



2020  
CIVITAS  
Cleaner and better transport in cities

DESTINATIONS



## Measure Evaluation Results

### LPA 7.3 - Real time mobility and tourism information services

Project Acronym:	DESTINATIONS
Full Title:	CIVITAS DESTINATIONS
Grant Agreement No.:	689031
Workpackage:	9 - Evaluation
Responsible Author(s):	Jordi Casas (CINESI)
Responsible Co-Author(s):	Antonio Artilles (Guaguas Municipales) and Clara Bellera (Cinesi)
Date:	10/03/2021
Status:	Final
Dissemination level:	Public

The views expressed in this publication are the sole responsibility of the authors and the DESTINATIONS project consortium and do not necessarily reflect the views of the European Commission.

2020  
  
CIVITAS  
Cleaner and better transport in cities  
DESTINATIONS



THE CIVITAS INITIATIVE  
IS CO-FINANCED BY THE  
EUROPEAN UNION

## Executive summary

Before DESTINATIONS, Las Palmas de Gran Canaria counted 818 bus stops located throughout the city, however, only 81 of these offered real-time information. In addition, the real-time information system was highlighted by passengers during the annual surveys as an operational issue to be improved. Under such circumstances, and with the goal to provide a better and more inclusive service for all, the public bus operator, Guaguas Municipales, decided to improve the information system. This would involve increasing the number of bus stops with real-time information, and providing better conditions especially for impaired users.

Hence, Guaguas Municipales extended the real-time information system to a further 20 bus stops, which were equipped with screens powered by solar energy. These screens included new and innovative functionalities, such as enabling customers to read the current balance of their contactless smart cards, and a voice-over system that alerted people with visual impairments about the updated arrival times.

After the installation and monitoring phase, the panels were continuously tracked to ensure their correct operation and to repair them in case of incidents, e.g. vandalism or technical faults.

In collaboration with the Municipality of Las Palmas de Gran Canaria, Guaguas Municipales continues to install the same real-time information systems every time a new bus stop is created, or an existing one is improved or replaced. Aside from the 20 systems installed as part of CIVITAS DESTINATIONS, over 40 further systems have been installed or upgraded.

Guaguas Municipales realised that solar-powered real-time information panels are cheaper than those connected to the electricity grid, considering the full cost of funding needed to purchase and install the equipment.

Thanks to this measure, the city now has 104 bus stops with real-time information systems, compared to the 84 in place prior to the CIVITAS DESTINATIONS project. Moreover, after their implementation, the percentage of services arriving/departing on time increased from 86.2% to 90.3%, according to indicators monitored by the transport service provider.

The information used for the evaluation of this measure was obtained from the bus operator Guaguas Municipales. For this, the company kept track of the number of bus stops with real-time information, and also calculated the percentage of services arriving/departing on time by dividing those on time by the total number of services offered.

# A Description

*Guaguas Municipales* has extended the real-time information system to 20 additional bus stops with screens powered by solar energy. These screens provided new and innovative functionalities such as enabling customers to read the current balance of their contactless smart cards, and electronic devices to give vocal updated arrival times to visually impaired users.

The tender process for the acquisition of 20 real-time information panels was launched in August 2016. Then, between October and December 2016, several studies were carried out in order to identify the bus stops where real-time information equipment should be installed. This took into account the physical features, number of customers, number of bus lines, and other characteristics of the bus stops. The panels were finally installed in July 2017.

## A1 Objectives and outputs

### City policy level objectives

- Efficient and coordinated use of the different transport modes (urban public transport, pedestrian and bike mobility)

### Measure specific objectives

- Improvement of accessibility to public transport for the visually impaired
- Implement new communication channels to improve users' experience
- Improvement of the quality and effectiveness of the information that the tourists and citizens receive about the transport systems

### Output

- 20 real-time information screens at bus stops powered by solar energy
- Installation/Upgrading of other over 40 real-time information panels<sup>1</sup>

### Supporting activities

During the implementation of this measure, *Guaguas Municipales* developed a promotional video for social media to inform customers how to use the contactless smartcard reader integrated into the real-time information panels. The promotional video also disseminated the CIVITAS DESTINATIONS project: <https://www.youtube.com/watch?v=vBIYAaBrsTE>.

## A2 Inter-relationship with other measures

This measure is related to measure *LPA 3.1 – attractive, safe and accessible public space at major attractions* because some bus stops in the demonstration area in LPA 3.1 have been supplied with the technology developed within this measure. This measure is also related to *LPA 7.1 – Communication for the introduction of the new Bus Rapid Transit (BRT)* because the real-time information service devices were installed at the BRT stops.

---

<sup>1</sup> Extra-output during DESTINATIONS funded by other financial instruments

### A3 Target groups and/or affected parts of the city or region

The target group for this measure was the users of the urban bus system of Las Palmas de Gran Canaria. The measure was intended to provide information to the users and thus improve their travel experience. Concerning the part of the city affected, the 20 screens have been distributed through the whole city, specifically in the most crowded bus stops.

