

Editorial

As part of its commitment to promote sustainable transport, the European Commission is funding a number of projects that it believes can make a major contribution to achieving sustainable urban transport. CityMobil is one such project.

This major research, development and demonstration project is addressing the integration of automated transport systems in the urban environment. Its focus on integration, based on real-life implementations of automated transport systems at Heathrow, Rome and Castellón, reflects a changing perception of automated transport from a futuristic niche mode to an everyday transport solution. Increasing interest in the CityMobil Reference Group, a group of cities that are considering the deployment of automated transport, is further testimony to this shift in attitude.

In addition to the Reference Group of cities, CityMobil is planning a number of other outreach activities intended to raise awareness of automated transport among urban transport professionals and to receive feedback on its work, including a workshop that will take place in the latter part of 2008 or early 2009. The European Commission and the CityMobil partners look forward to seeing you there.

Patrick Mercier-Handisyde
Scientific Officer
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European Commission



What is CityMobil?

CityMobil is an Integrated Project, co-funded by the Sixth Framework Programme for RTD (FP6), whose main aim is 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. This objective is brought closer by developing integrated traffic solutions: advanced concepts for innovative autonomous and automated road vehicles for passengers and goods, embedded in an advanced spatial setting. The city of tomorrow is in need of integrated traffic solutions that provide the required mobility in an efficient, safe and economic manner. It

is inevitable that automation, in all possible forms between providing information at one end of the spectrum and fully autonomous driving at the other, will play a major role. CityMobil expects to make significant steps forward that will, in the short to medium term, support a sustainable development of European cities.

Project update

A snapshot of automated transport research

By Marten Janse (TNO), CityMobil WP2.1 leader

In the state of the art review, the first deliverable of the CityMobil project, an overview is given of the developments in research on the automated transport of people and goods, from technology-driven invention towards transport demand innovation and integrated application.

New challenges for cities appear as their mechanisms to adapt to changes in mobility fail to keep pace with changes in urban developments. The big economic success of private car use is visible in the longer distances travelled for almost every activity, causing urban sprawl and devastating the chances for public transport to supply alternatives for car use from a sustainability point of view.

Promising solutions to this problem come from automating driving tasks and vehicles. Cybercars, personal rapid transit, high-tech buses, advanced city cars and dual mode vehicles, are all members of the same family, aiming to make transportation easier for people and goods, more efficient and sustainable.

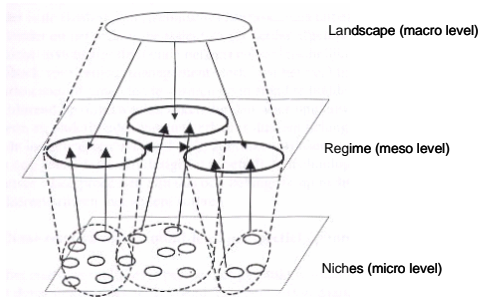
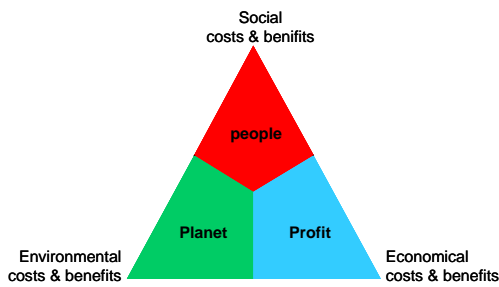
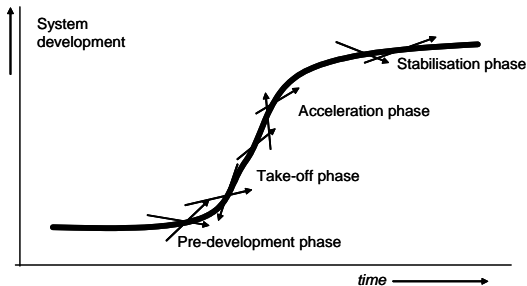
Promising applications for automated transport can be found by taking out the driver's costs as a decisive factor in the design of transport supply. Shuttle services to and from distant car parks and feeder services to high-speed public transport nodes, turn out to be the most promising, especially in the range of 2–4 km or at times (e.g. between rush hours) when transport demand is too low for regular modes.






The broadening of the research arena, from automated vehicles to transport applications with automated vehicles and from there on to transport demand and supply in the urban mobility system and the consequences and opportunities for urban planning, is a very promising development for the whole area of automated transport. System innovations, like

streamlining the public transport network, take the CityMobil research from niche application to transition management.

