First 6 month progress reports concerning the demonstrations

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1 Executive Summary

In the future cities will need of 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.

This deliverable describes the three large-scale demonstrators and the current status of work. 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.

The Heathrow demonstration consists of a PRT system to be used by airport passengers travelling from Terminal 5 to the car park. The demonstration is being managed within the CityMobil project by Advanced Transport Systems Ltd (ATS). In the first three month of the project, all aspects of the demonstration are running according to schedule, and it is anticipated that the deadlines for milestones and deliverables within the CityMobil project will be met.

The Rome demonstration presents a short distance transport service using small automated vehicles, cybercars, to collect people from their parking slot or from the train station and to bring them to the entrance of the new Rome exhibition building. The structure for the new exhibition is currently under construction. The Rome Municipality has issued a call for tender for the car-park management, which should be awarded before the end of 2006. The next step will be the identification of the building contractor, who will award the call for tender and provide the detailed design on the basis of the tender by the end of 2007.

The objective of the city of Castellón is the implementation of a hybrid transport system connecting the cities of Castellón, the university and city centre and the Benicassim at the seaside. At current status the type of vehicles, which will be used for the demonstrator, are evaluated. The offers regarding the call for tender for the choice of the vehicles are going to be rated next.

The showcases and city studies will give small demonstrations on selected sites in order to raise the awareness about new forms of public transportations. These showcases and studies are based on cybercars and city vehicles.
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 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. 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.

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 first 3 months concerning the demonstrations is described. In order to report the progress the reader has to understand all three demonstrators, their history, their aims and their challenges. A general overview of the demonstration sites is given, which also includes the current status of the work and a comparison of the current status with the schedule. In the end of each section the next steps for each of the three demonstration sites are presented.

2.1 Heathrow

The objective of the Heathrow demonstration is the implementation of a PRT (Personal Rapid Transit) system at Heathrow airport. An important focal point for the CityMobil project is to evaluate the effectiveness of the ULTra (Urban Light Transport) PRT system in this application.

The ULTra system has been developed by ATS, who have responsibility for the delivery of the Heathrow demonstration within the CityMobil project. ATS was formed in 1995 and has completed the prototype development of the ULTra system, an innovative form of PRT. The prototype development work culminated in successful passenger trials for which, in 2003, HM Rail Inspectorate gave consent for ULTra to carry the public.

The system is based on small, light and energy efficient vehicles that run on a segregated guideway network offering a personal automated taxi service with point-to-point, non-stop travel and no waiting. The system offers the convenience of a car, combined with the capacity of light rail but at a significantly lower capital cost. Figure 2-1 shows the ULTra vehicles at the trial site in Cardiff, Wales.

ATS was a principal partner in the EC EDICT program, which undertook a series of evaluations of the attraction of a PRT system in public use. Studies in four applications in
Sweden, Holland, Italy and Wales demonstrated that PRT is an excellent match for transport needs throughout Europe. The study in Wales was undertaken at the Cardiff trial site, and involved passengers undertaking a representative trip on the system.

In October 2005, BAA (British Airports Authority) announced their commitment to the installation of the ULTra PRT system at Heathrow airport. BAA runs seven UK airports including Heathrow. Success of the pilot could lead to the roll out of the system over the whole of Heathrow and at all suitable BAA airports, and include links to public services in local areas.

Figure 2-1: The ULTra system at the Cardiff trial site

In addition, BAA has committed to invest a total of £ 7.5 m (about 11.13 m €) in ATS in return for 25 % of the equity. This is funding the final production and commercialisation phases of the project, which are now well underway. Under a separate contract the final production system will be delivered during 2007 for installation at Heathrow. After necessary commissioning, the system will open for use by the public in 2008.

The work of the Heathrow demonstration will contribute to each of the specific evaluations planned for the CityMobil project:

- To quantify and qualify the benefits of advanced road transport systems
- To monitor the progress of the demonstrations and provide feedback
- To generalise the evaluation results of trials and studies and transfer them to other cases
- To identify how advanced road transport systems can contribute to sustainability
2.2 Rome

Rome is another of the three major CityMobil demonstrations. It contributes to the project objectives of demonstrating the feasibility, public acceptance and performances of innovative automated transport systems for short distance transport services using small automated vehicles, so called cybercars, to collect people from their parking slot or from the train station and to bring them to the entrance of the new Rome exhibition building.

