pilot test of the application was done. All the corrective actions were followed and the application is online. Currently, we are promoting the application.

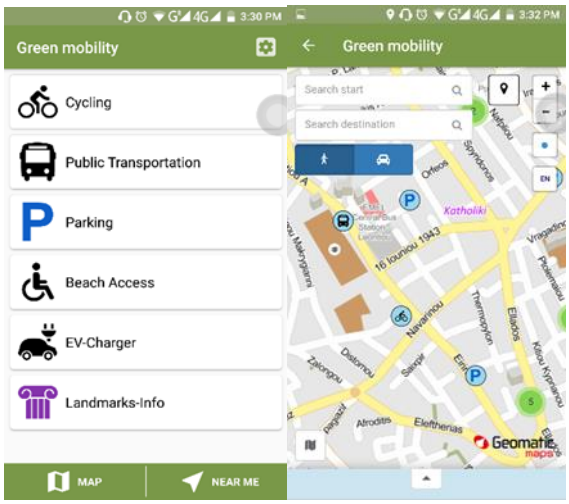


Figure 44: LIM 7.3 - Limassol App

ICT/Infrastructure supporting solutions

The interactive application provides real time information, GIS mapping with a travel planner being incorporated in the service. The application is securely connected to this system to retrieve all the updated information needed for its operation. The application operates offline since it includes a system to store the data on the device supporting an offline mode. A GPS system is incorporated with the application to allow users to locate information (maps, etc.) related to the current location. A push notifications service is supported on all devices based on automatic mechanisms that are triggered by the user's options.

4.9 Collaboration among DESTINATIONS Sites/partner

Measure Title	Best Practice description in the implementation of the measure	Description of a specific expertise needed for the demonstration phase	Identified Synergies (please indicate measure)
MAD 7.3 Smart PT traveller information service			MAD7.2 MAD7.4
MAD 7.4 Public Transport open and smart ticketing system	Not applicable	Mobile ticketing system that works offline.	MAD7.3
LPA 7.3 Real time mobility and tourism information services	Real time information panels powered by solar panels that included electronic devices to read contactless smartcard balance.		MAD 7.3, LIM 7.3 & 7.4, ELB 7.3
LPA 7.4 Integrated payment solutions for mobility and tourism.			ELB 7.2, MAD 7.4
ELB 7.2 Integrated payment.			
ELB 7.3 APP for user real time information			
LIM 7.3 PT traveller information system			
LIM 7.4 Mobility application and travel planner for smart phones to provide real information			

Table 3: Cross Site Collaborations, regarding implementation of integrated mobility and tourism information and payment service