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www.advancedtransit.net www.podcar.org
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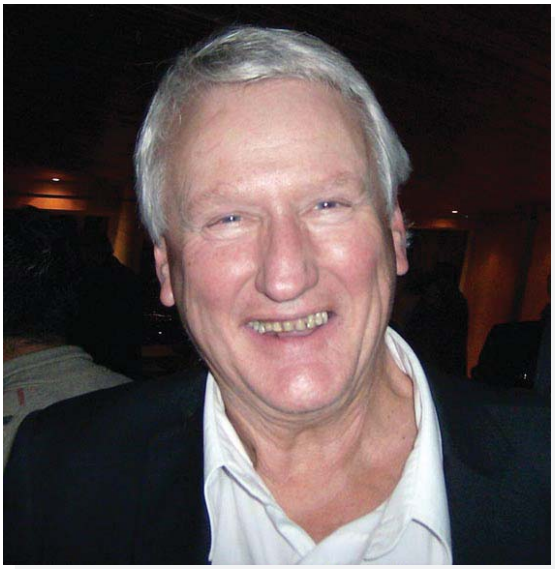
News of ATRA and IST

ATRA and IST members are encouraged to forward this newsletter to friends and colleagues or post it on appropriate websites.

September/October 2012

THIS MONTH IN BERLIN



Berlin lies in the middle of the industrial might of the Eurozone. One of its major industries with vast exports of technology and maintenance around the world is rail and rail-based metros and LRT. Soon it will hear the arguments for PRT at the 6th Podcar City conference September 19-20. There is still time to register at *www.podcarcity.org.*

The Swedish Institute for Sustainable Transportation (IST) and its California-based affiliate, the International Institute for Sustainable Transportation (INIST) along with ATRA and its European-based Industry Group have organized this annual gathering for maximum impact. Christer Lindstrom and Magnus Hunhammar deserve much credit.

Although not apparent in the US, urban metros are booming. New metros proliferate in China, India, and Latin America. Large chunks of ageing infrastructure are being upgraded to digital standards. Saudi Arabia and Persian Gulf states plan whole networks from scratch. Dubai has set the smart way.

Podcar Event Specifics

PCC6 will have a booth at *Innotrans*. The Icebreaker is September 19 followed by an intense one-day program ending with a formal dinner. Keynotes and announcements from both the public and private sectors will set the tone for

IN THIS ISSUE

With warm smiles, head of KOMPASS Hans Lundqvist greeted PCC5 registrants in Stockholm last year. He will again be part of the US-Swedish Delegation that will meet this month in Berlin, Stockholm and Uppsala.

advanced transit prospects and markets as 2012 draws to a close. Registration is €550 (~$700). To see the program and participate, visit *www.podcarcity.org*.

The program is about half American: nine speakers – including California and USDOT officials. It is ten, if Alex Kyllmann of Mexico's Modutram is included. Seven Swedes and three other Europeans fill out the program of speakers and panelists. It is an even 10:10 trans-Atlantic balance. Perhaps more importantly, there is also a balance between public and private sectors with many venture capitalists adding to the synergy.

After opening remarks, operating experience at Morgantown and three recent projects will be reviewed. Four breakout sessions will deal with new podcar technologies, plans (Amritsar, San Jose, Uppsala), energy and expanding services. With that global overview, discussions will turn to investment matters – how to strengthen them, how they interface with real estate markets.

As of press time, no definitive word is out on the San Jose or Amritsar project. Both look reasonable, but no shovels have turned dirt – except as an Ultra-centered press event last year. For hot news, visit www.podcar.org.