With respect to previous cybercars applications this new installation has a number of technical and integration features, which will contribute to supply a service of extremely high quality that is therefore expected to have a good impact on the public.

The technical complexity is high because, although segregated from external traffic, the transport system will be on a network and with a high vehicle density (8 vehicles in a slightly more than 2 km length of network) requiring good vehicle-to-vehicle-communication to manage priority at the intersections and the short headways needed to give high capacity.

The system will provide a fully on-demand service, and vehicle reservation will be integrated with the car-park management; each time a car enters the car-park-gate it receives the number of the slot where to park and an automated vehicle is called to wait for the car occupants at the corresponding stop. The waiting time will be greatly diminished without hampering the vehicle occupancy. As for the train station at each train arrival (every 15 minutes) a platoon of cybercars will go to the station, taking people leaving the exhibition and ready to collect those incoming by train.

All these features contribute to the achievement of four 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.

Transport performances improvement

Under the transport performance point of view the Rome installation will need to demonstrate that:

- Waiting time can be diminished to negligible values;
- Overall travel time can be significantly diminished by the new transport system;
- Integration between different modes can be improved so to eliminate any mode transfer barrier even for impaired mobility people;
- Energy spent per passenger kilometre is lower than that of conventional transport modes;
- System safety and security (a particularly sensitive point for Rome administration today after Madrid and London terrorist attacks and direct indication from terrorists on the web of Rome being one of the next targets) is higher than all the other transport modes.
Public acceptance increase of a public transport service

The objectives of Rome demo in terms of public acceptance are to have the users satisfied with:

- The quality of the service;
- The easiness of system use;
- The system accessibility;
- And the integration between transport modes.

Financial sustainability proof of such systems

The demonstration will also be the first ever occasion to keep under close control for a five years period all the cash flows of the installation, operation and maintenance of such a system. It will give the occasion to validate the assumptions about the necessary system maintenance (and its costs) over the years and to verify whether the initial investment will be re-paid and when.

Demonstration of the technical maturity of the technology

The Rome demonstration:

- Will define what is still needed in terms of technology, operational and certification aspects to make these systems more widely diffusible so to contribute to the CityMobil research;
- Will be a benchmark for the new technologies, operational and certification strategies developed in the Project;
- Will contribute in putting the first step stones in the road map for such system wide diffusion.

2.3 Castellón

The objective of the third demonstrator city, the city of Castellón, is the implementation of a hybrid transport system connecting the cities of Castellón, the university and city centre and the Benicassim at the seaside.

The project of implementation an advanced public transport system in the metropolitan area of Castellón (350,000 inhabitants) arises from the presentation in 2003 of a “Plan of Transport” for the Castellón metropolitan area. The studies previous to the presentation of the plan showed the low use of public transport in the city and its surroundings, and the great existing potential for the creation of corridors of high quality public transport providing service on a reserved platform.

The development of this system of public transport was already foreseen in the Strategic Infrastructure Plan of Valencia Region (PIECOVA) 2004-2010, presented by the Valencia Government, which constitutes the reference masterplan in this period for the public infrastructure investments.

The proposed system is structured around two corridors, with more than 40 kilometres, in which a reserved platform for the vehicles of public transport will be built. On this platform a hybrid system of guided bus/tramway will be used. This system has been selected to combine the cargo capacity, accessibility, speed and regularity of a railway-based solution with the flexibility, adaptability and smaller costs of a road-based system.
The vehicles will travel through a reserved platform, although in some stretches of the itinerary they will circulate through shared infrastructure. At intersections, the bus/tramway will be given priority over the private traffic.

The budget of all the intervention will surpass the 120 million euros. The first 97 have been already allocated for the period 2004-2010. Nowadays, the constructive project of the first section of the Castellón/ Benicàssim line is already approved with a budget of 19 million euros.

Thanks to the tourist label "Costa Azahar" the seaside of Castellón is one of the fastest growing areas in the Valencia region - in 2004 the Region of Valencia received more than 20.7 millions of tourists, which means more than four times the population of the region.

In order to keep up with this growth, thousands of new houses – mostly second residences for both locals and European long-term residents- are being built and public transport is a key part of the new infrastructures to be developed. In this context, a new airport is under construction in Castellón ant the Regional Government of Valencia has already stressed the strategic importance of the city of Castellón and its metropolitan area.

