

Editorial

Airports are naturally at the sharp end of technological progress. Aircraft themselves are technically enormously complex, and their designers are continually developing new systems and new materials. Passengers rightly expect that the whole experience of flying should be a thoroughly modern and attractive experience, and our airports make every effort to turn the time passengers spend on the ground into an enjoyable experience in its own right. We have always been the first to adopt new technologies where they can aid the passenger and improve the experience. Travellers, transit systems and other dedicated railways, electronic booking and automated baggage handling, and a host of other advanced technologies most passengers never see.

That is why at Heathrow BAA is introducing Personal Rapid Transport - to give our customers a better service between their arrival point in the airport and check-in. Passengers will no longer have to wait for shuttle buses but will travel in their own private vehicles quickly and without delays en route. Importantly to BAA, the PRT vehicles will emit no pollutants into the airport environment, they will use less energy and overall emit far less greenhouse gases than other forms of transport, and they will be much quieter, important to the local community. Heathrow is the leader in this field. Once the system is proven with customers, we will expand it to serve not just car parks, but hotels, car hire and other airport activities, and bring the system directly into our buildings for greater customer convenience. Its ULTra-modern and stylish appearance will act as an advertisement for the extensive renewal of many parts of the airport which will follow the opening of our new Terminal 5. BAA is delighted to be part of CityMobil in order to share its experience of implementing this advanced transport system.

Duncan Garrood
Commercial Director BAA



Project update

The contribution of earlier R&D to the CityMobil demonstrators

By Carlos Holguin, Inria

The CityMobil project features four different demonstrations of advanced concepts for innovative autonomous and automated road vehicles for passengers and goods. These projects, rather than a brilliant idea that came up from a genius' mind, are the product of several years of collaborative research between the project partners with the support of the European Commission. In this issue of the newsletter we will explain the research history that led to two of the present demonstrations: The Heathrow demonstration and the Rome demonstration.

The Heathrow demonstration

The objective of the Heathrow demonstration is the implementation and evaluation of the ULTra Personal Rapid Transit (PRT) system at Heathrow Airport. PRT is a system of driverless automatic cabs travelling on demand on their own guideway network 24 hours a day. The passenger arrives at a station and indicates the required destination station on a terminal, making payment electronically. If there is not an empty vehicle waiting in the station for immediate boarding, the system will automatically route the nearest empty vehicle to the caller's station. All stations are off-line, so the vehicle will take the passenger non-stop to the destination station by the most direct route.

Advanced Transport Systems (ATS), a Bristol-based company and one of the CityMobil partners, produced and tested an ULTra (Urban Light Transport) PRT prototype within the EC EDICT project (Evaluation and Demonstration of Innovative City Transport) between December 2001 and November 2004. EDICT was established by and began with four partner cities from Italy (Rome Ciampino), the Netherlands (Almelo), Sweden (Huddinge) and the United Kingdom (Cardiff), together with 12 research organisations and 5 follower cities. Researchers and transport authorities in these cities evaluated ULTra's technical, environmental, social and economic benefits. Practical assessment of user and community benefits was accomplished through test track demonstration in Cardiff. The prototype development work culminated in successful passenger trials for which HM Rail Inspectorate gave consent for ULTra to carry the public.



EDICT's findings on the PRT assessment were encouraging. Overall the findings inform us that PRT provides a highly accessible, user-responsive, environmentally friendly transport system which offers a sustainable and economic solution for the "Cities of Tomorrow". On paper, PRT looks much more attractive than conventional public transport, as proved in all EDICT sites. On the negative side, PRT carries an element of risk because to date, there has been no full practical development for public use, at least not in Europe. Although many public authorities are interested in the concept, as found in EDICT, not one has committed to installing such a system.

In October 2005 BAA announced their commitment to the installation of the ULTra PRT system at Heathrow, giving a kick start to a 3.9 km pilot project, 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 airports, and links to public services in the local area.

The Rome demonstration

The Rome demonstration is a short distance transport service using Cybercars to collect people from their parking slot or from the train station and bringing them to the entrance of the new Rome exhibition building. Cybercars are road vehicles with fully automated driving capabilities. A fleet of such vehicles forms a cybernetic transportation system (CTS), for passengers or goods, on a network of roads with on-demand and door-to-door capability. The fleet of cars is controlled by a central management system in order to meet particular demands in a particular environment. With respect to previous Cybercars applications, this new installation has a number of technical and integration features that will contribute to the provision of a service of extremely high quality. It is therefore expected that this Cybercar application will generate a positive image among the general public. This is a key element to guarantee the success of any innovative technology.