Speakers at the conference include, in no particular order:

Rod Diridon, Director, Mineta Institute, Silicon Valley

Hans Larsen, Acting Director of Transport, San José, CA

Bo Olsson, Swedish Transport Administration, Sweden

Walter Kulyk, FTA Office of Mobility Innovation, DC

Alain Kornhauser, Princeton University, ATRA Chair

Ron Swenson, President, of EcoSystems, Santa Cruz, CA

Tom Karlsson & Stefan Hanna, Uppsala Traffic/Council, Sweden

Jörge Schweizer, Bologna University, Italy

Ingmar Andréasson, LogistikCentrum, emeritus Royal Inst Tech, Sweden

David D. Little, Partner, Lea+Elliott, USA

David Holdcroft, consultant, former BAA Heathrow, UK

Nathan Koren, Capita Symonds, UK and India

Magnus Hunhammar, CEO, IST, Sweden

Lawrence Fabian, Director Trans.21 and ATRA, USA

John V. Cole, COO, SkyTran, USA

Eugene Nishinaga, Advanced Control Systems, USA

Hans Lindqvist, Chairman, KOMPASS network, Sweden

Bengt Gustafsson, CEO, Beamways, Sweden

BRING ON ADVANCED TRANSIT!

by Stan Young, President

Prospects for an exciting new round of innovation in urban mobility are looking up. As the general public hears more and more about podcars, PRT and ATN, expert opinion is in demand. ATRA is a recognized industry stake-holder and we are responding to these needs.

Each year's new car models are getting smarter. GPS-based driver assistance is becoming standard. Collision avoidance and parking assist are around the corner. Chances are by 2025 we'll have urban districts where cars drive themselves – the passenger merely punching in his destination much as he or she already does now to get directions.

Driverless Cars

Alain Kornhauser and Larry Fabian went to a highly wired conference on a private sector's view of driverless cars in Detroit last month. They didn't give presentations, Michel Parent, France's most prominent cybercar developer, was also.

Last month Alain Kornhauser, Shannon McDonald and I spoke at a conference on public sector perspectives, organized by several TRB Committees. See other articles in the issue about this.

There is a bright red line between guideway-based PRT and driverless vehicles. Theoretically, dual-mode systems bridge the divide. Driverless cars or vans or even buses can benefit from ways to guide and propel them and to recharge on-board

batteries. In dual mode openness, PRT vehicles off-guideway solve last mile problem.

ATRA Sees Abundant Research Needs

Legally, the compelling issue is liability. If a system-induced fault results in a casualty or even a serious injury, who is liable? Then there are planning and architectural questions and the need for data and design guidelines. To create a sound framework in which this work can proceed, ATRA has established a long-term research program. Shannon and Wayne Cottrell are co-chairing the effort.

Consider joining ATRA if you aren't already a member. Email me at *seyoung@umd.edu*.

How can we make dumb pavement smart, and maybe supply power too?

PUBLIC SECTOR MATTERS IN IRVINE

by Stan Young, ATRA President

ATRA has always advocated the benefits of automation in the transportation sector. At a recent Irvine vehicle automation workshop sponsored by TRB and NTSHA, ATRA members Wayne Cottrell, Shannon Sanders, Alain Kornhauser, Stan Young and Martin Lowson participated. In fact, ATRA, through its sponsorship and involvement with TRB committees, actively assisted in the organization of the workshop and helped shape the content and sessions. The workshop was initiated by NHTSA after press inquires followed Google's driverless vehicle demos. NHTSA then hired Volpe to investigate for them how to prepare for automation. This eventually led to this workshop.

Martin Lowson gave a thought provoking presentation related to Ultra. It stimulated discussion with vehicle automation experts from automobile manufacturers related to the excessive level of complexity associated with automating vehicles on existing highways in contrast to nearer term opportunities (such as PRT) that are achievable in constrained (fixed guideway) environments. Starting with guideways could lead the way to more complex operations.

