6 month progress reports concerning the demonstrations

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<thead>
<tr>
<th>Deliverable no.</th>
<th>1.1.1-VI</th>
</tr>
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<tbody>
<tr>
<td>Dissemination level</td>
<td>Public</td>
</tr>
<tr>
<td>Work Package</td>
<td>WP 1.1: Coordination</td>
</tr>
<tr>
<td>Author(s)</td>
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<td>Co-author(s)</td>
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<tr>
<td>Status (F: final, D: draft)</td>
<td>F_15.04.09</td>
</tr>
<tr>
<td>File Name</td>
<td>D1.1.1-VI-PU-6th 6month progress report-CityMobil-FINAL Draft v2.1-Zlocki-15042009.doc</td>
</tr>
<tr>
<td>Project Start Date and Duration</td>
<td>01 May 2006 - 30 April 2011</td>
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1 Executive Summary

In the future cities will need integrated traffic solutions, which provide a more effective organisation of urban transport and require mobility in an efficient, safe and economic way. The goal of the CityMobil project is to contribute to these solutions.

In the first sub-project of CityMobil concepts and tools, which are developed in the project, will be validated and demonstrated in a number of different European cities. Therefore three large-scale demonstrators have been chosen which will present real implementations of innovative transport concepts. The demonstrators are located at the airport of Heathrow, at the new exhibition building in Rome and at the city of Castellón. Furthermore showcases and city studies are conducted in various cities of different European countries.

This deliverable describes the current status of work in the reporting period between 1st of August 2008 and 31st of January 2009 of the three large-scale demonstrators and the showcases and city studies. The progress of work is given and the schedule is compared to the progress. Deviations to the work plan and necessary adaptation of the time plan are stated. In the end of each section the next steps for each of the three demonstration sites are presented.
2 Introduction

The objective of the CityMobil project is to contribute to a more effective organisation of urban transport, resulting in a more rational use of motorised traffic with less congestion and pollution, safer driving, a higher quality of living and an enhanced integration with spatial development. In order to achieve this objective advanced concepts for advanced road vehicles and passengers are developed. Further more new tools for managing the urban transport are introduced and barriers that are in the way of large-scale introduction of automated systems are removed.

In the first sub-project of CityMobil (SP1) those advanced concepts and tools are validated and demonstrated in a number of different European cities under different circumstances. Therefore three large-scale demonstrators have been chosen which will present real implementations of innovative new concepts. Theses three innovative concepts will be implemented in the city of Heathrow, Rome and Castellón. The three cities were selected in the preparation phase of the project based on the assessment of technical feasibility, political support in form of Letters of Intent, a commitment to invest financially in the project and an availability of a local consortium consisting of public and private organisations, which had expressed commitment to the plans. Furthermore showcases and city studies are conducted in various cities of different European countries.

The demonstration activities are the core element of the CityMobil sub-project 1. Therefore the status and the progress of the demonstrators are monitored and reported on a regular 6 month basis.

In this deliverable the progress of the fourth 6 months in the period between the 1st of August 2008 and the 31st of January 2009 is described concerning the demonstrations and the showcases and city studies. The detailed description of each single demonstrator is given in the first progress report dealing with the first 3 month of the project from May 2006 to July 2006. The current status of the work and a comparison of the current status with the schedule is the main focus of this report. Necessary adaptations to the time plan as well as the next steps for each of the three demonstration sites are presented in the end of each section.

3 Progress of the large scale demonstrations

3.1 Heathrow

3.1.1 Current status of the work

The infrastructure is now complete, including the Terminal 5 4-berth station and the four car park stations, and the guideway is instrumented and cabled. The major uncertainty has been connected with the requirement to change the communications system frequency from 2.4GHz to 5GHz, but the higher frequency system has now been tested successfully. The control system has been assembled and tested at the Cardiff Test Track, and has recently been transported as a unit and installed in the business car park alongside the vehicle depot. Six production vehicles have been delivered, and the remaining ten will be delivered over the next few months while commissioning of the system takes place. Thus everything is currently on track for full operation of the system, with multiple vehicles, sometime in April. The six
month's commissioning over the summer will ensure full reliability, ahead of public operation in the autumn. Preparations are now complete for a survey of the current bus shuttle service, which will take place in the last two weeks of March, for comparison with an exactly similar survey of PRT operations a year later. The passenger questionnaire has been drafted and discussed with BAA, and will be administered by BAA's own Quality Services Management team.