Prior to CityMobil EC project, the CyberMove EC project demonstrated the effectiveness of Cybernetic Transport Systems (CTSs) in solving city mobility problems, proving that they have now reached high levels of reliability, safety and user friendliness. To do so, several sites in Europe carried out field trials and feasibility studies for the implementation of CTS applications. A similar application to that of Rome was setup in Antibes, in the French Riviera. Antibes' application used the CTS as a park shuttle to push visitors to park further away from the city centre. The line studied was a two-way one kilometre line, along the harbour, between four car-parks and one of the city centre entrances (Porte Marine). In the ex-post analysis the line was lengthened to 1.5 kilometres in each direction.

The main CyberMove project finding is that, depending on how it is designed, a CTS can virtually accomplish any transport task: it can provide a park shuttle service for an historic city centre, or a business park; it can be a feeder for the main public transport network or the only available transport service in a defined urban area or a village; it can serve students and staff on a campus; and it can even be a city-wide transport system. For each of these services, CyberMove experimented, tested or simulated different design solutions and can now provide figures on performances and costs on this basis.

The technical complexity of the Rome demonstration 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) requiring good vehicle to vehicle communication to manage priority at intersections and the short headways needed to give high capacity. Two partners are involved in the Rome demonstration: The Rome Municipality, who will build and operate the system, and Ingegneria dei Trasporti, who will be the overall Rome demonstration manager.

Reference Group activities

The purpose of the Reference Group is to establish a group of cities interested in implementing advanced transport systems. The Group provides feedback to the partners in the project based on their experience with and knowledge of real situations and existing problems.

Activities of the Reference Group cities

In the early stages of the project, the Reference Group cities were actively involved in the definition of requirements and the presenting of their ideas for a possible small-scale demonstration, showcase or city study depending on the maturity of their plans. Although not a full CityMobil partner, they have access to various project reports and have limited access to the CityMobil intranet.

As commissioners of future projects and operators of transport systems, Reference Group cities represent the 'end users'. Some cities will be contractually engaged in the second phase of the project in the form of:

- City studies in which particular urban transport related problems will be addressed.
- Small scale demonstrations to demonstrate solutions for the problems which were brought forward.
- Showcases: a limited demonstration of about 2 weeks with cybercars and advanced city vehicles to demonstrate to city authorities the new mobility concepts offered by Advanced Transport Systems

After the decision on the small-scale demonstrations and the city studies is made, the Reference Group will continue its role





as a sounding board for project progress, findings and results and will continue to be invited to meetings, seminars and workshops.

Current Reference Group cities

The members of the Reference Group can change during the course of the project depending on their plans and activities. The member cities have shown an interest in different forms of advanced transport systems. At present the following cities are members of the Reference Group:

Almere (NL), Clermont-Ferrand, La Rochelle and Limeil-Brévannes (F), Gateshead, Cardiff and Daventry (UK), Hyvinkää, Tampere and Vantaa (FI), Lausanne (CH), Genoa, Milan, Orvieto and Santa Margherita Ligure (IT), Trondheim (NO), Vienna (AT) and Uppsala (SE).

What are the next steps?

At this moment the selection is underway of:

- cities for city studies
- cities for hosting Advanced Transport Systems (roadshow)
- cities for hosting dual mode vehicles (roadshow)
- cities for a small-scale demonstration

Preliminary discussions are being held with some of the cities. The final list of selected sites should be known by the end of May and will be made available on the CityMobil website: www.citymobil-project.eu

The next Reference Group meeting is planned for 3 July 2007 in Brussels. For further information please contact: p.aaldring@uniresearch.nl

News from the demonstrators

Heathrow airport update

In January work started on the foundations for the ULtra Personal Rapid Transport PRT system. These foundations will support the elevated 2.1 metre wide guideways which will carry the car-sized PRT vehicles. A fully operational chassis for the new vehicles was delivered to the system developers, Advanced Transport Systems (ATS), in December, and this is on test at ATS's test track in Cardiff, where three existing prototype vehicles have already proved their reliability over the past five years. The first of the 16 vehicles for the Heathrow system, plus two spares for development work, will be delivered in May, and the remainder through the rest of 2007, with each one being fully tested in Cardiff before transfer to Heathrow.

