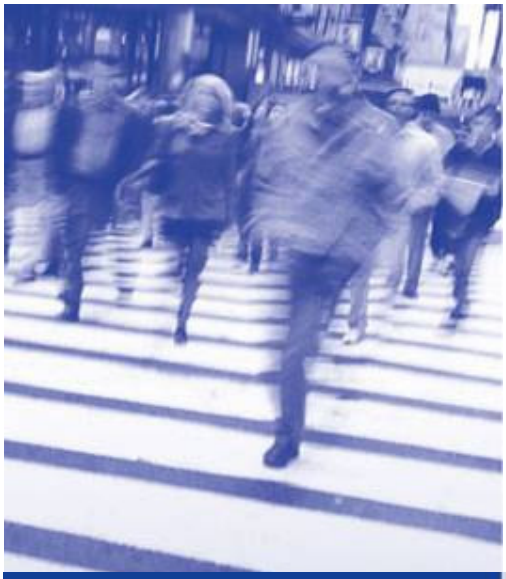

CiViTAS
Cleaner and better transport in cities

ARCHIMEDES
AALBORG • BRIGHTON & HOVE • DONOSTIA - SAN SEBASTIÁN • IAŞI • MONZA • ÚSTÍ NAD LABEM

Donostia – San Sebastian

T16.2 & T16.3 – 22 Security Cameras in Buses

Donostia – San Sebastian

October 2009

THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
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Author	Javier Vallejo
Quality Control	Elisabeth Jorge
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Contents

1. Introduction

1.1 Background CIVITAS

CIVITAS - cleaner and better transport in cities - stands for CIty-VITAlity-Sustainability. With the CIVITAS Initiative, the EC aims to generate a decisive breakthrough by supporting and evaluating the implementation of ambitious integrated sustainable urban transport strategies that should make a real difference for the welfare of the European citizen.

CIVITAS I started in early 2002 (within the 5th Framework Research Programme);
CIVITAS II started in early 2005 (within the 6th Framework Research Programme) and
CIVITAS PLUS started in late 2008 (within the 7th Framework Research Programme).

The objective of CIVITAS-Plus is to test and increase the understanding of the frameworks, processes and packaging required to successfully introduce bold, integrated and innovative strategies for clean and sustainable urban transport that address concerns related to energy-efficiency, transport policy and road safety, alternative fuels and the environment.

Within CIVITAS I (2002-2006) there are 19 cities clustered in 4 demonstration projects, within CIVITAS II (2005-2009) 17 cities in 4 demonstration projects, whilst within CIVITAS PLUS (2008-2012) 25 cities in 5 demonstration projects are taking part. These demonstration cities all over Europe will be funded by the European Commission.

Objectives:

- to promote and implement sustainable, clean and (energy) efficient urban transport measures
- to implement integrated packages of technology and policy measures in the field of energy and transport in 8 categories of measures
- to build up critical mass and markets for innovation

Horizontal projects support the CIVITAS demonstration projects & cities by :

- Cross-site evaluation and Europe wide dissemination in co-operation with the demonstration projects
- The organisation of the annual meeting of CIVITAS Forum members
- Providing the Secretariat for the Political Advisory Committee (PAC)
- Development of policy recommendations for a long-term multiplier effect of CIVITAS

Key elements of CIVITAS

- CIVITAS is co-ordinated by cities: it is a programme “of cities for cities”
- Cities are in the heart of local public private partnerships
- Political commitment is a basic requirement
- Cities are living ‘Laboratories' for learning and evaluating

1.2 Background ARCHIMEDES

ARCHIMEDES is an integrating project, bringing together 6 European cities to address problems and opportunities for creating environmentally sustainable, safe and energy efficient transport systems in medium sized urban areas.

The objective of ARCHIMEDES is to introduce innovative, integrated and ambitious strategies for clean, energy-efficient, sustainable urban transport to achieve significant impacts in the policy fields of energy, transport, and environmental sustainability. An ambitious blend of policy tools and measures will increase energy-efficiency in transport, provide safer and more convenient travel for all, using a higher share of clean engine technology and fuels, resulting in an enhanced urban environment (including reduced noise and air pollution). Visible and measurable impacts will result from significantly sized measures in specific innovation areas. Demonstrations of innovative transport technologies, policy measures and partnership working, combined with targeted research, will verify the best frameworks, processes and packaging required to successfully transfer the strategies to other cities.