3.1.2 Comparison with time schedule
The project is fully on track against the schedule which was revised in autumn 2007, following various reviews by Heathrow’s new owners in 2006 and 2007. Since that revision, installation and finalisation of the PRT system has remained fully on time.

3.1.3 Adaptations of work and time plan
It was considered necessary for the communications system to be redesigned for 5GHz operation rather than the original design at 2.4GHz, which might have conflicted with the communications of the T5 baggage-handling system. The new system has been designed, procured and tested within the past 9 months.

3.1.4 Next steps
As noted above, the system will begin full operation in its commissioning phase in late April. The CityMobil General Assembly will be held on April 23rd, following the European ATRA Conference, at Heathrow. Attendees will be able to see the system in operation, though it will not be possible for CM members to ride on it at this stage. Public operation will begin in autumn of this year.

3.2 Rome
3.2.1 Comparison with time schedule
Rome has built a new exhibition centre to replace the old one. The old one is currently inside Rome with big problems of parking, public transport and with a limited exhibition area. The new one aims to become one of the most important European exhibition areas.
It is located in the direction of Fiumicino airport (the main international airport of the city) on the west side of the city, 3 km outside of the outer ring road and 16 km away from the city centre, along the airport highway and railway link.
The new exhibition area is on the lower side of the airport highway and railway link and it is shown in Figure 3.1, whereas the new building for the Rome exhibition centre is shown in Figure 3.2. Around a 1.5 km long central corridor, each block represents an exhibition stand of 72 by 12 metres each.
In front of the building, there is a car-park with about 2500 car-slots. The transport system that will be the core of the Rome demonstration will serve the car-park with two objectives:

- To improve visitors’ accessibility to the buildings, for people coming both by car and by train;
- To eliminate the shuttle, which it is needed to serve the farthest car-slots.

A further objective in the longer term is to demonstrate the financial viability of automated systems for providing an effective feeder transport service; if successful, similar systems are expected to cover the feeder public transport needs for the new housing currently under construction along the railway and toward the airport.

With respect to the initial design, the car-park in front of the building has been re-designed in order that a “Cybercar” network can be built inside it. Its aim is to pick-up the visitors once they have parked their private cars and to bring them to the building entrance. On the return trip a “Cybercar” drives them to their car-slots.
The car-park capacity with the present design is 2500 car-slots. Now visitors park their cars in the slots without any order searching for a free place at their arrival. However there are parking zones inside the car-park about 600-700 metres distant from the building entrance, meaning that some people would need to walk for more than 10 minutes to reach the exhibition, and to return to their cars. In such cases, it is common experience in Italy, to park illegally in the proximity of the entrance rather than use parking spaces. In order to avoid this problem, the car-park has been re-designed introducing a “Cybercar” network inside it to pick-up visitors once they have left their cars and to bring them to the building entrance. Once they finish their visit inside the building, the “Cybercar” returns them near to their cars. These features contribute to the achievement of five different objectives:

- Improvements in transport performance.
- Increased public acceptance of public transport services.
- Proof of financial viability.
- Demonstration of the technical maturity of the technology.
- Definition of a legal framework for innovative transport system certification.

### 3.2.2 Current status of work

A draft of the 4th DoW has been provided by the Rome Demo partners. The activities the Rome Demonstration partners are working on are:

- Cybercars construction, a first Cybercars has been delivered at the end of January and the second one should be delivered at the end of February 2009.
- Robosoft provided the Cybercar requirements for the Civil works design.
- After and internal discussion all the requirements provided by Robosoft were included in the civil works design;
- The Italian Ministry of Transport (MoT) provided the safety requirements for the stop doors.
• According to the requirements provided by Robosoft and the further requirements provided by the MoT Demonstration detailed design is going to be finalized (D1.3.2.2).

Concerning the CTS certification, according to the results reported in D2.5.1 (from CityMobil project) TNO proposed to support the CTS certification process and test a new certification process for innovative driverless transport system.

