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SUSTAINABLE DEVELOPMENT, GLOBAL CHANGE & ECOSYSTEMS
INTEGRATED PROJECT – CONTRACT N. 031315**



**6 months progress reports concerning the
demonstrations**

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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 2009 and 31st of July 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 these objectives 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. 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 2009 and the 31st of July 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 completed, including the three stations (two two-berth stations in the Business Car Park and a four-berth station on the third floor of the multi-storey short-term car Park alongside Terminal 5) and the vehicle depot and control centre in the Business Car Park. The final details and construction snagging (fault correction), plus general tidying up, took longer than anticipated, so that handover of the infrastructure by the contractors to BAA, which had been scheduled for the end of May, had still not been completed by the end of July, though individual vehicles have been operating on the system during this entire reporting period. All but two of the 18 vehicles have been delivered during this period.

A conference sponsored by the Advanced Transit Association was held at Heathrow on April 21-3, in conjunction with the CityMobil General Assembly meeting, and over 100 delegates attended. Speakers from the UK, Europe and America presented papers on PRT and other forms of advanced transport, and delegates were able to examine the Heathrow system.

The control centre, which had successfully controlled multiple vehicles at the Cardiff Test Track, was transferred to Heathrow in June, and installed to operate at the new 5.1GHz frequency which became a requirement only in mid 2008 in order to avoid any possibility of interference with the 2.4GHz frequency of the automated baggage handling system in Terminal 5. Although the new control system had operated successfully in prototype form at Cardiff, there were problems in making the communications work properly in the new environment, causing two months' delay, but even when the system was working a whole sequence of new problems have appeared because of the higher frequency. These will be tackled systematically, but the solutions seem likely to require some rewriting of the software, and this will add further delay. Moreover, the change of frequency will require a change of hardware in the vehicles, which will have to be returned to ARRK for refitting. Thus it has become apparent that, overall, the change to a higher frequency, which became a requirement very late in the system development, is likely to add many months' delay to completion of system.

At present, the delay makes it unlikely that it will be possible to hold the PRT passenger survey in March 2010, one year after the survey of passengers on the transfer buses. The one year gap was considered desirable to ensure comparability of the two surveys, as is conventional in transport surveys, but in this case the passengers are primarily business passengers, and there is no marked seasonality in the pattern of demand outside the main summer holiday season. Their perception of the transport system is more likely to be influenced by the weather at the time (poor weather causes harsher judgements of waiting, for example) than by seasonality itself, so if the PRT survey has to be held later, in the summer of 2010, comparability should not be appreciably affected.

3.1.2 Comparison with time schedule

As noted above, problems with the new communications frequency seem likely to add several months' delay, pushing back public operation of the PRT system from the end of 2009 to perhaps the spring of 2010. If so, the passenger survey cannot be done in March, and will have to be postponed until the summer. However, this still leaves ample time for the data to be analysed and the remaining Deliverables D.1.2.4.2, D.1.2.4.3, and D.1.2.5.1 to be produced before the end of 2010. Deliverables: D 1.2.6.1 and D 1.2.6.2 on collision avoidance are in hand and will be available before May 2010.

3.1.3 Adaptations of work and time plan

At the time of reporting it is not possible to say how long it will take to solve the communications problems and bring the system to the start of full commissioning. It is clear that these problems have already introduced a delay of months, and will still require more additional months for full solution, so that public operation will be pushed back well into 2010. The PRT passenger survey will be rescheduled once the date of full public operation is known. As noted above, this should still leave ample time for completion of the remaining Deliverables well within the overall CityMobil timescale.

3.1.4 Next steps

Problems with the communications system, and the resultant reworking of control system software and replacement of vehicle hardware, will be completed as quickly as possible, but it is not yet possible to provide a new schedule.

3.2 Rome

3.2.1 Current status of work

In the period here addressed many activities have been carried out and to speed up the project the Rome demo partnership has worked on three sides at the same time: civil work design and implementation, cybercars implementation and certification process. Concerning the civil works design the requirements provided by Robosoft have been applied to the new design that now it is ready. ATAC is waiting for the contract amendment to start the procedure for the publication of the civil works implementation call for tender. Once the civil work final design was agreed the D1.3.2.2 (CTS final design) was delivered (April 2009).

On the 2nd of April 2009 the new civil works design with all the modifications agreed with Robosoft was showed to the MoT personnel and no comments were provided.