Figure 2-2: Area map with planned system trajectory

In order to tackle these challenges a number of interventions are planned, among which the current pilot plays a key role.

The first line of the advanced transport system – northern corridor – will provide service to the university Jaime I, the historical centre of the city, the important settlements in the seaside and the beach in Benicàssim, an important tourist city located 20 kilometres away. The layout of this line will connect therefore the main centres of mobility: University, Intermodal Station, historical centre, commercial centres, Port and beaches.
In a second phase, a second line – southern corridor, out of the scope of CityMobil - will also connect the south of the metropolitan area (Almassora, Vila-real, Burriana). The project in Castellón responds, in its first phase, to a historic demand of the Univeristy Jaume I. With more than 30.000 students, nowadays the university still lacks an efficient public transport system, connecting not only the university with the city centre, but also with the main railway station, used by many of the students and workers of the university every day. In this context, the university has already been cooperating during the preliminary phases of the project with the municipality of Castellón – responsible of the public transport in its metropolitan area- in order to discuss the requirements the guided bus/tramway should meet in the northern corridor. Furthermore, part of the infrastructure will be hosted by the university Jaime I.
3 Progress of the large scale demonstrations

In order to present the progress of the large-scale demonstrators, each demonstrator has to be understood and therefore is described first. The general description provides the site description, the objective and the work plan of each demonstrator.

Next the work in progress is described as well as the comparison of the current status with the time schedule. If necessary adaptations to the work or the timetable in the current stage of the demonstration sites are listed in order to cope with deviations. In the last section the next steps are presented.

3.1 Heathrow

3.1.1 General demonstrator description

The Heathrow demonstration will be an implementation of a PRT system. The system will link a passenger car park (1400 spaces) to the newly constructed Terminal 5. Figure 3-1 (left) outlines the proposed route (shown in red) of the 3.9 km pilot system, which is to be examined in the CityMobil project. Figure 3-1 (right) features a photograph showing the proposed route.

Figure 3-1: Photograph and plan of the proposed route at Heathrow airport

Details of the preferred route are currently subject to in-depth evaluations to ensure compatibility with the complex airport environment. However at the present time it is believed that there are no major issues, which will affect the proposed route. The end users of the system are BAA and the passengers that are going to be transported to and from the Heathrow terminals.

The vehicles at Heathrow will accommodate 4 passengers plus any luggage. A total of 18 vehicles are to be used along the pilot route, carrying an estimated 500,000 passengers per annum. It is anticipated that the use of the PRT system by airport passengers will be included within the cost of car parking. Figure 3-2 illustrates what the system at Heathrow will look like.
An evaluation at Heathrow comparing the use of PRT with the existing shuttle bus service, found that the PRT system offered reduced emissions, a 40% reduction in operating cost, and typical passenger timesaving of 60%.

3.1.2 Current status of work

The current status of the Heathrow demonstration, in month 3 of the project is as follows:

- ATS currently have detailed design contracts for the terminal 5 extension, and an agreed investment programme to fund the production vehicles and system design and manufacture.

- In April 2006 the contract for the design and manufacture of the vehicles to be used in the Heathrow demonstration was let to ARRK Technical Services, a company based in Essex, England. This is currently well ahead of the milestone (M1.2.2.1, Detailed design completed) for the detailed vehicle design to be completed by month 9.

- The design of the infrastructure at Heathrow began in May 2005. This is being undertaken by Arup who are acting as contractors to ATS. It should be noted that the infrastructure build is not being supported by the CityMobil project.

- Production is underway of a simulation package to enable the potential benefits of a PRT system to be assessed for any city. This is D1.2.3.2 (Simulation of representative version of the existing PRT system) in WP1.2.3 (Quantify the benefits of PRT system performance), which is due to be delivered after month 18.

BAA has recently agreed to a £10bn (about 16.23bn €) takeover bid from Spanish transport group Ferrovial. BAA has stated that Ferrovial will retain all staff, and capital expenditure plans will be guaranteed and possibly extended. As such, it is not anticipated that the takeover will have any impact of the installation of the PRT system at Heathrow, and the demonstration can continue as planned.

ITS has taken over responsibility for WP1.2.5 (Generalisation of Results and Sustainability Analysis) from ATS. This ties in well with SP5 (Evaluation and Transition) in which ITS have a significant role.
3.1.3 Comparison with time schedule
There is one imminent milestone within the CityMobil project to be met by the Heathrow demonstration. This is M1.2.2.1 (Completion of the detail design), which is on course to be completed by month 9 as required.

