CITYMOBIL
Towards Advanced Road Transport for the Urban Environment

**Funding:** European (6th RTD Framework Programme)

**Duration:** May 2006 - Apr 2011

**Status:** Complete with results

**Total project cost:** €40,362,975

**EU contribution:** €11,000,001

**Call for proposal:** FP6-2005-TRANSPORT-4

**CORDIS RCN:** 79971

**Background & policy context:**
During the first discussions with the EU officials it already became clear that CITYMOBIL was not going to be an exclusive research and development project. A very important part of the project had to be aimed at demonstrations; showing stakeholders and the general public what automated transport is and how it can contribute to more sustainable future cities. Very soon it was decided that these demonstration activities should not be just temporary demonstrations, but rather implementations of automated systems; systems that would survive the lifetime of the project and that would continue to be operating and expanding long after the project had ended. During these first discussions the general goal of the project took shape: "To bring the implementation of automated transport systems in urban areas a major step forward."

This very general goal was described more specifically: "To achieve 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."

**Objectives:**
The overall objective of the CITYMOBIL project was to achieve 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.

Specific objectives were:

- Developing advanced concepts for advanced road vehicles for passengers and goods. Most of the earlier projects addressed isolated aspects of the mobility problems of cities, whereas CITYMOBIL focuses on the overall urban transportation problem.
- Introducing new tools for managing urban transport. CITYMOBIL develops tools that can help cities to cross the thresholds that are preventing them from introducing innovative systems (e.g. the absence of certification procedures and the lack of suitable business models).
- Taking away barriers that are in the way of large-scale introduction of automated systems. Some of these barriers are of a technological nature, some are of a legal or administrative nature (e.g. the legal requirement for vehicles using public roads where the driver is responsible for the vehicle at all times, which effectively prohibits driverless vehicles from using public roads).
- Validating and demonstrating the concepts, methods and tools developed in CITYMOBIL in three European cities. These demonstrations (Heathrow, Rome and Castellón) are real implementations of innovative new concepts. In a number of other cities, studies are carried out to show that an automated transport system is not only feasible, but it also contributes to a sustainable solution for the city's mobility problems, now and in the future.

As a result, CITYMOBIL will contribute to innovative solutions that will allow increased mobility in a well-controlled manner, using technologies with low pollution, high safety levels and a much increased efficiency, using either a separate infrastructure or existing roads. In future mobility scenarios, such
new transport systems will be part of the urban environment. These new transport systems will be the answer to the new mobility demands of the future society. The urban mobility will be greatly supported by new transport system concepts, which are able to improve the efficiency of road transport in dense areas while at the same time help to reach the zero accident target and minimise nuisances.

**Methodology:**

The general project description was translated into concrete project objectives as follows:

- The demonstration part aimed at three large scale implementations of advanced transport systems in cities. The main goal of these three implementations was to demonstrate that the technology was in such a state that implementations would be feasible. In addition there were a number of smaller events of a temporary nature like showcases, where automated vehicles are brought to a city to allow the public and the authorities to ride them and get a feeling for the possibilities of automated systems.
- The research and development part also had a strong practical component. The main focus was on identifying barriers that were still in the way of large scale implementations of automated systems, and subsequently take them away or devise strategies for overcoming them in the future. The barriers could be of a technological nature, but also of other natures like political or societal. In short: anything that could disrupt or delay the advance of automated transport.

The above objectives and decisions led to the following concrete project components:

**Subproject 1: Demonstration Activities**

This subproject covers the CITYMOBIL activities related to the demonstrations, showcases and city studies. The demonstrations served as a laboratory for developing and evaluating solutions and as a source for identifying problems that can be addressed in the project.

- Demonstration at Heathrow, United Kingdom
- Demonstration in Rome, Italy
- Demonstration in Castellon, Spain
- Small demonstrations
- Showcases
- City studies

**Subproject 2: Future Scenarios**

This subproject will investigate how automated road transport systems fit into the expected scenarios for advanced urban transport in the future, particularly analysing how they will contribute to sustainability. The various modes, based on the state of the art of today, that serve as a starting point for further research on advanced road transport are:

- Cybercars
- High-tech buses
- Personal rapid transit
- Advanced city cars
- Duela mode vehicles

The point of view for transport demand and sustainable mobility standards will be respectively 2050, 2030 and 2015.

**Subproject 3: Vehicles and Technological Issues**

Subproject 3 addressed the technological aspects of automated road transport systems.
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Key Results:

A bi-dimensional matrix called 'Passenger Application Matrix' was developed to present the results of the evaluation of the various activities in CITYMOBIL. In this matrix the results have been grouped according to ten various trip origins and trip destinations: city centres, inner suburbs, outer suburbs, suburban centres, major transport nodes (such as airports, central stations), major parking lots, major educational or service facilities (e.g. university campuses, hospitals), major shopping facilities, major leisure facilities, for instance amusement parks and corridors.

Main Results Summary

- The public appears to be generally interested in these novel forms of transport which could provide an alternative to the use of private automobiles. The effect of major or minor accidents with automated transport systems on public acceptance is still unknown.
- One of the greatest challenges during the project was the realisation of the implementation and the demonstrations. It appears that a lot of hurdles must be taken from the moment a city has decided that they want to introduce a new transport system or a demonstration until the vehicles actually transport people through the city streets. The period of 5½ years that CITYMOBIL lasted was not enough to realise the plans in all cases. Especially during the implementation in Rome and a potential demonstration in Lausanne the difficulties were such that the plans could not be realised within the timeframe of the project. A period of 5 - 10 years seems to be a realistic time span that is needed from the time the decision is made until the system is operational.
- It became clear that the presence of operational automated systems in other cities is a great stimulus for decision makers. To be the first one to implement a new and unknown transport solution requires a lot of courage and enthusiasm from the decision makers, especially when there are no examples that can be used to overcome hesitations from colleagues, authorities and the public.

Technical Implications

On the basis of the results of CITYMOBIL it is possible to draw some lines for the immediate future. The lessons learned, as presented above, make clear that in order to make a significant next step forward the following is needed:
• More demonstration projects to convince stakeholders that automated transport solutions are a viable option.
• A further development of the CITYMOBIL City Application Manual and other tools that can help decision makers to overcome hesitations and draw balanced conclusions on the pros and cons of automated transport systems.
• An increased effort to come to generally accepted certification guidelines. This should take place on a European level and should result in clear and harmonised legislation that will define the precise conditions that will allow automated solutions in urban traffic.

Policy implications

Up until now the main efforts of European projects have been concentrated on technological research in order to assure the technical feasibility of advanced transportation systems. It is now time to forge ahead and address other topics in order to achieve the aimed goal: implementation and operation of urban automated transport vehicles. Recommendations with a wider scope of action must be fostered, in particular to establish a clear and solid framework focusing on the legal and homologation aspects of operation of automated vehicles in urban areas. As long as these points remain neglected, it will be difficult to complete the implementation and operation of a full working scheme.

Documents:
- Deliverable D0.1.15 - Annex I to D0.1.15 4th year dissemina.pdf (Other project deliverable)

STRIA Roadmaps: Cooperative, connected and automated transport, Smart mobility and services
Transport mode: Road transport
Transport sectors: Passenger transport, Freight transport
Transport policies: Decarbonisation, Societal/Economic issues
Geo-spatial type: Urban