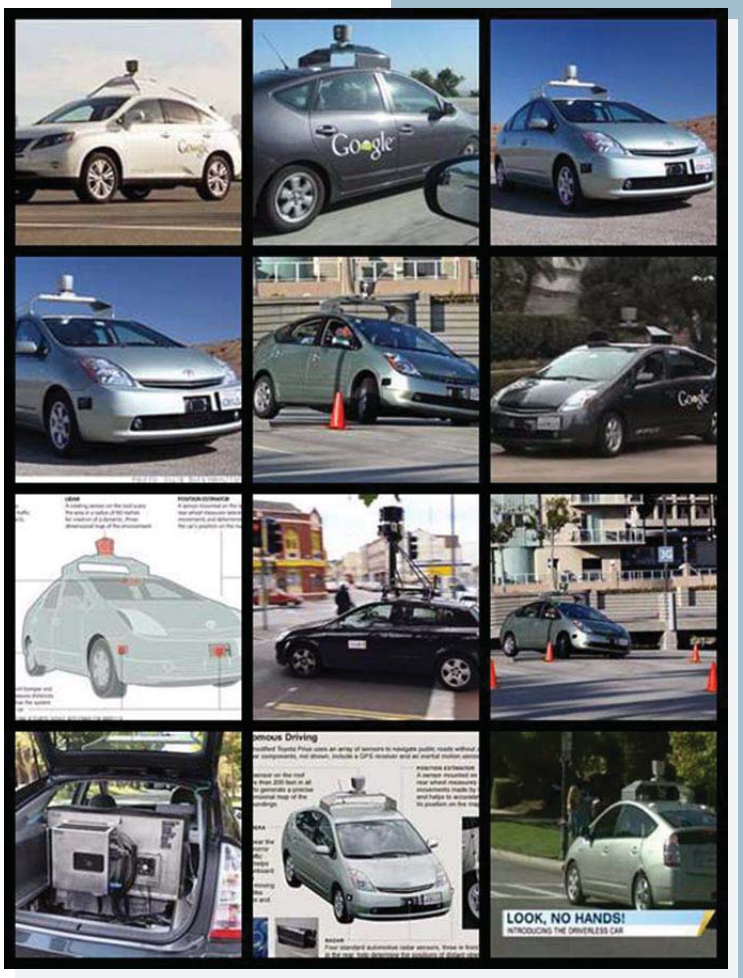
Although the vehicle automation crowd is keen on making your daily commute less stressful by enabling the car to drive itself on highways, they were reminded that even greater societal benefit could be gained by simply enabling the vehicle to park itself in low speed parking lots and garages, a task that is on par with emerging technology. Self-parking cars can fundamentally impact parking requirements: currently about eight spaces for each vehicle in the US. This can change create more sustainable, walkable communities.

Devicive Driving by Kornhauser

ATRA Chair Alain Kornhauser repeatedly reminded researchers that smart phones are not a distraction to driving: driving is a distraction to smart phones. Young people are more in love with the information highway than the 'open road' of last century. Road operators such as PennDOT are looking for practical ways to prepare for automated vehicles. Their presence reminded academic and corporate research-

ers that it is time for automation to get out of the labs and into our highways and roads.

The goal of the Irvine workshop was to chart a research agenda to assist and complement vehicle automation R&D by auto manufacturers and Google, Nokia and others. The US government seeks to renew a larger role in automated vehicles development. As supporters of the initiative, ATRA members emphasized the need to view automation in a broader perspective than self-driving vehicles on existing roadways. ATRA has grown more involved in the research arena through at national and international forums such as Irvine.



Consumer mobility devices are produced in the millions every year. They are getting smarter.

2012 TRB SUMMER WORKSHOP: FUTURE OF ROAD VEHICLE AUTOMATION

by Shannon Sanders McDonald

This summer at the UC-Irvine's Beckman Center over 125 professionals in national transport policies and international research gathered to discuss the state of automated vehicles. It included architects and urban designers as well. The 2.5 day workshop went non-stop from morning to night with presentations and break-out sessions discussing how all factors interrelate. The first day comprised 22 presentations from experts and researchers. Steven Shladover of UC-Berkeley opened by defining how the terms autonomy and automation are differentiated, so that we have a shared language for the complexity of issues now arriving.

The timeliness is obvious. Nevada now allows automated vehicles on their roads and the Google car is a reality. The most important public reason for developing these systems is to create safer, greener, less congested roadways.

