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



## Yearly reports on Rome demonstration progress

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Author(s)	G. Giustiniani
Co-author(s)	
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## **1 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. These three innovative concepts will be implemented in the city of Heathrow, Rome and Castellón.

Concerning the Rome Demonstration, CTS will be implemented in the main car-park that will take the costumers from the car-park to the main entrance of Rome Exhibition.

In this deliverable the yearly progress concerning the Rome demonstrations is described. The main achievements of the Rome Demonstration in this years' period are:

- The definition of the Cybercar requirements for the civil works;
- The CTS final design ready;
- The construction and test of the first Cybercar;
- The application of the CityMobil certification procedure to the Rome Demonstration.

Some institutional and political problems have been experienced and also because of the missing of the contract amendment ATAC was unable to issue call for tender for the implementation of civil works. Once the contract amendment will be available the civil work call for tender will be published.

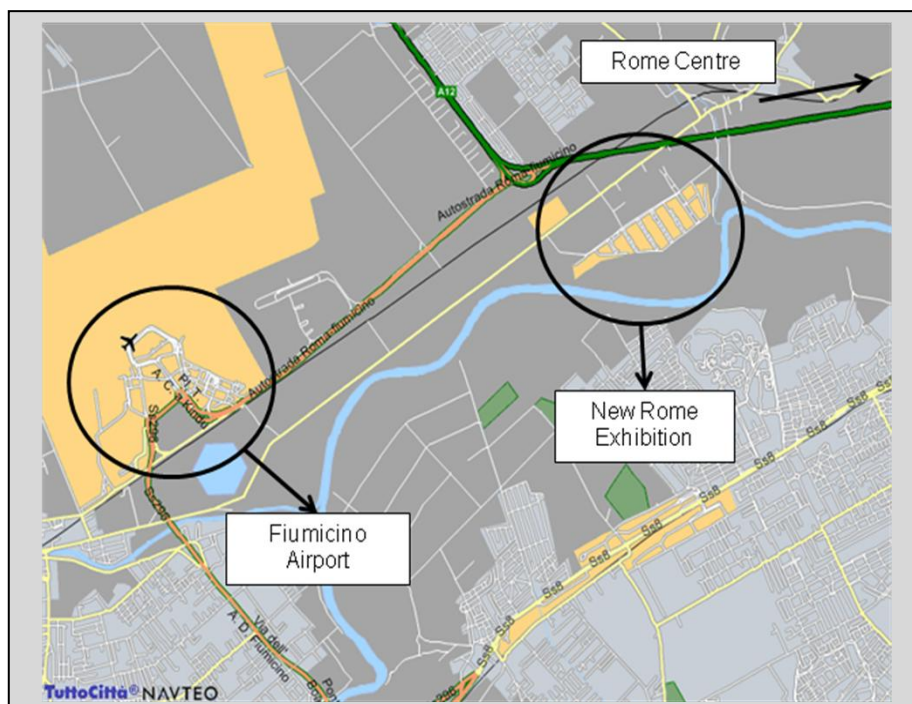
## 2 Rome Demonstration

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 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 new exhibition area is on the lower side of the airport highway and railway link and it is shown in Figure 2-1, whereas the new building for the Rome exhibition centre is shown in Figure 2-2. Around a 1.5 km long central corridor, each block represents an exhibition stand of 72 by 12 metres each.

**Figure 2-1 The area where the new exhibition is being built**



In front of the building, there is a car-park with about 2500 car-slots.

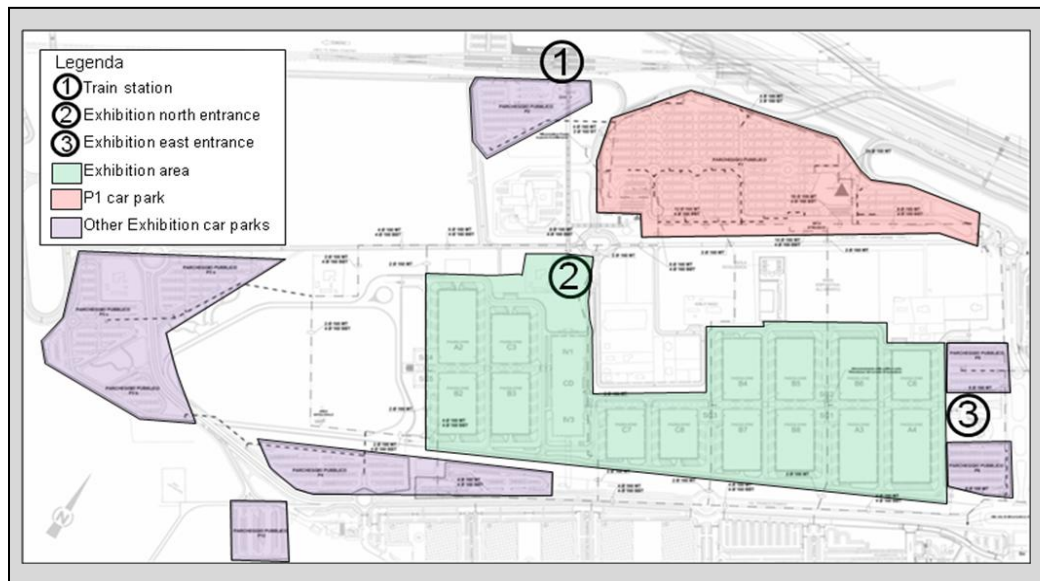
The transport system that will be the core of the Rome demonstration will serve the car-park with two objectives:

