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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 February 2010 and 30th of June 2010 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 these objectives advanced concepts for advanced road vehicles and passengers are developed. Furthermore 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. These 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 seventh 6 months in the period between the 1st of February 2010 and the 30th of June 2010 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 months 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 Heathrow PRT system is now fully operational, with its full fleet of vehicles running automatically between the Business Car Park and Terminal 5, but it has not yet been opened for public use. The vehicles are being run empty around the network for long periods, and periodically BAA staff members ride the system and monitor its performance and check it for faults. As was to be expected, there were several teething problems and faults, and the system has taken some time to settle down to reliable operation. In addition, it has been necessary to change to a different frequency channel (within the same band) for voice communications between vehicle and central control. This latter requirement involves some hardware changes on the vehicles, and these are being made sequentially by vehicle, a

process which necessarily takes considerable time overall. Nevertheless, we are now in a position where the actual operation of the PRT system is performing well and reliably.

However, there are continuing problems with some peripheral technology. The touch-screen destination selectors at the stations are proving to be so unreliable that they may have to be replaced by equipment from a different supplier. The door sensors are also causing failures, a problem which is fairly widespread in transport vehicle operations, but obviously, where safety might be a concern, it is essential to achieve 100% reliability before opening the system to the public. Lastly, there are issues with the emergency passenger-central control voice link that may require a re-positioning of the microphones in order to improve audio quality. In themselves all these equipment problems are peripheral to the main PRT operating system, but they are taking a longer time to correct than could be anticipated, and although it is hoped that they will be resolved within the next couple of months at present no date for public operation has been set.

Because of this, although we are ready to proceed with the survey of PRT passengers, we cannot yet schedule the date, which needs to be after at least a month of successful public operation. The necessary survey design is already in place, and we have the flexibility to organise the survey quickly when the situation allows, but the timing remains to be fixed. In the meantime, the survey will be piloted on the BAA staff who are currently monitoring the service.

3.1.2 Comparison with time schedule

The past history of this project has taken it a long way from its original schedule, not primarily because of any technical difficulties with the PRT design and construction, nor because of any delays or cost over-runs with the installation of the system structure itself, but largely because of external events and some changes in system requirements. The CityMobil schedule of milestones and deliverables has had to be amended to reflect the delays in getting the project underway following the change of ownership of Heathrow airport, but so far deliverables have been provided on the revised schedule on time and, in some cases, ahead of schedule. Thus D1.2.2.1 and D1.2.2.2 describing the specification of the system, D1.2.3.1 identifying the key issues in the evaluation of the project and D1.2.3.2 providing a simulation model package, and D1.2.4.1 analysing the survey of transfer bus passengers, have all been provided on or before time. D1.2.6.1 specifying communications-based collision avoidance was delayed by the need to concentrate on installing the Heathrow system, but was provided by month 48 as required by the revised schedule. Now that the system is operating, work is in hand to complete D1.2.6.2 describing tests of the collision-avoidance strategies, and this will be available before the end of the year. The remaining deliverables were scheduled for month 48 (D1.2.4.2 and D1.2.4.3) and month 52 (D1.2.5.1), but the last 6-monthly report envisaged that, because of recent delays, the survey of PRT passengers could be made in September of this year and all Deliverables completed by the end of 2010. With delays continuing in opening the system to the public this schedule looks in doubt.

3.1.3 Adaptations of work and time plan

The purpose of the CityMobil Demonstrator is to evaluate PRT against conventional forms of transport. The comparative survey of passengers using the current transfer buses between the Terminal 5 car park and the Terminal building was administered in March 2009, originally with the intention that exactly the same survey would be done with PRT passengers in March 2010. As noted above, delays in commissioning the system and opening it to the public meant that this expectation had to be revised. Continuation of these delays means that it is unlikely that the second survey can be mounted in September, as the last 6-monthly progress report suggested, and it may have to be pushed back into October or, possibly, even later. This means that the remaining deliverables on the evaluation of PRT will not be

completed until early 2011. Material on the wider application of PRT has already been assembled, but obviously it must wait on the surveys to be put into a proper context. This extension of the timescale is disappointing, but nevertheless it still allows adequate time for the completion of the Heathrow project well within the overall timescale of CityMobil. It is perhaps worth re-iterating that the Heathrow system is the first fully-operational PRT system in the world, and problems and delays in completing it are not unexpected. It brings to CityMobil, however, a very powerful technical innovation which has the potential to radically change our approach to public transport. It is also the case that the delays have not been primarily due to any technical difficulties with the PRT system itself, but rather due to peripheral and external issues.

