Editorial

New transport solutions for La Rochelle

La Rochelle played host to an open air demonstration of innovative transport systems from 18–28 September 2008 through the CityMobil project. This event provided the opportunity to raise awareness of low capacity transport of the future among specialists, decision makers and the wider La Rochelle public. The success of this first CityMobil trial has persuaded us to take the next step and to commit to a longer trial of at least 6 months involving members of the public.

During this trial, local people from La Rochelle will be able to use fully automated vehicles operating in real-life conditions. This initiative will enable the European Commission to gather a range of information and data concerning the reaction of passengers, potential fears as well as technical difficulties and energy efficiency.

The Avenue des Amériques has been identified as the site for this on-demand trial to serve the streets many different functions and organisations, including the Media library, university, maritime museum, technoforum, homes, town centre and the wider conurbation through the public transport network.

I am proud to be associated with this project, which builds on our tradition of innovation. It will enable the La Rochelle people to fast forward to 2020 for a period of time. I know that I can count on the support of our partners and on their ambition to turn this idea into a reality.

Maxime Bono
President of the La Rochelle conurbation
Mayor of La Rochelle

Project update

Doubled public transport market share with PRT at Boländerna in Uppsala

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Traditional mass transit modes have declined in share of ridership in the last 25 years in Uppsala as well as in many other European places. Therefore, more competitive public transportation systems are needed. The advantages of a Personal Rapid Transit (PRT) system are clarified in a CityMobil study for the Boländerna area in the city of Uppsala, Sweden. The PRT system offers individual trips with departure on demand and a direct origin to destination trip without any stops, just like the private car or the bicycle.

The proposed PRT network for Boländerna includes 9.4 km of single track, 16 stations on the main network and 130 vehicles with room for four people. The average waiting time is short, about a minute, and the maximum distance to a stop is 300 metres. The stops are all placed on separated and elevated tracks and since the PRT vehicle doesn’t stop on route a high and even speed is obtained (average speed 36 km/h).

Compared to the existing bus system the PRT system offers half the travel time. For example a trip from the central station to IKEA is made in 15 minutes with the bus but only 6 minutes with the PRT system.

With the existing bus network the public transit share in Boländerna is calculated to almost double from the year 2007 to the year 2020. With a PRT network system this share is instead calculated to rise to 5 times as many trips as today. This means that the public transit share increases from 5 to 20 %. At the same time the car share decreases from 65 to 55 %. Thus, a PRT network for Boländerna would contribute to enhance the public transport mode share from 5 % to 20 % or to fourfold.

The gain in travel time by PRT amounts 0.9 million hours per year. For a daily commuter working 225 days per year, this travel time gain corresponds to 49 hours saved per year, or more than one ordinary working week. A comparison of capital costs for bus, LRT (Light Rail Transit) and PRT on three different cost levels indicates that PRT is less expensive than
LRT in all three alternatives. The investment costs for a bus system is mostly less expensive than PRT and LRT mainly because the buses use the already existing infrastructure. The PRT network at Boländerna is found to be highly economically viable. The social benefit-cost ratio amounts an interval between 1.25 and 1.48 and with an average of 1.36. This means that the annual benefits exceed the costs by 25 to 48%. And the costs also include the capital costs. From a social benefit-cost point-of-view, PRT at Boländerna seems to be very well justified.

In a separate study, a comparison between a LRT and a PRT system for the entire City of Uppsala has been made. Today the public transport market share is 14%. In the year 2030 it is estimated to be 13% if nothing is done. With a network of trunk bus lines in the city the share could expand to 16%. But with an area-wide PRT network it could augment to 21%, which is 50% higher than today. This study also shows that a PRT system would yield a Benefit/Cost ratio of 8 compared to a combined bus and LRT network. Therefore, PRT reduces travel times to a half, and doubles the market share in Boländerna, Uppsala.

Advanced city cars showcase in Orta San Giulio

The final CityMobil showcase has recently taken place in the beautiful town of Orta San Giulio, Italy, located on the shore of the alpine lake of Orta. The city is active in the implementation of clean technologies, and it is now looking at advanced transport systems to complete its environment protection policies. With its attractive tourist offer, the city sees its population double during the holiday season.

From 21–30 May, CRF’s advanced city cars were driven autonomously in Orta’s charming main square, Piazza Motta, demonstrating the suitability of this technology to overcome difficult mobility conditions in ancient urban centres. The CityMobil project made a video about the advantages of advanced city cars, which will be presented for the first time during this showcase. The CityMobil General Assembly and a public conference about CityMobil’s advanced mobility solutions were also held in the on 20-21 May 2010.