- To improve visitors' accessibility to the buildings, for people coming both by car and by train;
- To eliminate the shuttle needed to serve the furthest away 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 towards 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.

**Figure 2-2 New building for Rome exhibitions**



The 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 distance 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” corridor 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.

## 2.1 The current status of the work

During last year the Rome demo moved forward on many sides:

- Publication of the civil works call for tender and award to the best bid;
- Preliminary civil works done;
- CTS certification officially started;
- Cybercars construction completed and both Cybercars tested in France.

Concerning the Civil works in November and December 2009 ATAC has run some preliminary civil works (wiring and cabling of the P1 car park). These preliminary civil works will reduce the time needed for the civil works full implementation of about one month.

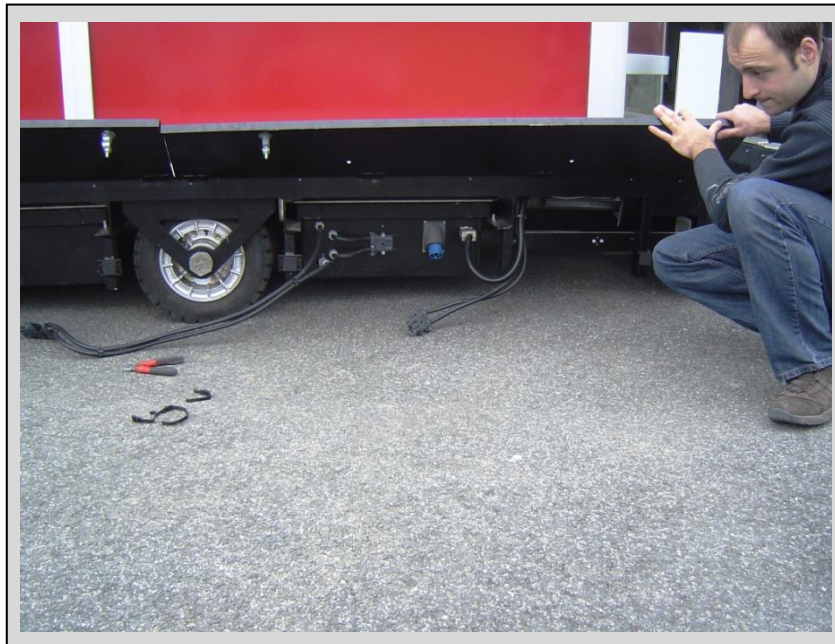
The call for tender for the civil works implementation was expected to be published in September 2009 but has been finally published on 13th of January. The call for tender was awarded to the best bid in March 2010 and the civil works are expected to start in July 2010.

Concerning the vehicle construction both vehicles 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 stress 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 the 19th to the 23rd of April 2010, dealt with the mecatronic 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 (see Figure 2-3).

**Figure 2-3 The training course in Robosoft premise – how to pull out battery rack**



The last area of work concerns the certification of the system. After an intensive preliminary work with the Italian Ministry of Transport (MoT) the CTS final design was provided to MoT in July 2009. After the review of the document provided, MoT requested a second round of documents to better understand some aspects related to the vehicle braking and navigation systems and to safety systems redundancy. The second round of documents has been prepared and translated into Italian and has been provided officially to MoT in May 2010.

Thanks to the collaboration with SP 2.5 and 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 core of the methodology was the Failure Mode Effects and Criticalities Analysis (FMECA). This analysis was applied to the CTS and required 28 working sessions of about 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 results of the FMECA have been translated into Italian and provided to MoT waiting for its reactions.

The second round of documents provided to the MoT was composed by about 1000 pages of documents, with pictures and technical schemas of CTS and civil works design. Probably MoT will ask for further documents or clarifications but the main bulk of information has been provided.

## **2.2 Problems experienced in this fourth year**

During the fourth year of work many activities were carried out and most of them were highly timing consuming. Nevertheless with all the work done in the Rome Demo is still in delay compared to the work plan agreed.

A project extension will surely help to reach the Demo objectives before the project end and a revision of DoW IV is expected for the end of September 2010 where a new work plan will be agreed with the project consortium.

## **2.3 Adaptations of work and time plan**

A revised version of DoW IV expected for the end of September 2010 will provide a new work plan for the Rome demo.