There are no deliverables or further milestones due from the Heathrow demonstration until month 12 of the CityMobil project. At this stage all work is running according to, or in some cases ahead of, the planned schedule.

3.1.4 Adaptations of work and time plan
It is not anticipated at this stage that any adaptations will be required to either the work to be carried out or the time plan of the Heathrow demonstration.

3.1.5 Next steps
The time schedule for work over the next six months (up to month nine) is as follows:
- In August 2006 the initial engineering test vehicles will be delivered by ARRK to the Cardiff trial site for testing.
- In September 2006 the initial vehicle testing by ATS will begin at the Cardiff trial site
- In October 2006 the construction of the system at Heathrow is due to begin. This is expected to be completed by the end of 2007.

3.2 Rome

3.2.1 General demonstrator description
Rome is building 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 important European exhibition areas. It will be 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 area where the new exhibition is being built is on the lower side of the airport highway and railway link in Figure 3-3 where the A12 highway to the north departs.
The diagonal straight line (bottom left to top right) in Figure 3-3 is “via Portuense” the old road to the harbour. It will divide the exhibition (on the lower side) from the new car park (on the upper side).

The surrounding area is being quickly built because this is one of the areas designated for the new settlements in the urban master plan. The new building for the Rome exhibition centre is shown in Figure 3-4. 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 building can be reached not only with the private car, but also with the train by using the railway from Fiumicino Airport to Rome (FM1). The distance between the railway station and the nearest building entrance is about 500 metres.

The transport system that will be the core of the Rome demonstration will serve the car-park and the railway station with two objectives:

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

A further objective in the longer term is to demonstrate the economic viability of automated systems for providing an effective feeder transport service to and from the railway; 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 cybercar also provides the same service to people reaching the exhibition by train: the visitors are picked-up at the railway station and driven to the building entrance; then, after visiting the exhibition, returned to the station by cybercar.

**Figure 3-3 the area where the new exhibition is being built**

To dimension the operating cybercar network, the car-park size and the demand have been estimated on the basis of data from other European exhibition centres of similar size to Rome’s. 8 vehicles with space to carry 20 passengers are reckoned to be sufficient to serve the demand of the car-park zones further than 200 m from the entrance.
The foreseen car-park capacity with the present design is 2500 car-slots: 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. It is common experience in Italy, in such cases, 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.

Figure 3-4 New building for Rome exhibitions

The new structure of the car park is shown in Figure 3-5.

The main features of the new system car park – cybercar network are:

- A “car corridor” around the car-park to allow car owners to reach the slots they have been addressed at the car-park entrance gate;
- A central “cybercar corridor” from the left to the right with five vertical joined corridors to serve all the car-park as reported in Figure 3-5;
- Car-slots for impaired mobility people cars near the entrance of the building.

In this configuration the cybercar is segregated and the maximum allowed speed is 30 km/h (according to CyberMove results). Furthermore this new configuration avoids congestion problems for the absence of intersections between cybercars and cars and parking-search traffic because each car is addressed to a specific slot at the car-park entrance gate.
At the two car-park entrances (one on the west side and one on the east side), there are automated gates: once a car enters, the driver states how many passengers there are in his/her car and receives a ticket which shows in which car-slot he/she has to park. Immediately a cybercar vehicle is sent to the cybercar stop nearest that car-slot and is there waiting for the people when they arrive to park at the slot.

Figure 3-5 New car-park structure after the insertion of the CTS

The new configuration of the car park has 3 000 car-slots. The total length of the cybercar network is 2.2 km. 20-place cybercar vehicles have been chosen to serve the visitors. The number of cybercar stops is 9 (six roundabouts and three intermediate stops on the vertical corridors), each one identified by a number. Those from 2 to 9 are inside the car park. Stop 1 is at the entrance to the building. It is the end-point of all the trips from the car park and from the railway station, and the start-point of all the return trips. Depots and recharging stations (which include a vehicle washing facility) are near the exhibition entrance (stop 1).

3.2.2 Current status of work

At this moment Rome Municipality is calling for tenders for the car-park management; the call for tenders should be published before the end of Summer 2006 and awarded before the end of 2006.