3.1.4 Next steps

As far as the CityMobil Heathrow project is concerned, everything now waits on the opening of the system to public use and, shortly after that, the administering of the PRT passenger survey for comparison with the already-completed survey of transfer bus passengers. All preparations for the PRT survey are in hand, and the questionnaire will be piloted with BAA staff who are already riding the system, but at the moment the date for the actual survey cannot be set. The remaining Deliverable D1.2.6.2 on communications-based collision avoidance will be provided before the end of 2010, and Deliverables D1.2.4.2, D1.2.4.3 and D1.2.5.1 will be completed in the early part of 2011. As soon as the survey date can be set, dates for all these Deliverables will be agreed.

3.2 Rome

3.2.1 Current status of work

In the period here addressed the following activities have been carried out:

- The call for tender for the civil works implementation was published on 13th of January awarded to the best bid in May 2010 and the signing of the contract and the start of the civil works are expected for July 2010;
- Concerning the vehicle construction both vehicle are ready and were fully tested in two different test sites in France where the vehicles run for about 1000 km. During the tests no major problems were met by the vehicles. Concerning the track it is interesting to report that after testing some ruts appeared on the surface and to avoid this problem in the call for tender for civil works specific requirements were inserted. The shipment of the first vehicle in Rome is expected for July 2010;
- Since ITR will manage the CTS once it will be in Rome, Robosoft has organized a first training course for ITR personnel. The course, held in Robosoft premises from 19th the 23rd of April 2010, deal with the mechatronic of the vehicle, with the software and the remote maintenance and with the vehicle usage and a two days vehicle testing was run on a parking place in Biarritz;
- The certification procedure is on-going and in November 2009 the Ministry of Transport (MoT) asked for further clarifications about the Rome demonstration final design (D 1.3.2.2). The MoT asked more info about: Cybercar navigation system and related backup systems in case of malfunctions, braking systems and related backup systems in case of malfunctions, personnel safety procedures in case of emergency. Robosoft is drafting the document with all the information required and will also provide a detailed report about the results of the cybercar testing. MoT asked that the 2nd round of documents to be provided meet the following requirements: stamped and signed in original by authors with a swear translation in Italian version of the documentation and that an Italian Engineer assure that the technical contents of the Italian and English

versions are the same. The new documents, about 1000 pages, were delivered to MoT in may 2010 and were:

- ROME CTS Detailed Design
 - CTS Safety Assessment
 - RouRIDE safety testing
 - RobuRIDE 25 Additional information Round 1.
- Since Rome is the official Italian candidate for the Olympic games and the minor sports are expected to be hosted in the new Rome Exhibition buildings the extension of the system to the train station and to the exhibition east entrance is now under evaluation.

3.2.2 Comparison with time schedule

Nevertheless some minor delays the Rome demo is preceding well on all the sides and no major problems are expected.

3.2.3 Adaptations of work and time plan

The CTS will be fully certified in Spring 2011 and a six months extension of the project will allow the evaluation of the 2 vehicles system.

3.2.4 Next steps

The next months will be crucial to speed up the certification procedure. Indeed ATAC made available a depot to store and test at least one vehicle waiting for the civil works completion. The arrival of the first vehicle is expected in July 2010. The second vehicle will be shipped to Rome only when the civil works will be ready because before it will be not useful. During the first half of September ITR personnel will be trained to manage and maintain the vehicle. After this training, held during the first half of September, the MoT will be invited to see and test the vehicle. These tests with MoT will help to save time later on during the certification process.

The extension of the CTS to the train station and the Exhibition east entrance will be also assessed in late autumn 2010.

3.3 Castellón

3.3.1 Current status of work

The Castellón demonstrator is already in operation with good operational results and only minor problems encountered: The optical guidance needs high contrast between the white line and the pavement to operate properly it has been found that at some places – mostly at curves- the pavement gets dirty with the rubber of the tires. These places of the lane have to be regularly cleaned for the optical guidance to work properly.

Within the actual reporting period the ex-post data collection process has been done in the Castellón demonstrator. A data collection plan was designed and reported in the deliverable D1.4.5.1. This document shows the different indicators to be measured in Castellón and how they will be analysed afterwards. Three different questionnaires were developed in order to gather the required information:

- Questionnaires for users. With a target of 100 samples
- Questionnaires for drivers. With a target of 10 samples
- Questionnaires for phone interviews. With a target of 300 samples

The surveys and phone interviews were collected between February 16th and February 26th, including the weekend – to recover ex-post data from all kind of people and not only

students-. These data will be analysed afterwards and the results will be included in the corresponding document.

