



## 2nd TRB “CRASHLESS CAR” CONFERENCE

By Prof. Alain Kornhauser, ATRA Chair

As anticipated, the second TRB workshop on automated road vehicles last July 16-19 at Stanford University in Silicon Valley was excellent. Last year the first one in Irvine drew about 125 people with little FTA presence. There were over 300 this year, most of whom not only stayed engaged for the whole three days but also participated in both pre-and post-workshop activities. This workshop received no direct government funding. Modest registration fees were possible thanks to benefactors: small research-oriented entities, Insurance and communications companies. Big auto and tolling companies did not: instead they attended at the subsidized rate!

AutonomousStuff gave one of the more compelling demonstrations of several different sensor technologies used as the “eyes” of automated vehicles. Each confirmed its after-market and demonstrated, among other capabilities, the ability to readily identify Bobby and me.



Of the plenary presentations, the most compelling was an “off-the-record” presentation made by R. David Edelman, Senior White House Advisor for Internet, Innovation & Privacy. He canvassed the opportunities and challenges of this emerging technology in a way that shared perspectives presented by SmartDrivingCars. Should the White House promote this as official government policy, innovation will accelerate. We can look forward to more rapid market adoption of this transformative technology that promises great rewards in safety, mobility, energy, environmental, decongestion, employment and quality-of-life enhancements.

### Google Continues to Be Transformative

Another compelling presentation in Stanford last July was by Anthony Levandowski of Google, who affirmed Sergey Brin’s intention last year to avail the public to *Level 4* mobility within five years. This is compelling because of the timeframe: by 2017 the

### IN THIS ISSUE

Memories of Martin .....	3
Washington Takes Notice. 4	
Innovation’s 2nd Round....	4
Boston Learning Forums..	5
Robocar Realities at Technix 2014 .....	6
ATRA Approaches 40 .....	7
APM@PHX + PRT .....	8
Mega Metro Market.....	9
What Powers PRT.....	9
Rocky Mountain High.....	9
Airports .....	10

*Europe has demonstrated robocars, such as these in Nancy, France.*

“public” (not “research” or “demonstration”) would begin to have access to the safety benefits of Levels 1, 2 and 3. Even more importantly, access to Level 4 will bring mobility, environmental and real quality-of-life benefits. In the future vehicles no longer will need drivers. *Level 4* will deliver demand-responsive mobility utilizing of our existing roadway infrastructure

Google’s intention to make this transformative opportunity a “public” reality in as few as four (4) years is diametrically opposite to the “Science Fiction” attitude by most of the policy and planning communities, as well as the general public. To be sure, Levandowski made NO statement as to *how* Google intends to bring *Level 4* technology to market. This led several of us at the Stanford conference to speculate whether Google will buy a car company? Will they buy Tesla? Will they partner with Lexus or some other car company?



Will they test market these as they’ve done with Google Glass? Will they create “PRT-like” autonomous taxi (*aTaxi*) service on their own campus? We had a lot of fun with the speculation.

*The reality of driverless cars is upon us.*

### Transit Takeaways

One thing is clear: whatever Google’s *Level 4* game plan, it is time for the planning community to view *Level 4* technologies as a reality that is upon us. Long-range planning was institutionalized in the MPOs across the country. It is the foundation of all public sector expenditures in surface transportation. Yet, MPO plans have little to say about the existence of *Level 4* vehicles on public roads at any time in the future, let alone by 2017 (which next year will be in short-range plans). There needs to be a wake-up call to the planning community. I participated in the Transit & Shared Mobility breakout group and the need for this was central to our deliberation as summarized below.

The openness and collegiality of FTA participants was evident in the sessions. Credit is due Mike Schagrin of DOT’s ITS Joint Program Office for setting the tone and creating an open environment. DOT staff listened intensively and engaged in meaningful discussions.

From the Transit & Shared Mobility sessions, I took away two important concepts.

First, conventional bus operations can benefit from near-term adoption of Level 1 and 2 automation. This can revolutionize service offerings and ready up for long-term implementation of *Level 4*.

Secondly, evolution of “*Level 4*” (aka driverless) transit technologies can continue on two fronts:

- a. “High” speed” vehicle technologies are currently constrained to exclusive guideways, such as APMs. They function well at airports, including Heathrow’s PRT, as well as the Morgantown PRT. They have all been crashless and totally safe.
- b. “Low speed” that operate on roadways shared with pedestrians, bicyclists and traditional road vehicles, as demonstrated in La Rochelle, France as part of the European CityMobile2 program.