The project for the insertion of the CTS (Cybernetic Transport Systems) is ready and the Contractor will have to insert the system in the parking area and manage it on its own for 12 years. For this reason Rome Municipality, together with IT, is deeply reviewing the call for tender and the attached contract to prevent any problem from the legal and technical point of view.

The work for the CTS network insertion in the car park will start at the beginning of 2007 (once the call for tenders has been awarded) and should be finished at the end of 2007.
The CTS is totally new in Italy and it needs the approval of the test commission of the Ministry of Transport that has been already contacted.

However the car park and some blocks of the building (other than the first four blocks yet built) are currently under construction and at the end of September the first four blocks of the Rome Exposition will open and with them also the parking area will be opened. Once the call for tenders has been awarded the car park will be managed by a public company without the CTS inserted.

### 3.2.3 Comparison of the current status with the time schedule

The work planned is proceeding almost as it was previously planned, considering both the coordination activities and the detail design activities.

Concerning WP 1.3.1, demonstration project management, the first milestone has been met, which is M 1.3.1.1, the demonstration requirements definition. The second milestone M 1.3.1.2, detail design completed, is on course to be completed, but will probably be reached with some delay, because of the time spent by preparing the call for tenders.

Concerning WP 1.3.2, transport system executive design, this WP is strictly linked to WP 1.3.1 (demonstration project management) and M1.3.2.1 (demonstration requirements definition), which has been met. The deliverables 1.3.2.1 (Rome demonstration requirement) is already completed. Milestone 1.3.2.2 in WP 1.3.2, detail design completed, probably will be reached with the same delay as M1.3.1.2, because of the same problems described above.

### 3.2.4 Adaptations of work and time plan, if necessary

At current time adaptations to the time plan are not necessary.

### 3.2.5 Next steps

As reported in section 3.2.1, before the end of Summer 2006 the call for tenders for the car-park management will be published and it will be awarded before the end of 2006. Once the car-park management has been awarded, the work will start. The period foreseen for the beginning of the work is the beginning of 2007.

The first and most important step will be the identification of the building contractor (who will award the call for tender) and the consequent detailed design on the basis of its behaviour. The other steps will be the requirements reported in the deliverable 1.3.2.1 of the CityMobil project.

The certifications for the homologation of the CTS have to be ready and approved before the beginning of work. Furthermore a system for the advanced CTS network management, including car-slot selection and verification of the right position of the cars, cybercar selection to serve the visitors and cybercar recharging management, has to be ready, in order to provide the integration of the system with the car-park yet before the work starts.

A system for the communication between the cybercars during the service and for the management of the network intersection is also necessary to be ready before the beginning of the work.
3.3 Castellón

3.3.1 General demonstrator description
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.

While totally separate rights of way can be provided, most currently available proposals envisage providing guideways solely where buses need to bypass congestion. This can be achieved with minimal space requirements; the guideway need only be 3 m wide, and is only needed in the direction in which congestion is experienced. Specially equipped buses can then operate normally on the rest of their routes, hence providing much more extensive suburban coverage than light rail. These systems have a number of advantages, including the increase of reliability, speed and accessibility to bus services, and the reduction of road congestion.

Guided vehicle systems involve taking the steering of the bus away from the bus driver for all or, as in the case of Castellón, part of the route. In doing so, they eliminate the need to allow for any lateral movement of the bus within a lane of traffic. A bus is generally approximately 2.5 m wide, but a bus lane is usually 3.75 m or even 4 m wide to allow for this lateral movement. A guided bus system, therefore, provides opportunities to implement dedicated busways where road space is in short supply and, hence, where conventional bus lanes could be impractical. Furthermore, it also provides opportunities –by means of automated docking- to improve physical access to the bus by minimising the vertical and horizontal gaps between the bus stop and the bus.

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.

3.3.2 Current status of work
The current status of the Castellón demonstration, in month 3 of the project is as follows:

- An internal meeting with Generalitat Valenciana (GVA), ENQ and ETRA has been held to analyse the requirements of the IT systems to be implemented for the site.
- Currently the kinds of vehicles, which will be used for the site, are being evaluated. The tender for the choice of the vehicles has been closed. The offers have been rated and the technical reports analysing the different possibilities have been already delivered. The last step is the political decision that needs to be taken in order to conclude definitively the selection of vehicles.
• The design of the platform will be finished in January 2007. The delivery of the platform is planned for the summer 2007. The call for tenders for the second phase is in preparation.
• FCVARE presented at the Committee of Regions in Brussels the Castellón demonstrator, starting this way the awareness actions.