Policy drivers for implementing new kinds of transport supply often seem to come from a transport problem perspective, a sustainability perspective or the perseverance of an image of being an innovative city. Most of the time local authorities follow a logical approach, building consensus as they take a project from pre-design phase to planning phase and so on.

To follow a more solid approach, parallel endeavours are needed: multi phase, multi domain and multi level. Multi phase indicates that transition paths are non-linear with different phases shifting from one equilibrium into another. Multi domain indicates the need for interaction between components in the economic, ecological and social domain (profit, planet, people). Multi level connects developments at different scale dynamics: micro referring to individual actors, technologies and local practices; meso referring to social norms, interests, rules and belief systems that underlie institution's strategies and politics; and macro referring to the societal landscape determined by slow changes.



Innovative transport concepts	Examples
<p>Cybercars are fully automatic, clean, driverless vehicles that run on guide ways, and will evolve to operate on street in mixed traffic, starting with traffic at low speed (pedestrians, bicycles) and traffic with professional drivers (taxis, buses).</p>	
<p>Personal Rapid Transit (PRT) is a system of fully automatic clean, driverless vehicles that run on guideways to segregate them from other traffic and pedestrians.</p>	
<p>High-tech Buses run automatically on guide ways and can dock precisely, but need a driver on city streets.</p>	
<p>Advanced City Cars integrate zero or ultra-low pollution mode and driver assistance such as ISA (Intelligent Speed Adaptation), stop&go, parking assistance, collision avoidance, etc. They should also incorporate access control coupled with advanced communications.</p>	
<p>Dual Mode Vehicles are able to support both fully automatic and manual driving. The first applications of automatic driving will be for relocation of shared cars using platooning techniques but these vehicles could become full cybercars in specific areas/infrastructures.</p>	

This so-called transition management approach is organised in iterative development rounds, each round consisting of four activities:

- establishing a transition arena;
- developing a long-term vision and a common transition agenda;
- initiation and execution of transition experiments; and
- monitoring and evaluation of the transition process.

The CityMobil project, built with a variety of partners in the consortium, bears all potentials for a successful transition management approach. Knowing we do not start from scratch

–with Tintin already trying the cybercar almost 50 years ago- let's start learning and change the future !

News from the demonstrators

Three major demonstrations of automated transport systems are featured within CityMobil at Heathrow Airport, the new Rome exhibition centre and the Spanish town of Castellón. In addition, other cities will also be associated with the project through showcases (ie, smaller-scale demonstrations) and detailed feasibility studies. These activities will be coordinated through the City Reference Group.

Heathrow airport

In October 2005, the owner of Heathrow airport, BAA, announced its commitment to the installation of the ULTra Personal Rapid Transit (PRT) system at Heathrow. ULTra is a system based on small, light and energy efficient vehicles on a dedicated guideway network offering a personal, automated taxi service with point-to-point non-stop travel and no waiting. The Heathrow scheme will take the form of a pilot project, 3.9 km in length, linking the passenger car park and terminal areas. Success of the pilot will lead to the roll out of the system over the whole of Heathrow and all suitable BAA-owned airports, and links to public services in the local area.

ULTra offers personal transport with no waiting, and takes passengers non-stop to their chosen destination. Rather than forcing passengers to collect in groups until a large vehicle is scheduled to travel on predetermined routes, ULTra provides immediate response to each passengers trip demand. The system will be implemented in several phases: the first will see a service provided between the car park and the new Terminal 5.



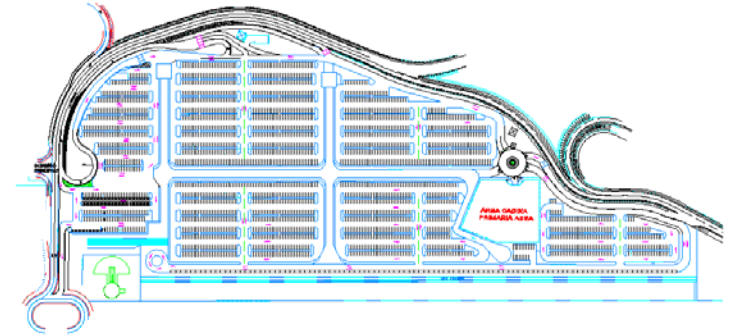
Impression of system in Operation at Heathrow

Rome exhibition centre

The municipality of Rome is building a new exhibition centre at which a fully automated transport service will be implemented using Cybercars to shuttle people between their parking slot or the train station and the entrance of the exhibition centre. The technical complexity of this system is high because, although segregated from external traffic, the transport system will be on a network and with a high vehicle density (12 vehicles in a slightly more than 2 km length of network), thus requiring good vehicle to vehicle communication to manage priority at

intersections and short headways needed to deliver 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 will receive the parking space number to which it has been allotted and an automated vehicle will be called to wait for the car occupants at the closest stop to the allotted space. 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.