Between these extremes lie *Level 4* transit opportunities for high-speed driverless vehicles sharing existing roadways with existing road users. Such autonomous taxis (*aTaxis*) could provide auto-like service while facilitating casual ride-sharing, which substantially improves efficiency and eliminates congestion. Such systems could emerge from smaller precursor exclusive guideway system whose vehicles could

## MEMORIES OF MARTIN

Late last June, Martin Lowson – founder of Ultra PRT, VP of ATRA for many years, and active in the ATRA Industry Group -- passed away. Details of his life and career are in the previous issues. Below are personal memories and thoughts of Martin that ATRA members have shared:

*At 2getthere we have nothing but the utmost respect for Martin. Over the past 15 years he has really been a driving force in getting PRT accepted by the main stream. He was clearly pursuing his dream of making PRT a reality for all, becoming a well respected speaker and contributor for the industry.*

*We have always enjoyed our interactions with Martin, whether it was in competition or doing business. Our thoughts go out to his loved ones and his extended family at ULTra. May all find a way to deal with the loss.*

— Robbert Lohmann

*We were all saddened by the sudden passing of our fellow member Martin Lowson. Martin was an active contributor to our (APM Standards) work and participated in our Standards Panel during the Phoenix APM Conference (April, 2013).*

*Martin was also actively pursuing an issue for the Committee involving recent FTA accident database definitions that may inadvertently give misinterpretation to overall APM industry safety records and analysis.*

— Lawrence Smith

*Martin along with all his technical accomplishments was a kind and generous man. At conferences he always had time to talk with me no matter how busy he was with his work moving PRT into modern reality. This for me is the indication of a truly gifted individual. I have already missed his calm and deliberate presence at conferences and his keen intelligence. He will be sorely missed.*

— Shannon McDonald

*I always appreciated Martin's view on topics as they arose. He had the ability to broaden the perspective beyond the here and now, and provide insight from his rich history of innovation and development. He will be missed personally, as well as his strong leadership to the Advanced Transit Association over the years.*

— Stanley E. Young



*The Ultra at London Heathrow Airport is the crowning achievement of Martin Lowson's PRT contributions.*

# PODCAR CITY

The Advanced Transportation Symposium with Podcar City 7 will take place at George Mason University October 23-25 2013

Advanced Transportation Symposium and Podcar City 7 present: *INNOVATIONS IN PUBLIC TRANSPORTATION*



## WASHINGTON TAKES NOTICE

For the first time since 1976, Washington policy-makers and urban planners are thinking of new urban modality issues. They will come together with advanced transit technologists at the 7th Podcar City conference – within the Beltway in the nation's capital. Congressman James Oberstar, former Minnesota Democrat representative, will deliver a keynote to put podcars, ATN and PRT within the context of Washington's political realities.

USDOT is also partnering with INIST and ATRA on the organization of PCC7 within the broader context of official US-Swedish technical cooperation and information exchange. For the latest information on the program and other details, visit [www.podcacity.org](http://www.podcacity.org). It will take place in Arlington, Virginia, October 23-25.

Transit issues are not on Obama's desk these days. Mass transit has limited political weight compared to debt issues and sequesters, medical costs and quality, unrest in the Middle World and fracking. However, concerns over climate change and carbon dependency are potentially disruptive. Broad societal trends are converging in ways that make today seem, finally, squarely in the 21st century. This fall the 1900s will seem far behind us. Before us is a vast new playing field. Come to PCC7 to get the feel of the game.

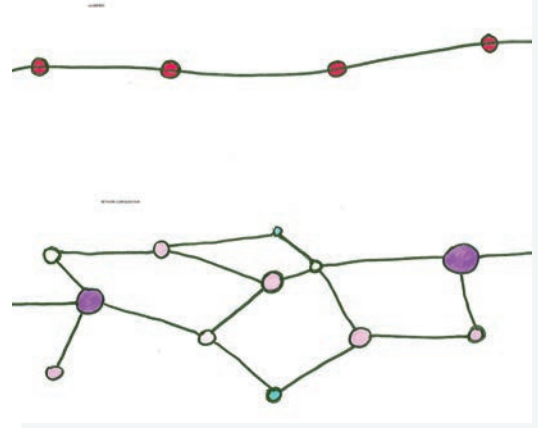
Have you registered yet and gotten the ATRA discount?