Most speakers focused on how vehicles navigate all types of roads and obstacles. Platooning was the key idea in which groups of cars or trucks are "driven" close together. The Federal Government has been financially sponsoring research in this area for several years.

Transit Components

Transit was also discussed. Adriano Alessandrini of the City Mobile project in Europe generated a great deal of discussion by saying that to solve the traffic problems, one had to have multiple people in vehicles, not US standards of SOVs (single occupancy vehicles). Several projects have implemented automated vehicles in Europe, including those by 2getthere and CityMobile. The most recent implementation of automated vehicles for public use is the Heathrow PRT system - ULTra.

Martin Lowson did an excellent job presenting on ULTra PRT, explaining that small steps toward automated vehicles are more accepted. Many presentations were on testing and simulations. Two lawyers discussed legal implications. Chris

Borroni-Bird, co-author of Reinventing the Automobile, gave an eye-popping presentation of city visions with automated cars that excited many.

The second day was a series of workshops on public policy, driver-vehicle interaction, technology needs, information architecture, deployment strategies, and legal and safety issues. These generated discussion on what the industry does next and what research is necessary. Participants were encouraged to develop ideas for research problem statements that set TRB's research agenda.

At the policy workshop, five speakers expanded upon public policy issues generating thought provoking comments for research priorities. One of the most popular break-out sessions was Transition and Deployment Strategies. One of the three scenario focus groups as part of that breakout session was led by Stan Young. Resulting scenarios brought out issues related to implementation. Bob Denaro of Nokia Location and Commerce, who has been working with automated vehicles for years, said that in his group, new issues and strategies were uncovered making for a very productive session.

You may visit TRB's website for more information.
http://onlinepubs.trb.org/onlinepubs/conferences/2012/Automation/Program.pdf

BAY AREA VISIONS

ATRA member Rob Means last July submitted a few questions and suggested an advanced transit strategy to his MPO in the Bay Area, Known locally as the MTC (Metropolitan Planning Commission), it is currently working on a California-mandated Sustainability Communities Strategy (SCS) plan designed to reduce CO2 emissions.

Means asked hard questions: "If transportation accounts for 40% of California's carbon emissions, why does your Plan include a 2035 reduction target of only 15%? Our State calls for a 55% reduction by the year 2035. Doesn't such lenient action on transportation mean that other ways of mitigating CO2 emissions must pick up the slack? Global climate change is accelerating and bringing more costly impacts. Reversing this requires us to make major and rapid reductions in our CO2 emissions."

Moreover, why does the Plan focus so heavily on future Transit-Oriented Development (TOD) rather than in-place development? Even with TOD, only a fraction of the built environment in 2035 will be well served by transit. Your Plan is so TOD-focused that it ignores the larger metropolitan area not well served by transit.

California's environment is stunning but also delicate, rich but also vulnerable. Advanced transit can help.

Evaluate Advanced Transit

Means suggests that his MPO should look at a scenario based on the intelligent application of Automated Transit Networks (ATN). He claims that many transportation projects in the TIP could be eliminated or reduced in scale by using

ATN alternatives. ATN is easily scalable: a small 2-station shuttle can be the start of a large network covering most of the region.

MTC planning documents claim to embrace long-range vision of regional transportation, yet they have no advanced transit options. This obvious contradiction reveals a fundamental problem in the process. Since various forms of ATN have been implemented, their exclusion is hardly justifiable. Is it due to restrictive funding rules that support only conventional modes? Is it the lack of vision on the part of elected officials? Or the ignorance of transportation experts educated 30 years ago who are unfamiliar with advanced transit options.

Whatever the reason, Means highlights a seemingly fatal flaw that could leave officials and experts vulnerable to future charges of professional neglect.

Envision the Difference a Link Can Make

MTC spends around $11 billion each year on its annual capital transportation improvement program, dubbed the TIP. If $2 billion over four years were allocated for ATN, the carbon reduction would be dramatic. Means concludes that MTC's priorities clearly favor highways and conventional transit, precluding the carbon reductions that are sought.