### A4 Stakeholders: CIVITAS project partners and other important actors

Stakeholder name	Activities description
CAPMAR	Real time information equipment supplier

**Table 1:** Stakeholder involvement

## B Measure implementation

### B1 Situation before CIVITAS

Before DESTINATIONS, Las Palmas de Gran Canaria had 818 bus stops located throughout the city, but only 81 of these offered real-time information. Following the annual surveys related to urban PT customer satisfaction, the real-time information system was highlighted by passengers as an essential issue to take into account. Moreover, the total number of bus users in Las Palmas de Gran Canaria had been following an upward trend since 2013.

Under such circumstances, the public bus operator identified the need to increase the number of bus stops in the city which offered screens with real-time information. This was to increase the quality of the service, but also to provide a public transport service that is more inclusive for all, providing better conditions, especially for impaired users.

### B2 Innovative aspects

The real-time mobility information services installed at the bus stops are innovative as they are accessible for all target groups, including impaired users (commuters, tourists, disabled people, etc.). In addition, the equipment has innovative physical infrastructure, with a modern design and an autonomous system, as it is powered by solar energy.

Guaguas Municipales has collaborated with ONCE (a Spanish association that raises funds to provide services for the blind and people with serious visual impairment) in order to adapt the visualisation of real-time information for visually impaired people. This resulted in the addition of a device within the panels that vocalises the time of arrival of the bus if a button is pressed.

Moreover, the real-time information panels installed in the bus stops also included an electronic device informing users about the remaining balance of their transport ticket (*BonoGuagua*) through a contactless system.

## B3 Research and technology development

During the preparation of the tender documentation, market research was carried out in order to identify the desired characteristics for the new real-time information panels. In addition, research was performed together with ONCE with the objective of adapting the visualisation of real-time information for visually impaired people.

## B4 Actual implementation of the measure

Before DESTINATIONS, *Guaguas Municipales* already offered real-time information in at least 82 bus stops within the city. After annual surveys related to urban PT customer satisfaction, which highlighted the real-time information system as an essential issue, the company decided to improve the main bus stops. This involved extending the real-time information systems to a further 20 bus stops, with screens powered by solar energy.

Hence, the objective of measure LPA 7.3 was to purchase, install, and operate real-time information panels powered by solar energy at bus stops.

A tender process was launched on 22/08/2016 in *Boletín Oficial del Estado* for the acquisition of 20 real-time information panels for Guaguas Municipales bus stop network. It was awarded to CAPMAR S.L. CONSTRUCCIONES Y MANTENIMIENTO.

While the construction stage of the equipment was progressing, several studies to select the most convenient bus stops to install the real-time information panels were carried out. The physical features were taken into account, alongside the number of customers, the number of lines and other operational characteristics.



**Figure 1:** Real time information panel powered by solar energy

The installation of the real-time information equipment occurred between January and February 2017, and the real-time information panels were in full operation in March 2017. In July 2017, a promotional video was developed and launched explaining how to use the contactless smartcard reader which is integrated into the real-time information panels. The video was disseminated on the Guaguas Municipales YouTube channel and via social media <https://www.youtube.com/watch?v=vBIYAaBrsTE>.

# C Impact evaluation

## C1 Evaluation approach

### Expected impacts and indicators

Impact category	Impact indicator	Unit of measure
Transport	1 - Punctuality of the service	%
Transport	2 - Bus stops with real time information	Nº

**Table 2:** Expected impacts and indicators

### Method of measurement

Impact indicator	Method *	Frequency (Months)			Target Group	Domain (demonstration area or city)
		Bef.	Dur.	After		
1 - Punctuality of the service	DC	8	n.a.	28	citizens / tourists	city
2 - Bus stops with real time information	DC	8	n.a.	28	citizens / tourists	city

\* (Data collection (DC), Estimation (E), Survey (S))

**Table 3:** Method of measurement

### Detailed description of the indicator methodologies:

- 1. Punctuality of the service** – This indicator shows the percentage of services arriving / departing on time, and was measured by dividing the number of expeditions that arrived and departed on time in a year by the total number of expeditions. This data was provided by the bus operator Guaguas Municipales, who keeps track of these indicators.
- 2. Bus stops with real time information** – This indicator shows the absolute number of bus stops that have panels with real-time information in the city of Las Palmas de Gran Canaria. This includes panels powered by solar energy (74) and panels connected to the power grid (10). The number is provided by the bus operator.

### The Business-as-Usual scenario

If this measure had not been implemented, the city of Las Palmas de Gran Canaria would currently have the same number of bus stops with real time information as before, 84.