News from the demonstrators

Heathrow Up and Running - with Passengers

Late autumn 2009 and winter 2010 have been spent completing the multi-vehicle control systems, and testing all aspects of Heathrow’s new advanced transport system. The change to the operating communications frequency from 2.1GHz to 5GHz has delayed the project substantially, since it necessitated both new software and new hardware in the vehicles, and extensive additional testing. It was required in order to ensure there was no possibility of interference with Terminal 5’s automated baggage handling system.

Once ATS were finally satisfied that the whole system was performing exactly as designed, it was possible for passenger
trials to begin. These need to be exhaustive prior to opening the system to the public, because it is generally the case that when real people begin to use public transport vehicles there are likely to be small problems which were not apparent with the carefully controlled use of the prototype and trials systems by technical personnel.

When the Terminal 5 Business Car Park Personal Rapid Transit system opens for normal use in the autumn of 2010, it is essential that all teething problems have been identified and rectified - absolute reliability is the aim. Visitors to the PRT Conference at Heathrow in April 2009 were impressed by the general design of the system and the smoothness of the demonstration vehicle, but now there are 21 vehicles running between the car park and the Terminal, and the control and segregation of all these small “pods” is impressive. Passenger trials have started with carefully instructed groups of BAA’s own staff, but as experience is gained with the operation this will be gradually expanded to groups of people with no knowledge of the system beyond the information which will be available to the public users. The groups will increasingly include invited members of the public, who will be asked for their impressions of the system and to discuss any problems or suggestions they may have.

Group rapid transit at Rome exhibition centre

The preparation of the demonstration of the people mover system (based on Cybercar technology) in the main car park of the new Rome exhibition centre is proceeding well. The Cybercar corridor has a round-trip length of about 1620 metres and includes 11 stops, which are within 100 metres of nearly all parking bays. The track will be fully segregated by means of a fence and the stops are provided with doors that open only when the Cybercars are stationary at the stop. Two of the stops are located close to the eastern and northern entrances of the new Rome Exhibition.

In the past year, delays have occurred in the execution of the civil (public) works at the site, however, the certification process and vehicle construction have been pursued.

Concerning the civil (public) works - the P1 car park of the new exhibition centre has to be adapted to the Cybercar system and to meet the requirements of the Italian Ministry of Transport which is responsible for certifying of the system. The most important modifications to the P1 car park concern:

- The track which should be segregated - for this reason a 1.2 m high fence will be erected along the track and each stop will be provided with doors.
- The construction of a control room, a depot and maintenance area for the Cybercars;
- The installation of a fibre optic LAN enabling communication between the Cybercars and control room.

Following a call for tender for the civil (public) works earlier this year, all bids have been evaluated by the car park operator, ATAC, and the winning bid has been selected.
appeared on the surface. To avoid this happening at the car park, specific requirements were included in the call for tender for civil (public) works.

Since ITR will manage the Cybercar system once it is operational in Rome, the vehicle manufacturer, Robosoft, has organised a first training course for ITR staff. The course, held in the Robosoft premises from 19-23 April 2010, dealt with the mechatronic of the vehicle, with the software and the remote maintenance and with the vehicle usage. Furthermore, a 2-day vehicle test was held on a parking place in Biarritz.

The third area of work concerns the certification of the system. After an intensive period of work with the Italian Ministry of Transport (MoT), the final design of the Cybercar system has been submitted to the MoT. The MoT has since requested a second round of documents to better understand some aspects related to vehicle braking, navigation systems and safety systems redundancy. The second round of documents has been prepared and translated in Italian and will be submitted officially to the MoT shortly.

The CityMobil coordinator, TNO, is supporting the CTS certification by developing and testing a new certification process for innovative driverless transport systems. The core of the methodology is the Failure Mode, Effect and Criticality Analysis (FMECA). This analysis was applied to the Rome system and required 28 sessions of work of 4-5 hours each from April to July 2009. The panel that ran the analysis was composed of Gabriele Giustiniani from ITR, Damien Salle from Robosoft and was coordinated by Jan van Dijke from TNO. ATAC personnel were involved in the analysis in the sessions on the civil (public) works. The results of the FMECA have been translated into Italian and provided to the MoT and reactions are anticipated.

News from related initiatives

CityNetMobil showcases update

Following the successful showcase in Clermont Ferrand, the CityNetMobil project held its second showcase in the city of Formello, in the outskirts of Rome, between 27 February and 7 March 2010. The majority of inhabitants who commute to Rome daily do so by car (80%), therefore, the city would like to implement an advanced transportation system so that its inhabitants can use any of the two railway lines that circumvent the town. Two kinds of cybercars were presented to the public in a park located in the city centre. The city organised daily visits to the event for all of Formello’s schools, with around 150 children per day experiencing these advanced technologies. Finally, on 5 March, the CityNetMobil Reference Group held its biannual meeting, with the participation of 7 European cities.