1.3 Participant Cities

The ARCHIMEDES project focuses on activities in specific innovation areas of each city, known as the CIVITAS corridor or zone (depending on shape and geography). These innovation areas extend to the peri-urban fringe and the administrative boundaries of regional authorities and neighbouring administrations.

The two Learning cities, to which experience and best-practice will be transferred, are Monza (Italy) and Ustí nad Labem (Czech Republic). The strategy for the project is to ensure that the tools and measures developed have the widest application throughout Europe, tested via the Learning Cities' activities and interaction with the Lead City partners.

1.3.1 Leading City Innovation Areas

The four Leading cities proposed in the ARCHIMEDES project are:

- Aalborg (Denmark);
- Brighton & Hove (UK);
- Donostia-San Sebastian (Spain); and
- Iasi (Romania).

Together the Lead Cities in ARCHIMEDES cover different geographic parts of Europe. They have the full support of the relevant political representatives for the project, and are well able to implement the innovative range of demonstration activities proposed.

The Lead Cities are joined in their local projects by a small number of key partners that show a high level of commitment to the project objectives of energy-efficient urban transportation. In all cases the public transport company features as a partner in the proposed project.

2. Donostia – San Sebastian

The city of Donostia -San Sebastian overlooks the sea and, with a bit more than 180,000 inhabitants, keeps a human scale. Some people consider the balanced combination of small

mountains, manor buildings, and sea as the setting for one of the most beautiful cities in the world. We have a tradition in favouring pedestrians, cyclists and public transport.

For about twenty years, the city has been enforcing a strong integrated policy in favour of pedestrians, bicycles and public transport. Considering walking and cycling as modes of transport, has led to the building of a non-motorised transport network for promoting this type of mobility around the city.

Likewise, the city has extended its network of bus lanes. The city holds one of the higher bus-riding rates, with around 150 trips per person per year.

2.1 Objectives in CIVITAS

The CIVITAS project is a perfect opportunity to expand our Sustainable Urban Transport Strategy. With the package of CIVITAS measures Donostia-San Sebastian wants to:

- Increase the number of public transport users
- Decrease the number of cars entering in the city centre
- Increase the use of the bicycle as a normal mode of transport
- Maintain the high modal share of walking
- Reduce the number of fatal accidents and accidents with heavy injuries
- Reduce the use of fossil fuels in public transport.

3. Background to the Deliverable

The present deliverable refers to Measure number 16, High Quality Bus Corridors in Donostia-San Sebastian

As part of this measure CTSS has been working on the Task 2.10 High Quality Public Transport Corridors.

The existing bus lines on these corridors serve commuters, schools, the university campus, tourist/visitors and leisure trips and are not yet connected to the three employment areas targeted within ARCHIMEDES.

The two public transport corridors coincide exactly with the two proposed CIVITAS corridors (east-west and north south corridors). These two corridors therefore really form the backbone of ARCHIMEDES project in Donostia – San Sebastian.

3.1 Summary Description of the Task

During the ARCHIMEDES project the San Sebastian public transport company (CTSS) will gradually introduce security cameras in its fleet.

An important element of quality is the feeling of security of the bus passengers. For this reason CTSS will install 22 security cameras in the buses that will run on the high quality public transport corridors. The following introduction scheme was planned in the workprogramme:

- 15 security cameras installed in Month 12 (September 2009)
- 7 security cameras installed in Month 23 (August 2010)

4. 22 security cameras in buses

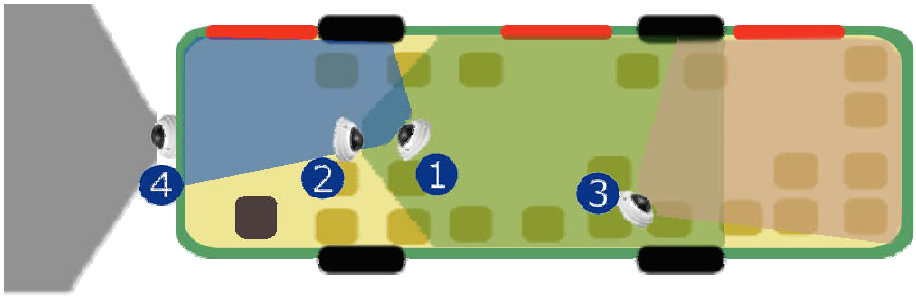
4.1 Description of the Work Done

CTSS-DBUS has advanced very quickly in this activity and has achieved the aim to have the 22 buses with security cameras installed by September 2009.