## C2 Measure results

Impact category	Impact indicator	Unit of measure	Baseline	Ex-Ante	Ex-Post
Transport	1 - Punctuality of the service	%	86.2	90.0	90.3
Transport	2 - Bus stops with real time information	Nº	84	104	104

**Table 4:** Measure results

### C2.1 Transport

#### 1 - Punctuality of the service

The percentage of bus services arriving/departing on time increased from 86.2% to 90.3% in two years, during the CIVITAS DESTINATIONS project. The expected percentage was 90%, so it has slightly exceeded the expectations.

#### 2 - Bus stops with real time information

The number of bus stops with real-time information in Las Palmas de Gran Canaria increased by 20 thanks to the CIVITAS DESTINATIONS project, as planned.

Following such implementations, more reliable information was provided, and an inclusive solution to a wider range of PT passengers. The new panels were installed in the bus stops that deal with a higher number of passengers, which are usually in the city centre and in the stops that are around the future BRT line.

## C3 Quantifiable targets

No	Target	Rating
1	Currently 4,800 users, to be increased to 7,000 after the improvement	★
<b>NA = Not Assessed O = Not Achieved ★ = Substantially achieved (at least 50%)</b> <b>★★ = Achieved in full ★★★ = Exceeded</b>		

**Table 5:** Assessment of quantifiable targets

Target 1 was considered as Substantially achieved. Lately, the year-on-year increase of bus users in Las Palmas has been between 3% and 8%. Therefore, the estimation of a 46% increase in 3 years made at the outset of the project was overestimated. It finally increased by 15% between 2016 and 2019, from 33.4 million to 38.5 million, which is considered very positive.

Year	2013	2014	2015	2016	2017	2018	2019
Urban bus users (millions)	29.7	30.6	31.8	33.4	34.7	35.4	38.5

**Table 6:** Evolution of urban bus passengers in Las Palmas de Gran Canaria

The installation of additional innovative and inclusive information panels provided a better service to all public transport passengers, and contributed for enhanced punctuality of the service. As a result, it was possible to attract more passengers to use the public transport. As can be observed in Table 6, the increase of passengers between 2018 and 2019 was even higher than previous years. Moreover, this result also reflected implementations carried out in measures LPA 7.2 (Hybrid buses in the urban bus fleet), and LPA 7.4 (Integrated payment solutions for mobility and tourism), which also contributed towards better information and an enhanced service.

## C4 Up-scaling of results

There are 818 bus stops in Las Palmas de Gran Canaria, and as of now 104 have real-time information devices. In the future, these devices could be implemented in more stops, in the framework of improving the service quality.

As the works for the new BRT system in the city progresses, new real-time information panels will be installed in the bus stops around the area where the works are taking place.

# D Process Evaluation Findings

## D1 Drivers

The primary data required for the real-time information was derived from the AVM (Automatic Vehicle Monitoring System), the ITS (Intelligent Transport System) tool that supports operational management of the Guaguas Municipales fleet. The fact that the AVM system offers GPS-based vehicle location in real-time enabled the implementation of this measure, as the vehicles were already prepared. Therefore, the operator already had real-time information available, which is now also displayed at the panels at the bus stops.

## D2 Barriers

Some of the problems faced during the implementation of this measure were related to vandalism which affected some of the real-time information panels.

## D3 Main Lessons Learned

This measure demonstrated that providing access to real-time arrival information decreases the perceived and actual waiting times for passengers and improves the public transport service appreciation. Real-time information systems make the experience of travelling on public transport more attractive and comfortable.



## E Evaluation conclusions

This measure was implemented on time and according to the initial schedule. In addition to its impact in terms of increased satisfaction amongst customers and service reliability, this measure also showed the potential of EU-funds to unlock other public and private funding sources. In March 2020, Guaguas Municipales had already installed 74 real-time information panels powered by solar energy (20 funded by DESTINATIONS and 54 with own resources). In addition, the Regional Government of Gran Canaria has installed over 100 panels (with resources beyond DESTINATIONS) all across the island for the inter-urban PT service. DESTINATIONS has catalysed the implementation of this kind of product not only in the city but also across the island.

## F Additional information

### F1 Appraisal of evaluation approach

The best way to evaluate the real impact of the installation of these new real-time information screens in several bus stops around the city would have been to ask the passengers. Through surveys, user satisfaction and usability of the equipment could have been gauged, or to measure the increment of bus passengers at those stops with the new real-time information screens. However, it was not possible to carry out these evaluation approaches. This is because it was not initially planned, and because the bus operator does not have data available regarding the number of passengers using specific bus stops before and after the installation of the information panels. Information is only available regarding the total number of passengers on the whole network. Therefore, for the evaluation of this measure, indicators were chosen related to the service reliability, for which data were available.

### F2 Future activities relating to the measure

In the future, Guaguas Municipales plans to implement more real-time information panels in more bus stops, in the framework of improving the service quality.