The next CityNetMobil showcase will take place in the commune of Ixelles, one of the municipalities that make up the Brussels region, during European mobility week (16-22 September 2010).
Daventry is a market town situated in a rural green environment in the midlands area of the UK where car manufacturing in nearby towns and cities such as Longbridge, Birmingham, Coventry and Gadon, has traditionally been a major industry. The responsible local government body is Daventry District Council (DCC), although roads and transportation matters are managed at regional level by Northamptonshire County Council (NCC).

Daventry is designated as an area for future development and a vision was set out in a Master Plan in 2006. This provides a plan for the development required to accommodate a proposed growth from a town with a population of 23,000 currently to 40,000 with associated business, retail and leisure activities by 2021. Following a recent public inquiry, go-ahead has in principle been accepted for the first stage of this expansion, with 1000 new homes to be built to the north east of the town.

The vision requires a new sustainable transportation system to facilitate the planned expansion, and also to provide improved connections to the local main line train and motorway networks. Significant new roads building will not be possible, so the new system will need to: provide flexible transport between residential, business, retail and leisure areas; help reduce the need to travel, especially by car; support the development of sustainable communities; reduce social exclusion and improve intermodality.

The plan stated that there was a transport opportunity and PRT was suggested as an option. This was the brainchild of a spatial town planner. It was not based on any formal analysis of PRT, but appeared well suited to serve the requirements for mobility.

Daventry was interested to investigate the opportunity further, and commissioned two feasibility studies: one (DDTS, 2007) to confirm that PRT offered a viable solution; and a second (DPRTSS, 2008) to confirm that it offered the preferred solution (compared with a bus based alternative), and to specify and evaluate a proposed pilot scheme. The results showed a pilot scheme was potentially economically viable and performed better than a high quality bus option.

These results were presented, together with examples of ‘podcar’ type vehicles (including a prototype of the vehicle being used in the PRT scheme currently being deployed at London’s Heathrow Airport), in a Conference and Showcase jointly organised by Daventry DC and the EC supported CityMobil project, in Daventry in September 2007.

Further work has followed on implementation aspects including assessing private sector interest, consideration of business case requirements in consultation with funding agencies, and the details of procurement.

In 2008 Daventry applied for, and was successful in winning Champion City status in the NICHES+ project. This has enabled work to progress with additional support from experts and financing through NICHES+. The support has included:

- expertise, including participation in workshops with Europe wide membership, to help Daventry clarify the personal and group rapid transit (P/GRT) systems, and the particular forms, that are relevant for them;
- developing an Implementation Scenario that will serve as an example Case Study aiming to identify and clarify:
  - the process and steps involved in implementing a P/GRT scheme, including:
    - the benefits and justification
    - the users and user needs
    - transferability issues
    - barriers and success factors
  - using the results to produce Guidelines for implementation aimed at Chief Officers and politicians in other cities, and
  - identifying any additional requirements for policy actions and research needed at EC and member state levels to facilitate deployment.

Development of the Implementation Scenario is making good progress. It will be substantially completed by the end of the year (2010) and will be presented in national seminar to be held in early 2011. It is planned that this event will provide a major opportunity for promoting P/GRT systems as sustainable transportation for the future, and will bring the necessary stakeholders together to generate the interest, impetus and funding required for a scheme to go ahead in Daventry. NICHES+ is providing support with help in developing the agenda, clarifying the message and identifying the target audience.
Relevant events

- 3rd Transport Research Arena (TRA2010), Brussels, 7-10 June 2010, www.traconference.eu
- EU-China Science & Technology Week, Shanghai World Expo, 14-18 June 2010
- PRT@Heathrow, Heathrow, 21-23 September 2010
- Final CityMobil conference, May 2011

Partner profiles

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

Rome, the capital of Italy, has 2.7 Mill. inhabitants and is the largest urban green area in Europe. With nearly 2.2 millions of private vehicles, more than 600 thousand motorcycles and some 6 millions of trips, 60% of which by private transport, urban transport is becoming increasingly unsustainable. To tackle this, the city has decided to undertake serious actions both in the short and medium term to improve the mobility system.

Uppsala, the city of Uppsala is Sweden’s fourth largest municipality with 187 500 inhabitants. Perhaps best known for its 15th century university with is 40 000 students, Uppsala is located 70 kilometers north of Stockholm. Today’s Uppsala is a dynamic industrial and commercial city with a rapidly expanding business sector. At Uppsala University, extensive research is carried out in a number of fields such as life sciences and energy technologies. The City of Uppsala is involved in various types of international work with extensive contacts in Europe, USA and South Korea, networks and EU-projects.

Rups Consultants for Innovation is focussed on the development and implementation of strategic and innovative concepts. RUPS has been involved in a wide range of projects with regard to transport and mobility systems, logistical improvement and innovation, information & communication technology (ICT) and its innovative application.

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.

www.citymobil-project.eu/