Concerning the vehicles the first cybercar is ready and fully operational. Because of the civil works delay it has been decided to slow down the 2nd cybercar implementation to fully test the 1st and then run, if required, modifications only on it. The cybercar will be fully tested in August 2009 in a business park not opened where only the road network is available. This premise is located in Bidart close to Robosoft office.

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

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.

The core of the methodology was the Failure Mode Effects and Criticalities Analysis (FMECA). This analysis was applied to the CTS and required 28 sessions of works of 4-5 hours each from April to July 2009. The panel that run the analysis was composed by Gabriele Giustiniani from ITR, Damien Salle from Robosoft and was coordinate by Jan Van Dijke from TNO. ATAC personnel were involved in the analysis only in the sessions on the civil works.

The analysis finished in July 2009 and the final report is now being drafted.

3.2.2 Comparison with time schedule

Nevertheless the work carried out in the reporting period the project is experiencing a delay. This is due to the publication of the call for tender that according to DoW III was expected for M27 but, because of the change of the administration in Rome and the delay in the contract amendment for ATAC has not yet been published. This delay caused other delays in other related activities.

The other activity in delay is the CTS final design that was expected for M26 but was delivered in M36 because the agreements between ATAC and Robosoft on the civil work design required more time than planned. This delay is not to be considered as a relevant one.

3.2.3 Adaptations of work and time plan

The delay in the publication of the civil works implementation call for tender caused many discussions during the review meeting held in Bruxelles on 7th of July and the project

reviewers asked for a new work plan in which the full 6 cybercar CTS would be implemented and tested before the end of the project.

For this reason, before the end of July a new work plan was sent to the project officer (see Table 3.1) and now it is under review. In the new work plan a 6 months project extension, only from Rome demonstration, the evaluation WP and the management WP is proposed. The project extension will allow to the Rome demo to implement and test a 6 cybercars CTS before the end of the project.

ROME PLANNING																											
		May 2010																									
New		40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60					
Milestones		date	a	s	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f	m	a	m	j	j	a
			Q14	Q15			Q16			Q17			Q18			Q19			Q20			Q21					
Civil works																											
	Issue tender	15-sep																									
	Issue order	31-okt																									
	Civil works ready	29-jan																									
CTS operational tests																											
	Vehicles to Rome	1-feb																									
	CTS set up in Rome	26-feb																									
Tests in Rome																											
Certification process																											
	MoT sets up committee	sep ?																									
	Evaluation by the committee																										
	Vehicle evaluation on site by committee																										
	Temporary approval for 2 vehicles	?																									
	Certification	29-okt																									
Operation with 2 vehicles with public																											
	Preliminary ex-post report	30-apr																									
Preparation and issue tender 4 vehicles																											
	Issue tender (ATAC)	1-nov																									
Tendering process																											
	Tender open	30-nov																									
	Order to manufacturer	15-dec																									
Production of 4 vehicles (6 months)																											
	Delivery of 4 vehicles	30-apr																									
Evaluation complete system																											
	Final ex-post report ready	31-aug																									

Table 3.1 New work plan proposed to the project officer

3.2.4 Next steps

The next steps are:

- Issue of the civil works call for tender;
- Start the official certification process providing the CTS final design to the MoT;
- Cybercar long run test (expected in August 2009);
- Finalize the FMECA report, translate it in Italian and provide it to MoT.

3.3 Castellón

The GVA has recently designed two new persons to act as a contact point between the GVA and the CityMobil consortium, therefore it is expected that the communication flow will be easier and more fluent from this point on. As a result of a better communication flow we

expect to be able to get all the administrative and technical information needed in order to complete the work on WP1.4

3.3.1 Current status of work

The Castellón demonstrator implementation has been successfully achieved in two of the four stretches in which it was divided – see picture below-, in these two stretches – the stretch going from the university to the Parque Ribalta and the Calle Colón stretch in the city centre - the demonstrator is already in operation with good operational results and only minor problems encountered - it has been found that the painting used for the optical guidance is starting to fade, so the use of different materials is being considered in order to have a higher durability-

The other two stretches are, the one going across Parque Ribalta and the stretch between the city and the Grao de Castellón. The track crossing the Parque Ribalta is still dealing with some administrative and political issues. It is expected that these problems will be solved within the next months.

The stretch to el Grao de Castellón has been provisionally awarded. The formal contract for construction will be done in the beginning of 2010. The construction work is expected to take about 18 months.