The first meeting with TNO and Rome Demo partnership was held in Rome on the 8th of January 2009 and a work plan for the CTS certification was agreed.

3.2.3 Comparison with time schedule
Due to the Administration change in Rome, the New Administration decided to review all the Research project on-going. This review caused delays in the project work plan. On the other hand the New Administration is now fully supporting the Rome Demonstration.

3.2.4 Next steps.
The Rome Demonstration next steps are:
• Publication of the call for tender for the civil works implementation.
• Delivery of the D1.3.2.2 to the MoT to start officially the certification process.
• Delivery to the MoT and discussion of the proposed CTS certification methodology.

3.3 Castellón
The guided bus/tramway system to be implemented in the Castellón demonstrator provides a lower cost alternative to light rail while having the advantages of dedicated rights of way.

The Castellón demonstrator will provide considerable flexibility in operations. A suitably adapted bus/tramway could travel on a guideway where this is available but could also travel on any other part of the road network as required, something especially useful in the city centre.

In this context, the Castellón demonstration will make use of electrical traction vehicles with guidance systems to circulate over a reserved platform. The vehicles will be powered through a tramway catenary, having in addition another secondary power supply system –possibly battery based- to be used in the historical centre of the city, where it is not possible to have an aerial power system.

3.3.1 Current status of work
As far as we know, the system is already operating.

3.3.2 Comparison with time schedule
The administrative and technical work in WP1.4 is still pending inputs and reactions from the GVA, some of these inputs are blocking the finalisation and the final approval of the opened deliverables.
3.3.3 Adaptations of work and time plan
This situation has been reported to the Executive Board so that a solution can be found at that level.

3.3.4 Next steps
A formal reaction plan has been settled by the Executive Board to make the GVA react and restart the communication flow with the project at coordination level.

4 Progress on showcases and city studies
The general description of the workpackage provides the objective and the work plan of smaller demonstrators in several showcases and city studies.

4.1 Current status of work

Work package 1.5.1
Title: Studies and demonstration management
Work package leader: INRIA
Partners: CRF, DITS, GEA

During the reporting period, the showcase in La Rochelle was executed. A video was prepared for this showcase. This video will continue to be improved, since it only used archive images. A budget was allocated for this. The CityMobil brochures were translated to French language and printed. The relevant data was collected and is under study by DITS. 253 surveys were completed.

The showcase in Hyvinkää (Finland) was cancelled and moved to the city of Vantaa (Finland). A first site visit was done to the possible showcase locations and the date of May 2009 was defined for the execution of the showcase. The corresponding Recommendation report for the operation will be done in the next reporting period.

The site for the Trondheim showcase was already selected, and the Recommendation report for the operation will be done in the next reporting period.

A meeting was held in Genoa in order to postpone the showcase. Unfortunately, the contact person in the Regional government left. Therefore, a direct contact with the local government (Vice-Mayor) is being sought through the Italian partner CRF. If a support position is not defined during the next reporting period, the Advanced City Cars showcase in Genoa will be moved to another location (to be defined).

The following dissemination activities were carried out during the reporting period:
- European City of Sciences exhibit, Paris (France), November 14-16 2009;
- Club Move-on CityMobil (in the framework of the Mobilis Congress), Belfort (France), November 20 2009.
- ICT event 2008, Lyon (France), November 25-27 2009

Work package 1.5.2
Title: Preparation of the Cybercar showcase
Work package leader: INRIA
Partners: Robosoft, TNO
During the reporting period, the Vantaa and Trondheim showcases sites were selected. The corresponding Recommendation reports for the operation including safety issues of the Vantaa (D.1.5.2.4) and Trondheim (D1.5.2.5) showcases will be performed in the next reporting period.

**Work package 1.5.3**
Title: Preparation of the advanced city car showcases
Work package leader: CRF
Partners: TRW, TNO
During the reporting period the Recommendation report for the operation including safety issues for La Rochelle showcase (D.1.5.3.2a) was completed and implemented during the showcase execution.

**Work package 1.5.5**
Title: Showcase execution
Work package leader: INRIA
Partners: CRF, TNO, TRW, GEA
During the second half of September 2008, from the 15th to the 28th of this month, an important and intensive test performance has been conducted with three electric Fiat Advanced City Vehicles during two weeks. The site of the testing was Place de Verdun, in La Rochelle (France), that has a plate surface with an open space sufficiently far from the surrounding houses and building.