These buses are currently giving service to the travellers of the two high quality public transport corridors (CIVITAS corridors).

4.2 Summary of Activities Undertaken

The security camera system onboard the buses consist on 4 cameras located in different strategic points: 3 of them to cover and view all the space inside the bus and one located on the front of the bus to have a frontal view of the road.



Camera nr.1: view of front door (bus passengers access) and payment systems
Camera nr.2: view of central door and part of the bus (descent of passengers and access of wheel chairs and children prams)
Camera nr.3: view of the back part of the bus and the back door (descent of passengers)
Camera nr.4: frontal view of the road (i.e. what the driver views)

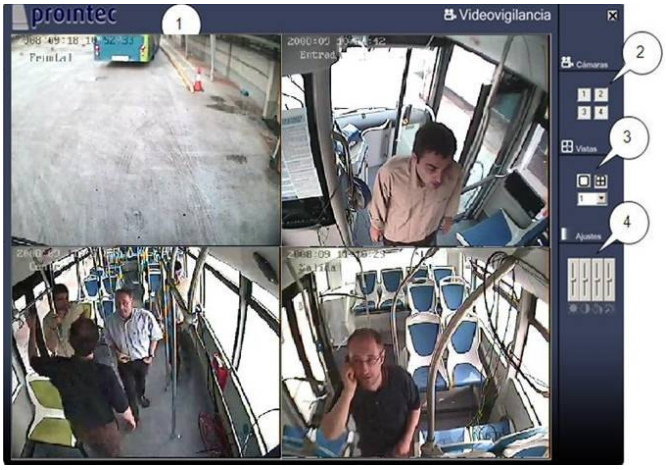
The 4 cameras are connected to an advanced onboard computer that administrates and manages and records all the images (videos) of the 4 cameras. The images are digitized and zipped in this computer, which has a capacity to record videos for 30 days (due to legal limits) and is integrated with the GPS system.

Advanced computer for video administration and managing (onboard the bus)

There are two possibilities to download recorded videos:

- Wire-less (WIFI), when buses return to deposit and are parked in its place.
- By wire, connecting directly to a portable computer when in the depot

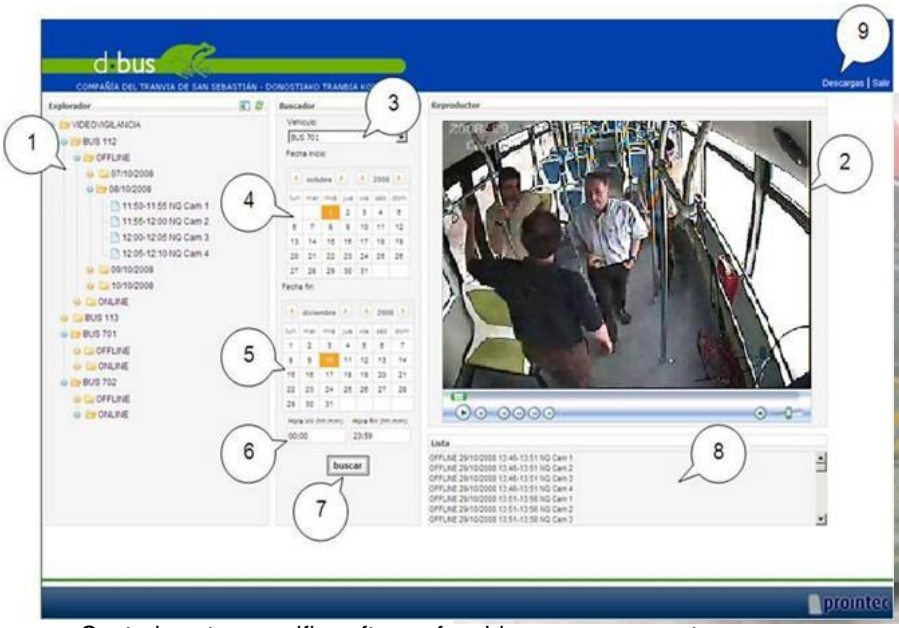
It is also possible to have an on-line visualization of what is going on in a specific bus. Those videos are transferred from the bus to the control centre by HSDPA-3G communications, and can either be activated by the driver or by the control centre operator.