Originally, the results of the evaluation process should be available at the end of the summer of 2006. Due to the metro accident, which occurred at the 03.07.06 in Valencia the evaluation process, might be delayed. A part of the system (non-automated) should work in the second half of next year.

### 3.3.3 Comparison of the current status with the time schedule

No deviations from time schedule and working plan can be seen at current time.

There is not any imminent milestone within the CityMobil project to be met by the Castellón demonstration.

The first milestone is due at month 6 (M1.4.4.1 Preliminary engineering plans), though the deliverable associated will be ready at month 9 (D1.4.4.1 Design of dedicated lane infrastructure, M1.4.4.2 Analysis of the noise emissions and landscape)

There are no deliverables or further milestones due from the Castellón demonstration until month 12 of the CityMobil project. At this stage all work is running according to the planned schedule. The delay in the evaluation of vehicles is not affecting the planned schedule.

### 3.3.4 Adaptations of work and time plan, if necessary

At current time adaptations to the time plan are not necessary.

### 3.3.5 Next steps

The time schedule for work over the next six months includes the follow up of the work developed within WP1.4.2 (Vehicles), WP1.4.3 (IT systems) and WP1.4.4 (Infrastructure).

It cannot be anticipated, when the political decision related to the selection of vehicles will be taken. However the process should be closed after summer.

The design of the platform will be finished in January 2007. The delivery of the platform is planned for the summer 2007.
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 General description

The objective of showcases and city studies is to raise the awareness of European cities about new forms of urban transportation based on cybercars and advanced city vehicles.

4.2 Current status of work

Three cybercars, which belong to INRIA, have been selected for showcases as "best available vehicles" (see Figure 4-1):

Figure 4-1 Two CyCabs provided by ROBOSOFT and a CityCab provided by Yamaha

These three vehicles are small enough to be transported simultaneously to a chosen location. There are two more vehicles available (one CyCab, one CityCab) for showcases as a back up. All of these vehicles are in good shape and can represent very well the capabilities of small-scale cybercars (from 2 to 5 passengers).

Various scenarios have been looked into, which could be demonstrated with these vehicles. A generic one has been selected, which can be easily deployed in various locations. A simple network in the shape of the figure 8 (which can be reduced to a figure O) with one-way paths has been selected as the scenario.

On this network it is possible to position a number of "stations" (between 2 and 4). Up to three cybercars will be operated simultaneously. A vehicle can be called from any location using a PDA with Wi-Fi connection to the dispatcher, which selects the best available vehicle. The destination can be selected from a panel inside the vehicle.
Various technologies, which will be implemented in the vehicles to have the showcases ready by month 18, have been investigated. The following are the basic technologies, which have been retained:

- Navigation: combination of street border following (variable gap), low precision GPS combined with odometry and landmark localisation (with laser scanner)
- Obstacle avoidance: combination of laser scanner and stereo vision
- Management: simple software on a PC with had-hoc network (OLSR) for communication with the vehicles and PDAs

A feasibility analysis has been carried on, in order to adapt some of dual mode vehicles, presently available at CRF as one of the results of past projects regarding automatic driving. In particular, some electrical car Seicento with sensors and actuators developed in Amica project were examined and some improvements/changes were identified. The supplier of the lithium battery pack was involved to provide some replacement parts, but this action did not succeed since the necessary components are prototypes and spare parts do not exist. Therefore it has been decided to build new cars with a different propulsion system. The car model has been selected: Panda, which is the smallest Fiat car, suitable for showcases in urban centres.

### 4.3 Comparison of the current status with the time schedule

No deviations from time schedule and working plan can be seen at current time regarding the cybercars. The work is currently proceeding as planed.

The selection of city vehicles is on the way, but the impossibility to use the available cars and the need to develop new prototypes based on a different car model can cause additional work and can delay the availability of cars for showcases. Currently the activity is on schedule.

### 4.4 Adaptations of work and time plan, if necessary

At current time adaptations to the time plan are not necessary.

### 4.5 Next steps

The basic technologies for cybercars, which were investigated, are being implemented into the vehicles and will be available for demonstrations according to schedule.

For the city vehicle the control systems for automatic driving of Panda will be examined, to define possible changes or to adapt alternative components for the intended functions.