In Milpitas, CA, a PRT crossing of the railroad tracks may cost $3 million – less than a common standard steel-and-concrete pedestrian over-crossings (POC), estimated to cost $5 million. Such a simple starter PRT would be a sort of ferry or horizontal elevator that will take people from one side of the tracks to the other, filling a large gap in pedestrian/cyclist access.

In the long run, what mode split can and should be achieved in Milpitas and the larger Bay Area? When only 3-5 percent of today's travel is by transit, a goal of 10 percent may be too ambitious for conventional modes. With ATN and policies that promote walking, biking, e-car sharing and transit, maybe 25% is possible or even 50% -- achieving carbon reductions of the scale needed.

A Milpitas ATN could grow to link most of the city's neighborhoods to the future BART station while also providing lots of local circulation. In the long run it could expand to include San Jose's similar efforts, now focused on the airport five miles away. Although Means has his work cut out, he is also using the upcoming election and his mayoral candidacy to highlight advanced transit opportunities and their potential for Milpitas.

ECONOMICS 101

The problem with advanced transit is a weak ROI.

Companies that can design and supply a truly advanced APM that has PRT functionality is that they can't make money at it. The timeframe is too long – it takes well over five years to nurture, plan, engineer, construct, integrate and put into a service that creates an income. The Return-On-Income has too big a denominator – years – for ROI to be attractive investor interest.

So most PRT promoters can't raise funds for their ambitious R&D programs. $20 million easily rolls of the tongue of those who know the full rigors of software and hardware development. If you don't have it, steps aside. So advises Peter Muller of PRT Consulting, hoping that at least one of the "Three Giants" – Ultra,Vectus and

2getthere – will flourish, all the time ignoring spinoffs from Boeing's magic in the 1970s that has kept students safe in Morgantown, West Virginia.

Who can make a profit from advanced transit if and when a market exists? Maybe it's the faring system. Credit card? Debit card? Smart phone? The devices in hand in 2020?

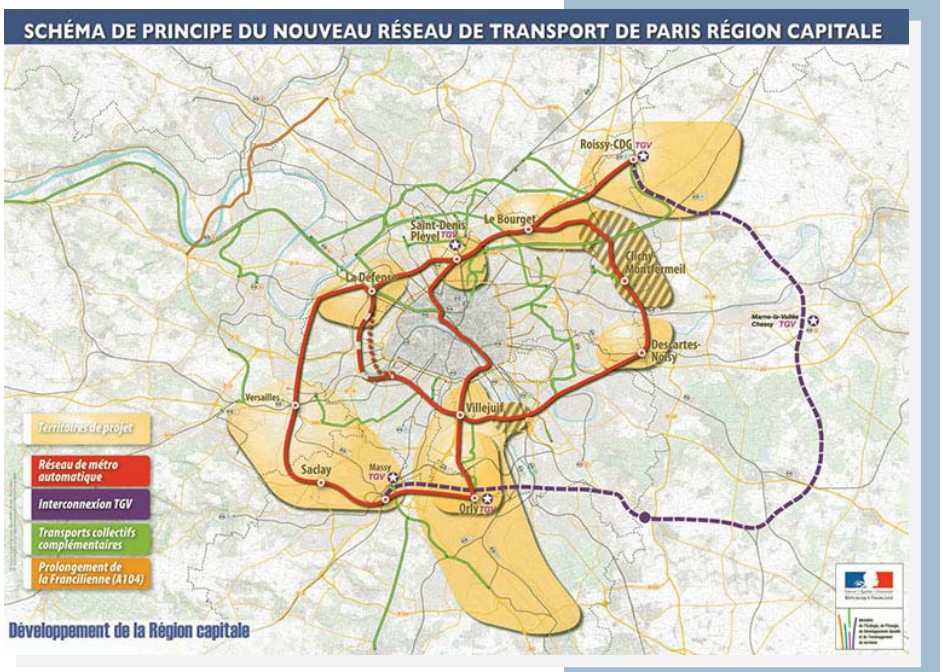
Automatic door manufacturers already have a sizable business, and will find new markets in PRT systems. Surveillance and monitoring systems too.