In this area three vehicles from CRF, two New Panda and one New 500, and three cybercars were conducted during a public demonstration, showing to a very large amount of onlookers the behaviour and cooperation of such advanced city cars, electrically powered and equipped for automatic driving. The test track on the floor was shaped as “eight” with crossing.

A conference was organized on September 19th 2008, with 150 participants.

Also the safety issues were some of the main points related to this kind of performances and were taken into account with several organizational issues: the tests in automatic guidance were always conducted with CRF experienced drivers on board and, every day, after the demonstration job, the prototypes were parked in a safe and covered area. The site of parking was equipped with electric supply facilities, in order to allow the recharging of the prototypes, as electric vehicles, during the night.

During the showcase period, tests in platoon and demonstration of obstacles detection, with platooning control in front of pedestrians, have been repeated successfully. These tests had the aim of demonstrating to the public the capability of such autonomous vehicles.

The public of onlookers was outside the test area, but every people were able to see the vehicles running during the demonstration and some of the onlookers tested the vehicles performances together with CRF personnel.

The experiences were conducted organizing a sequence of cycles, running the cars along the “eight” shaped track traced on the floor of the place. Every half an hour people among the onlookers were invited to get on board to the vehicles, driven by CRF personnel, for observing directly the functionalities of the prototypes. Then it has been possible to show to the public the vehicles running by themselves in platoon, stopping automatically in front of a pedestrian, in every position on the track. During the demonstration, moreover, the CRF
Drivers showed the functionalities of the cars, explaining the difference among the automatic guidance and the normal driving.

Several situations were experienced: pedestrian (personnel from CRF) standing on the trajectory of the vehicle or walking in front of it or coming from the sides of the track; then the vehicles run with people onboard looking at the demonstration, while the drivers abandoned the steering and the brake, leaving the vehicle driving by itself.

Even without external passengers on board the vehicles were conducted, by CRF drivers, along the track for showing to the onlookers, always present along the boundaries of the track, the capabilities of the prototypes running continuously.

Then, during two weeks several tenths of onlookers were conducted on board every day, in the morning and in the afternoon, demonstrating the functionalities of the cars in every condition of light. Some cycles were performed also with a light rain, without any problem for the cars.

Figure 4.1 Pictures of CRF Vehicles New Panda and New 500 at the public demonstration in La Rochelle - Details of cars and public
4.2 Comparison of the current status with the time schedule
The major issue that appeared during the reporting period was the delay of the Genoa showcase. Due to this delay, the contact with the local government was lost due to the resignation of the contact person. If the contact is re-established, it is most likely that the showcase be executed in October 2009 (M 42), as it was already discussed with local parties (excluding the local government). Otherwise, a delay may be expected because a new site will have to be selected and all the preparation will have to be done again.

WP1.5.1 and WP1.5.3 – La Rochelle showcase study and preparation
The initial delay on the vehicles preparation was completely recovered and the time schedule or the final steps of the demonstration was respected.

WP1.5.5 – La Rochelle showcase execution
The time schedule of the showcase was in line with the project targets and the performances were conducted successfully, respecting completely the calendar of the foreseen activities.

4.3 Adaptations of work and time plan, if necessary
If the contact is re-established with a representative of the local government of the City of Genoa, it is possible that the showcase be executed in October 2009 (M 42). Otherwise, a delay may be expected because a new site should be selected and all the preparation should be done again. In that case, this new showcase would take place most likely between M46 and M56.
4.4 Next steps

The preparation of the Vantaa and Trondheim showcases will continue during the next reporting period, especially the Recommendation reports for the operation including safety issues. The video for the showcase will be improved for the Vantaa showcase, but a final version (including 3D animation) is only expected for the Trondheim showcase. The CityMobil brochures and other printed materials will be translated to Finnish and Norwegian languages. The results of the study of the surveys carried on at the La Rochelle’s showcase shall be published during the next reporting period.

WP1.5.5 – Showcase execution

A further showcase for the advanced city vehicles has been initially planned for October 2009 in the city of Genoa; but this event has still to be verified with the city municipality involved.