On-line images visualization of the bus in the control center

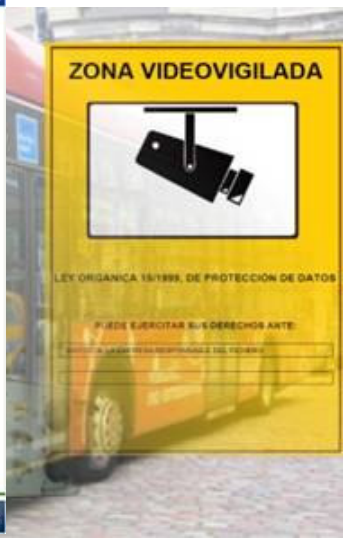
Also for driver security, there is an emergency key that can only be activated by the driver. While pressing the emergency key, videos are recorded in a bigger resolution, an alarm sounds in the control center and also the bus microphones are activated, so that video and sound can be recorded and downloaded in the control center.

In the control centre there is specific software that administrates and manages all the security camera system, and follows the legal requirements of data protection. In the bus, travellers are informed of the cameras presence by an information sign.



Control centre specific software for videos management

Information sign for travellers



Some of the technical characteristics of the security camera system are:

- 4 cameras onboard
- Video download by WIFI (wire-less) or wire to a portable computer
- On-line video transferred by HSDPA-3G communications
- Onboard advanced computer with 250 GB, integrated with GPS system
- Images resolution of CIF 352x288 pixels format
- Video Compression following standard H264 (MPEG4 layer 10)
- Record rate 5 images per second
- Commutation (10 images per second for incidents and emergencies

With the security camera system, CTSS-DBUS has improved the security and the physical integrity of the drivers, travellers and material equipments of the public transport.

The main innovation compared to other cities that have similar systems is the video recorded by the front view camera. It is expected that this evidence will be used by the Local Police to fine vehicles that slow down the operation of the public transport, parking at bus stops or driving along bus lanes.

With this activity, CTSS-DBUS expects to adapt the new technologies to improve the bus service quality and to promote and strengthen the use of the public transport.

The security camera system has been a solution to reduce vandalism problems. In the first 9 months of operation, CTSS-DBUS has detected that the vandalism has been reduced significantly in the buses with the security camera system, several people have had charges pressed against then and several accidents have been solved.

4.3 Problems Identified

The main problems with the installation of security cameras in the buses has been the different bus types (12 metre buses, 18 metre articulated buses, 10 metre buses and minibuses of two different suppliers and different model types), that have required a specific analysis for each model type to give technical solutions for the location of all the cameras and electronic devices onboard the buses.

4.4 Risks and Mitigating Activities

The main risk has been the inexperience, at least in Spain, with security camera systems onboard buses.

CTSS-DBUS started to install security cameras on December 2008 and established a pilot project to install the first 5 buses in 3 months. During this period, there was a special maintenance plan to adjust and correct the problems founded in relation with the security camera's system. Initially there were many problems with the hard disks, which were getting damaged easily. Finally the problem was determined to be the feeding source, which was not specifically designed for automotive use and was affecting to the stability of the hard disks. Once these feeding sources were replaced by other more suitable versions the problem was solved (this problem affected only the first 9 items of equipment).

Once all the technical problems were solved, CTSS-DBUS continued with the installation of this system for the rest of the buses.

4.5 Dissemination Activities

At the same time as the new ecological buses were presented to citizens, the security camera system was explained in a press release.

As it is a very innovative experience not seen before in this country, several articles have appeared about the DBUS security camera system in the two most important newspapers of the city, and also the Basque television EITB has made a TV report that was broadcast in the most important afternoon magazine programme watched by a large number of citizens of the Basque Country and nearby regions.

On 2009 June 4th, CTSS-DBUS presented the security camera system onboard buses in the IX INTELLIGENT TRANSPORT SYSTEMS CONGRESS that took place in Andorra La Vella.

4.6 Future Plans

Continue with the installation of the security cameras system to the rest of the bus fleet, although this part is not included in the ARCHIMEDES project.

Another working point is to implement the procedure together with the Local Police to issue fines to the offenders that don't respect the bus stops or the bus lanes, and are recorded by the front camera. The procedure is already defined and all the legal items have been solved. This part is also not included in the ARCHIMEDES project.