COPENHAGEN'S SPROUTING RING

Ground has hardly been broken on the16km, 17-station Cityringen metro around the core of the Danish capital, to be driverless when it opens in 2018 just like the popular first line that opened in 2002. A branch was added in 2007. System supplier was and will be Ansaldo – $1.4 billion for the current construction including several years of O&M.

Yet already expansions of the 16km, underground Cityringen are underway. Officials recently approved a 2.5km branch. It may be extended in the long run. Officials are also studying a second branch, to be decided next year. Beyond that, other driverless metros are being discussed for the far future.

Such is the popularity of Copenhagen's APM in the form of a driverless metro. In addition there is heavy emphasis on biking, and the region is designing a 28km LRT for a second ring farther out.



Did ambitious plans for a driverless metro around Paris die with voter rejection of Sarkozy? Will Copenhagen capture the title of Europe's smartest transit system?

ATRA DELIVERS ADVANCED MESSAGES IN PARIS

The 3rd International Conference on Urban Transportation Systems will be held in Paris, France, November 11-14, 2012 and will include six papers/presentations on PRT and automated transit networks spread over three different sessions. Sponsored by the American Society of Civil Engineers, this conference will offer a forum for civil engineers seeking to address applications associated with all modes of public transportation, including bus and rail.

The three sessions that include PRT papers will be on the morning of Tuesday, November 13. Session D-3 is titled Innovative Systems and Practices and includes PRT Urban Applications, Small to Large by Peter Muller, Personal Rapid Transit Live Applications Challenges by Jorgen Gustaffson, Robbert Lohmann and Martin Lowson (presented by Jorg Schweizer) and PRT as a Supplement to Existing Transportation Modes by Ingmar Andreasson.

Session A-4, Planning, Environment & Finance, includes Planning for PRT – How to Plan for this Paradigm-Breaking Mode by Peter Muller and PRT Mode Share Estimations Using a Direct Demand Stated Preference Method by Jorg Schweizer. Finally session D-4, Innovative Systems and Practices, includes a paper by Alain Kornhauser titled Investigating Advanced Transit's Ability to Theoretically Compete with the Automobile, and Appropriately Serve Today's Mobility Needs.

The number of advanced transit papers at this conference is a breakthrough. Walt Kulyk, Director of Transit Research at the US DOT has helped organize this conference and his assistance and support in facilitating the participation of advanced transit speakers is very much appreciated.

ATRA'S ACADEMIC & RESEARCH COMMITTEE

by Wayne D. Cottrell and Shannon McDonald

This is the proposed document for the new Academic and Research Committee (ARC). All comments and suggestions welcome.

VISION
To maintain a community of ongoing, active, worldwide forum of educators and researchers having an interest in the study and development of automated transit networks (ATNs). To provide a structure and base for research in these systems through the development of problem statements, preparation of proposals, pursuit of grants, conduct of research, critical review of academic works, experimentation and testing, and data collection and analysis.

MISSION
The mission of ARC is to connect researchers to each other, high-level resources, funding, and publication tools while supporting a global, academic foundation for research and development of ATNs. The Committee would ultimately seek to establish a research center for experimentation, analysis, testing, and documentation with a library of ATN literature.

GOALS

- Identify and attract qualified persons to participate in the group.
- Create a database of existing research, develop problem statements and proposals, and pursue grants.
- Identify academic institutions that might serve host of such research and study. Sustaining a regular dialogue between members of the group will be critical.

Maintaining a dialogue and investigation forum into topical areas of advanced transit are envisioned. These include, but are not limited to: technology development, modeling and simulation, planning and finance, architectural interfaces, scanning tours, data collection from existing systems, and analysis of the information.

EXECUTIVE COMMITTEE
An Executive Committee (EC) of five members from the ARC will be established. The EC will initiate and approve Committee actions, efforts and statements. Topical areas for research problem statements, for example, might be developed by the Committee: and these would then be shared with the general membership. members.