The following image shows the four stretches mentioned above:



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 many WP4.1 deliverables are delayed.

3.3.3 Adaptations of work and time plan

Two new persons have been designed as new contact points between the GVA and the project consortium. This is expected to improve the communication flow quality so that the deliverables will be prepared with the information provided by these persons. Some of these deliverables are already being prepared and will be sent to the consortium for they review within the following weeks.

3.3.4 Next steps

Several meetings with the new contact persons have been held and a new plan to prepare and deliver the pending documents has been elaborated and presented to the executive board during the last Board meeting.

4 Progress on 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 Vantaa was executed, while the preparation for the Third cybercars showcase execution (Trondheim) (D.1.5.5.3) continued. The CityMobil brochures were translated and printed in Finnish language. The relevant data was collected and is under study by CTL. 490 surveys were completed. An exhibit, designed by the CityNetMobil project, was presented for the first time during the Vantaa showcase. Seven posters and a video were prepared for this exhibit. The final version of the video is also being prepared with the CityNetMobil project.

Novara, Italy, came up during this reporting period as a candidate to host the second Advanced City cars showcase, in order to replace Genoa. Its capability to host a showcase is still being explored by CRF. A visit will be organized during the next reporting period to evaluate the potential site and the commitment of the local authorities.

Work package 1.5.2

Title: Preparation of the cybercar showcase

Work package leader: INRIA

Partners: Robosoft, TNO

During the reporting period, the Recommendation reports for the operation including safety issues of the Vantaa (D.1.5.2.4) and Trondheim (D.1.5.2.5) showcases were completed. The recommendations for the Vantaa showcase were implemented during the showcase execution.

Work package 1.5.5

Title: Showcase execution

Work package leader: INRIA

Partners: CRF, TNO, TRW, GEA

During the reporting period, the Second cybercars showcase execution (Vantaa) (D.1.5.5.2) was executed.

The site and vehicle setup of the showcase were done from May 2nd until May 6th 2009. Several events were organized in parallel in order to advertise the showcase among the public. A press conference was organized on May 7th. A conference titled *CityMobil – Future Mobility Solutions*, directed to urban planners, was organized on May 8th at the Heureka Science Centre, one of Vantaa's landmarks. The programme of this conference included a visit to the showcase. Finally, a conference directed to the public was organized at the City Hall on May 9th. The showcase public operation started on May 9th, and it ended on May 17th.

The showcase represented a cybercar service on-demand over a network. The track consisted of 3 stops linked by a one-way path. The users had the possibility to choose between two possible destinations on the vehicle's touchscreen. When the destination was selected, the vehicle travelled non-stop to the selected destination. Before starting the trip, the users were also requested to indicate the number of passengers per trip. This data was recorded in a log file to produce statistical information about the use of the vehicles during the showcase. During the trip, an audio recording explained the function of the vehicle in Finnish language. At the end of the trip, a recording requested the passengers to visit the tent in order to answer the survey. 490 questionnaires were completed.

Figure 1. Images of the showcase execution



As mentioned above, an exhibit, designed and produced by the CityNetMobil project, was presented for the first time during the Vantaa showcase. The exhibit represents a “Street of the future”, where all kinds of transportation systems share the public space with pedestrians and cyclists. Seven posters and a video were prepared for this exhibit. The final version of the video is also being prepared with the CityNetMobil project. Figure 2 shows a 3D view of the exhibit.

Figure 2. 3D view of the CityNetMobil exhibit



4.2 Comparison of the current status with the time schedule

All tasks have been completed without delay. Concerning Task 1.5.5.2 (Second Advanced City Vehicles Showcase execution), a delay is likely to happen.

4.3 Adaptations of work and time plan, if necessary

Since the city where the Second Advanced City Vehicles Showcase will take place has not been selected, a delay is likely to happen. However, once the commitment of the city of Novara has been determined, it shall not take too long to setup and execute the showcase.

4.4 Next steps

The main next steps are the Trondheim showcase execution, and the selection of the site that will host the Second Advanced City Vehicles Showcase. Once the city has been selected, a *Recommendation report for the operation including safety issues* will have to be done, as a replacement to that of Genoa (D.1.5.3.2b), which is no longer valid.

On the other hand, after the success of its showcase, La Rochelle has expressed its interest in hosting a 3-months small demo on 2010. This will be prepared during the next reporting period, and shall be included in the Description of Work.