New car-park structure after the insertion of the "cybercar" network

Castellón

The metropolitan area (350 000 inhabitants) of Castellón lies to the north on Valencia on Spain's south-eastern coastline. The proposed implementation of an advanced public transport system emerges from the 2003 "Plan of Transport" for the Castellón metropolitan area. Studies undertaken during the preparation of the Plan showed a low use of public transport in the city and its surroundings but nonetheless a substantial potential for the creation of corridors of high quality public transport running on a reserved platform. The development of an automated system was then set out in the Strategic Infrastructure Plan of the Valencia Region (PIECOVA) 2004-2010, presented by the Valencia Government. This document constitutes the reference master plan 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 on a reserved platform, although on 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 vehicles to be used will be hybrid vehicles with electrical traction and a guidance system to assure the greatest

accessibility at the stops and to allow the circulation and operation in sections where they will have to share the roadway with the private vehicles.



Area map with planned system trajectory

Other city activities

The objective of the 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. Cities with a keen interest in automated transport systems will be selected for detailed studies on the implementation of possible innovative transport systems and for showcase demonstrations. It has been decided that a fleet of 3 cybercars and 2 advanced city vehicles will be made available for this small-scale demonstrations. The selection of the cities for the studies and the definition of the demonstration are currently underway and it is likely that these will be drawn from the City Reference Group. This group of cities interested in advanced urban transport systems will convene on several occasions during the first 18 months of the project to learn about the CityMobil activities and to provide input to the project based on their own experiences and plans. For more information on the City Reference Group, contact: Jan van Dijke (jan.vandijke@tno.nl)

Partner profiles

28 organisations representing industry, research and public authorities, are partners in CityMobil. Each issue of the CityMobil newsletter will profile three partners. This edition will feature the CityMobil coordinator, TNO, as well as IKA and ITS.



TNO, the Netherlands organisation for Applied Scientific Research was established by law in 1930, to support companies and governments with innovative applied research. TNO is an independent research organisation with a staff of about 4500 and a yearly turnover of over 400 million Euros. TNO focuses on 5 core areas: Science and Industry; Quality of Life; Defence, Security and Safety; Environment and

Geosciences and Information and Communication Technology. Expertise from all of these core areas is used in CityMobil. <http://www.tno.nl>



Univ.-Prof. Dr.-Ing. Henning Wallentowitz

Automotive Engineering has always been one of the focal points of teaching and research at the Rheinisch-Westfälische Technische Hochschule Aachen (RWTH). Lectures on motor vehicles and combustion engines have been given here since 1898. Following this centennial tradition, the Institut für Kraftfahrwesen Aachen (ika) is engaged in teaching and industry-orientated research-projects on vehicles as well as related issues such as traffic and environmental conditions (noise, exhaust gas, etc.). In 2005 ika had some 200 employees. <http://www.ika.rwth-aachen.de>



The Institute for Transport Studies (ITS) is one of the world's leading inter-disciplinary groups involved in teaching and research in transport studies. ITS has participated in some 34 projects in the Fourth Framework and 26 in the Fifth Framework and is currently involved in 9 projects within the Sixth Framework. Its expertise covers the full range of land transport research issues. Research in ITS is co-ordinated via subject groups in Safety, Network Modelling, Traffic Environment and Informatics, Economics and Behavioral Modelling, and Transport Policy and Appraisal. ITS supports three large research facilities, the Advanced Driving Simulator, the Instrumented City and LANTERN (Leeds Health Air Pollution, Noise, Traffic and Emissions Research Network) and the SATURN traffic assignment and DRACULA traffic micro simulation software packages. <http://www.its.leeds.ac.uk>

Related events

- *2007 Annual Polis Conference*
14-16 March 2007, Toulouse, France www.polis-online.org
- *57th World Congress & Mobility and City Transport Exhibition - Moving People, Moving Cities*
20-24 May 2006, Helsinki, Finland
<http://www.uitp.com/Helsinki2007/>
- *ITS 2007 - 6th European Congress and Exhibition on Intelligent Transport Systems and Services*
18-20 June 2007, Aalborg, Denmark
<http://www.itsineurope.com>
- *URBAN TRANSPORT 2007 - 13th International Conference on Urban Transport & the Environment in the 21st Century*, 3 - 5 September, 2007, Coimbra, Portugal
www.wessex.ac.uk/conferences/2007/urban07/
- 14th ITS World Congress and Exhibition,
9-13 October 2007, Beijing, China,