EC membership will be drawn from the general membership. Preference will be given to academic and research leaders who are willing to commit time to the

organization. Two physical meetings per year are envisioned, with one most likely occurring in conjunction with the Annual Meeting of the TRB. The EC would also stage several conference calls per year. Participation by the general membership would be invited, as needed, to invigorate and expand discussions. The EC, once formed, may make formal declarations as to the participation of the general membership in physical meetings and conference calls.

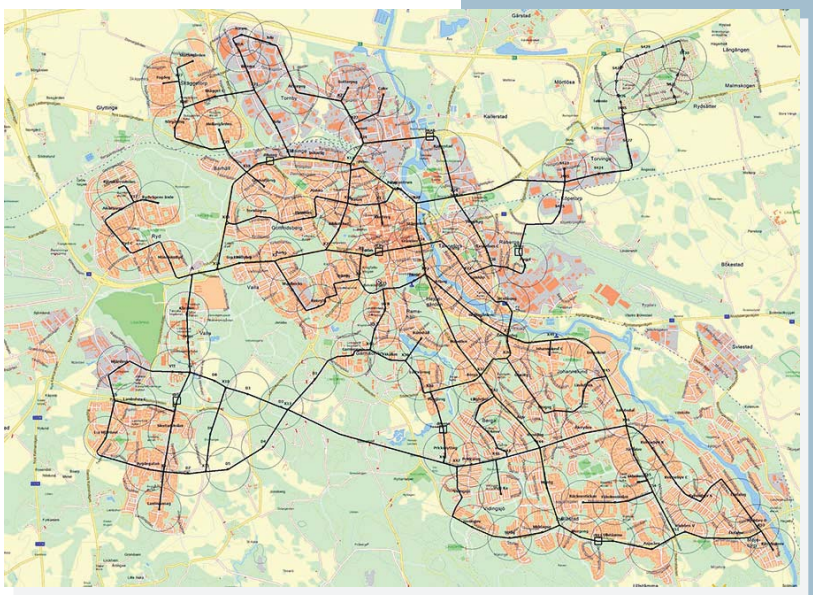
All who are invited to join must be ATRA members. A goal is to have a list of potential members and an established EC by January 2013. If interested, please contact Shannon McDonald (*smcdonald@siu.edu*).

BRITISH PRT GUIDELINES

by Martin Lowson, ATRA IG

PRT is classified under the category of Light Rail in the UK. The UK Department of Transport asked UK Tram, the industry body for Light Rail, to produce an overall advice note on Light Rail.

We at ULTra led the drafting of the PRT section of the document but worked closely with ATRA IG to ensure that the document reflected the views of the whole industry. We also had input from UK consultants with knowledge of PRT. The ultimate responsibility for the document is with UK Tram. It is on the UK Tram website



What would a real live PRT service require in a sizable city? What impacts would it have? What do we need to know?
– courtesy of Beamways

WALKABLE CENTERS:
Nickel and Diming Ourselves to Sustainability

As we move forward into the 21st century, how can we create and manage sustainable districts of density that also raise land values in depressed neighborhoods?

ATRA for decades has assembled expertise about advanced transit options. How does that relate to sustainable density when the American reality (outside New York City) is auto addiction? Does retail and most of modern life depend of car access and easy parking? Can we convince developers, bankers, and others that advanced transit has a high benefit-cost ratio? There is a connection, and it's actually a very exciting and promising one.

Many other professional and charitable organizations strive for sustainable transportation. Some profess a new urbanism or neo-traditionalism. Others emphasize walkability, biking –perhaps with "shared streets" and long-term health benefits. All have in common a platform in which traffic and parking do not have top priority.

A Small Gas Tax Can Go Far

We need better mobility options freeing us from oil addiction. It makes sense to raise gas taxes to underwrite the transition. How painful in the long run will be a small increase of five or ten cents on each gallon of gas be? Not much, but the resulting

revenues and policy shifts will underwrite enhanced mobility without driving.