The Heathrow system has 3.8 kms of guideway connecting the business car park for the new Terminal 5 to a station in the multi-storey car park adjacent to the main Terminal Building. A vehicle will normally be waiting at each station, but if not the

system will call an empty one from nearby automatically. The battery-electric vehicle will take up to four passengers, and their baggage, directly to the Terminal, a few minutes' ride away. The system will be commissioned during the summer of 2008, and passenger operation will begin in autumn. When the system is proven, BAA intends to expand it to serve all the North side of the airport, connecting through a tunnel to Terminals 1, 2 and 3. With little noise and no emissions, the vehicles can be routed inside airport buildings, and will greatly improve the quality of service for passengers.



Impression of station at Terminal 5

Rome exhibition centre update

Fiera di Roma, the new Rome exhibition centre, is located along the Fiumicino airport highway and railway link, on the west side of the city, 3 km from the outer road ring and 16 km from the city centre. It has a surface area of 186 000 m², and expects to attract around 15 000 visitors per day, 75% of which will reach it by car.

The main car-park open so far, comprising 2500 car-slots, is 300m-900m from the exhibition entrance. The railway station, a brand new station in the Fiumicino Airport – Rome (FR1) line, is at a distance of about 500m from the nearest entrance.

In order to help people going to the new Fiera di Roma to reach its entrance both from the car-parks and from the train station, and to avoid the illegal parking problem currently experienced, a cybercars network has been designed to be built inside the main car-park. The system provides an on-demand service from the car park and a fixed time service to visitors using the railway.

The Mobility Agency of the Rome Municipality (ATAC) is now contractually responsible for the management of the car-park and also for the construction of the cybercar system. Work on installing the cybercar system will start during spring 2007. The first vehicles are expected to be delivered for testing in September and the opening to public of the new system is foreseen before the end of May 2008. The connection of the



train station to the automated cybercars will be evaluated in October 2008.

Castellón update

The guided bus/tramway system being implemented in the Castellón demonstrator is now reaching the end of the first phase of the project.

The project in Castellón responds, in this first phase, to a historic demand of the University Jaume I. The University has more than 30 000 students but still lacks an efficient public transport system to provide connections with the city centre and the main railway station, which are used daily by staff and students.

The guided bus/tramway system provides considerable flexibility in operation, involving the use of a suitably adapted bus/tramway that is able to run on a guideway where this is available but also on any other part of the road network if required. The required infrastructure will be ready in the first months of summer 2007. The plan is to evaluate system performance during the holidays and to start offering a commercial service at the start of the academic year.

The main work underway at present is on the different activities related to the preparation of the guideway, and the adaptation of the selected vehicle. The Castellón demonstration makes use of electrical traction vehicles with guidance systems to circulate over the reserved platform. The vehicles are mainly powered by a tramway power line, except in the historical city centre where a different power supply system is used because it is not possible to have an aerial power system in this area. Irisbus vehicles have been selected.

Partner profiles

28 organisations representing industry, research and public authorities, are partners in CityMobil. Each issue of the CityMobil newsletter profiles three partners.



ETRA I+D is the hi-tech unit within ETRA Group, one of the leading industrial groups in Spain. The activity of ETRA Group – with a turnover of 120 M€ and a staff of 1250 - is centred in four main activity lines: urban and interurban traffic, transport, energy management and access control systems. ETRA I+D brings into the project its expertise in research and development of new technologies and applications.



Uniresearch was founded in 1994 and is a fully independent Netherlands-based company (SME), providing subsidy and grants consultancy and management services to national and

international R&D and innovation related partnerships. Uniresearch provides services related to the set-up and management of European RTD collaborations in the areas of rail, urban and maritime transport, automotive and naval industry, industrial technologies, new materials, chemistry and environmental and energy technologies.

D.I.T.S The Transport area of DITS, the Department of "Idraulica, Trasporti, Strade" (Hydraulics, Transport and Roads) at the University of Rome "La Sapienza", is dedicated to education and research activities in transportation. Research areas include transportation systems analysis, planning and operation, vehicle dynamics and railway plants, logistics and intermodality. The research programmes involve some 30 researchers, including established department staff, PhD students and consultants.

Related events

- *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>
- *International Podcar/ATRA/CityMobil conference*
1-2 October, Uppsala, Sweden
http://www.podcar.org/podcar/index_eng.htm
- *14th ITS World Congress and Exhibition*,
9-13 October 2007, Beijing, China
17-19 October 2007, Noordwijk, Netherlands
<http://www.aetransport.org>

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 by developing integrated solutions based on advanced concepts for innovative autonomous and automated road vehicles for passengers and goods, embedded in an advanced spatial setting.