During this 10 days period the following surveys were collected:

- 91 users' questionnaires.
- 3 drivers' questionnaires.
- 300 phone interview questionnaires.

The number of surveys gathered approximately meet the target specified in D1.4.5.1 with the exception of the drivers questionnaires. This is due to the fact that only 6 drivers have been trained to drive Castellón demonstrator buses and only 4 of them are usually working at the demonstrator. The other 2 drivers work as the main drivers substitutes.

3.3.2 Comparison with time schedule

The administrative work in WP1.4 is still pending some inputs and reactions from the GVA. As a result of this some WP1.4 deliverables are still delayed.

3.3.3 Adaptations of work and time plan

Two new persons were assigned as new contact points between the GVA and the project consortium. This has resulted in an improvement of the communication flow quality with the GVA so that the pending deliverables are already being prepared with the information provided by these persons. Some of those documents have already been finalised.

3.3.4 Next steps

Some pending documents are still under preparations and will be finished during the next months.

4 Progress on showcases and city studies

4.1 Current status of work

In the Citymobil plan two showcases of Advanced City Cars were planned. The first one has been done in September 2008 in La Rochelle and a second one was planned after some months in Genoa.

This second showcase has then been postponed by one year since it was too close to the first one, with high risks of technical problems. Furthermore there would not be any further events on advanced city cars in the remaining project lifetime.

So the showcase has been planned for November 2009 but then some difficulties arise with the city management and it has been decided to find an alternative solution. After a contact with Novara it has been found a strong interest from the city of Orta San Giulio, a small city but with a lot of mobility needs due to the tourism. The city is heavily involved in all sustainability aspects: clean water, renewable energy, CO2 reduction, etc.

Some meetings (September 18th 2009, November 9th 2009 and February 8th 2010) take place to organise the event with the local authorities (Orta San Giulio major, Novara province president, Consorzio Turismo Cusio Ossola president).

Two further technical meetings (April 8th and April 30th 2010) has been organised, to test the vehicles in the specific scenario.

The showcase has been organised in the main city square, Piazza Motta, just in front of the San Giulio isle. The showcase started on May 21st and finished on May 28th. A specific workshop has been organised before the showcase opening.

During the week other two events had been organised by the local authorities, one relative energy efficient buildings and the second one about alimentation behaviour. In both events the Advanced City cars have been described and demonstrated to the participants.

Local and national media (TV and newspapers) have been involved in all events. An independent TV journalist has also made video shootings of the event for Discovery Channel.

During the 8 days of the showcase thousands of people have seen the demonstrations and hundreds had the opportunity to test the vehicle on board. 150 answers to the questionnaires have been collected from them. A large part of the visiting people were not Italian, so the questionnaire have been translated and made available in three different languages (Italian, English and German).

Figure 1: Piazza Motta during the showcase.



Figure 2: Two advanced city cars used for the showcase.



Figure 3: Advanced City Car and isle of San Giulio



Figure 4: People waiting to test the vehicle.



4.1.1 La Rochelle small demonstration

During the reported period, the Work Packages concerning the small demonstration of La Rochelle were prepared and presented to the project's General Assembly (during the Orta showcase). The following are the concerned WP:

- WP 1.5.X.1: Management (TNO - INRIA)
- WP 1.5.X.2: System implementation (INRIA)
- WP 1.5.X.3: Evaluation and recommendations (INRIA – DITS/CTL)

The decision made by the General Assembly was to continue the preparation of the work with the local partners and evaluate the inclusion of these WP during October 2010's General Assembly based on the advancement status of the demonstration, especially in what concerns the vehicle preparation that INRIA is currently doing. Therefore, INRIA organized a meeting with all the involved partners (both members and not members of CityMobil) in La Rochelle to kick-off the demonstration work, since it had been delayed because no formal decision had been made by CityMobil before the Orta San Giulio's General Assembly meeting. This meeting allowed each of the involved partners to share their advancement status and to start working together.

4.2 Comparison with time schedule

As already mentioned the showcases was planned initially in November 2008, for different reason has been postponed to may 2010.

4.3 Adaptations of work and time plan, if necessary

As already mentioned, the General Assembly that will meet in October will decide the inclusion of the La Rochelle Work packages in the CityMobil's Description of Work based on the advancement status of the demonstration.

4.4 Next steps

No further showcases are planned for Advanced City Cars, only the participation to the final event will be considered. Depending on the decision made by the General Assembly in October, the small demonstration of La Rochelle should be executed starting early 2011.