What will cities, towns, suburbs and other communities do along these lines in coming years? What planning and policies principles are available? Planners, engineers and architects who work for cities, MPOs or transit agencies need more tools to explore advanced transit options. What is the business model?

This is uncharted territory on a path away from auto addiction to vibrant, healthful communities freed of parking glut and car woes. Think of the benefits of transforming barren, declining districts into prosperous pedestrian-friendly community centers served by multiple strategically placed mobility portals.

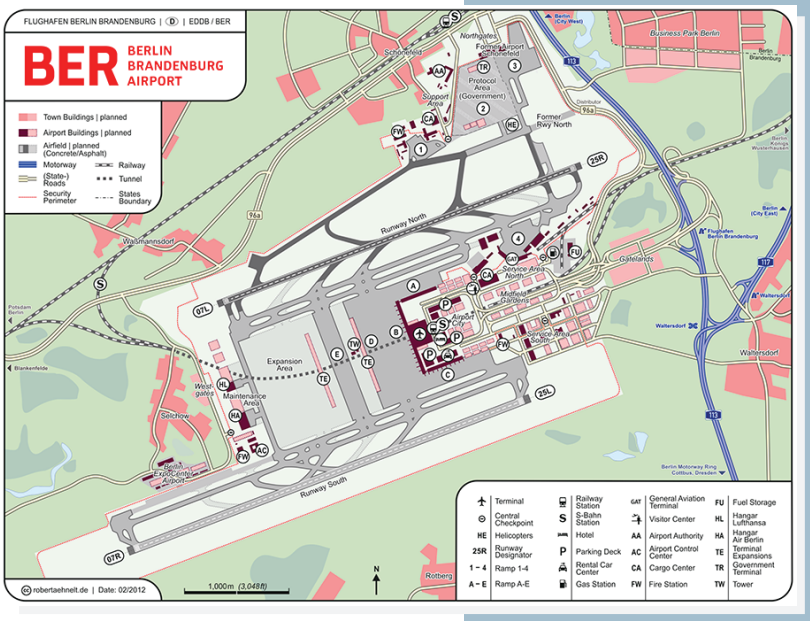
A Well-Deviced Future

The future of urban mobility is in your smart phone or “device”. Through it you will subscribe to a monthly plan tailored to your trip-making needs. Your device will also be your pass. You will click to hail an e-cab for you or open its doors.

A nickel or dime tax on each trip will water the flowers around the station.

AIPORTS

Las Vegas, Nevada: The third Bombardier shuttle has opened at McCarran, linking the new concourse to the main terminal. All three systems, each planned and built separately, perform similar functions. The other airport with three distinctly different APMs is Miami, whose old shuttle, new rooftop spine and landside line to multiple rail and bus services were described in the previous issue. Las Vegas taxi, jitney and limo services have so far prevented the private (and driverless) Monorail’s extension to the airport. The Monorail is so far a gamble that has not paid off.



Berlin is expanding Brandenburg Airport with a master plan that includes an APM in the long term.

London, England: The PRT shuttle between the new T5 garage and remote parking lots has completed one year of steady operations carrying an average of just over 1000 passengers a day. Still no word of its expansion, but there is big news of demolotion of old T1 and T2 make way for a new Terminal 2 that is actually a main building and two satellites linked by an APM. HOK, Mott-McDonald and Logplan will plan and design. A major question is whether that system can also extend to T5, or whether a separate APM should be provided for that function.

Middle World: Economies are growing fast in oil and gas exporting countries, most of which are concentrated in the Middle World (the Mideast to Eurocentrics). Egypt is in the region, but has little oil wealth. An APM (cable, by Poma-Leitner) has been installed at Cairo but stalled by political change. Doha just expanded with an APM (cable by DCC), and another will soon start up in Dubai (tire by MHI?). Another (tire by Bombardier) is underway in Jeddah. Growing fast but not yet with APM plans are Abu Dhabi, Bahrein, Kuwait, and Riyadh, Growing too are airports north of the Gulf in Iran, but a gulf away from the Arabs.