*The configuration and operation of an ATN network are quite different from the linearity of a rail corridor.*

## INNOVATION'S SECOND ROUND

ATRA was well represented at a public sector innovation workshop convened by Aerospace Corporation at the behest of the City of San Jose. It was held at Aerospace headquarters in El Segundo, just south of Los Angeles International Airport. Seventy-five individuals representing a variety of agencies flew or drove in to discuss what needs to be done so that the public sector can begin to move toward automated transport in the possible form of automated transit networks (ATNs), a term that has evolved to encompass PRT, AGT, GRT and the like. The emphasis was less on technology, and more on processes and paradigm shifts needed in public infrastructure development as we approach a new age in public transit.

Aerospace conducted significant PRT research in the 1970s and is taking a second



look. How appropriate to meet in a city whose Spanish name means second! Modal innovation has returned to the American agenda. This second time around, it's called ATN.

Ed Anderson, author of the textbook *Transit Systems Theory*, holder of many PRT-related patents and founder of PRT International, traveled from Minnesota to accept an award in recognition of his achievements in PRT research and development. Stan Young and Matt Lesh made it out for the Washington Beltway. Sam Lott was over from Texas, and Peter Muller from Colorado. A Cornell professor attended, Christer Lindstrom added an international touch, in the context of the US-Swedish Memorandum of Cooperation. And of course, a large contingent from California – including Catie Burke and Will Ackel and representatives of Google, Lea+Elliott, Mountainview, Santa Cruz, San Diego and the Association of Bay Area Governments.

Rod Diridon emphasized the synergy with HSR now starting up for real in a segment that includes Fresno. He helped keep discussions focused on what needs to be done next. There was clear interest and commitment to action on leading urban infrastructure to more sustainable realms. Planning has begun to continue the dialog in October as part of PCC7, October 23-25 at George Mason University.

## Podcar Cities Tours

### BOSTON LEARNING FORUMS

*By Kjensmo Walker*

Three public learning forums took place last May in various neighborhoods in Boston to educate the public and key area stakeholders about Podcars, new urban mobility, and other pertinent topics that pertained to each locality. The Boston/Cambridge Nexus Committee organized these informational workshops.

The first addressed needs in two adjoining Boston neighborhoods - Jamaica Plain / Roxbury on Wednesday, May 15. Hundreds of neighborhood activists in Jamaica Plain, Roxbury, Dorchester, and Hyde Park are vigorously working on improving local transit and roadway access due to the MBTA's recent re-route of key transit and highway access points. Prior to our meeting, advertisement was made in a Jamaica Plain newspaper.

Ten community members attended this presentation about ATN technology given by Kjensmo Walker, on new and future urban design trends by Larry Fabian and on solar PRT by Judeth Van Hamm. Kjensmo's presentation included a video introduction to ATN, in-depth explanation of the technology and specific examples of real world applications (Morgantown, Heathrow, Masdar City (UAE) and Suncheon (S. Korea). Larry assessed broadly the urban planning context for urban mobility ideas, and how ATN technology can fit with new and future conditions. Judeth discussed solar PRT with great passion about the need for actions to safeguard Mother Earth, showing informative visual designs and implementations through community ownership.



*Planning activist Judeth van Hamm, second from left, continued her efforts for sustainable transportation at Boston's GreenFest last month..*

## Columbia Point and the Fairmont Corridor

At each event, I encouraged attendance at the October 23-25 Podcar City 7 conference in Washington DC to learn more about all of these topics. Event attendees completed Peter Muller's travel demand survey.

The second Boston workshop was on Thursday, May 16 at Columbia Point – a peninsula of precious shoreline that is home to several significant institutions: UMass-Boston, the JFK Presidential Library, the Massachusetts Archives, a Catholic high school, the *Boston Globe*, etc. as well as multi-cultural housing and hotel. There are severe parking and highway access problems, and they are intensifying. Rail access is remote. This important geography is vulnerable to sea level rise being caused by global warming.

Most of these stakeholders attended the workshop. In addition to talks by Kjensmo, Larry and Judeth, there was scholarly presentations on climate change/sea level rise/flooding in Columbia Point from a UMass Boston hydrologist. The mobility challenges are real and unique to the geography of Columbia Point. Actualization of sea levels rising and parking problems make new transportation solutions a priority for this coast district. Judeth is continuing conversations, including presentations to the Harbor Point Taskforce and Columbia Point Associates.

The third Boston public workshop focused on an old freight and commuter rail corridor that is being upgraded. It also took place on Thursday, hosted by the Dorchester Bay Economic Development Corporation. Boston's transit agency is the MBTA ("T" to locals), which is adding stations to adapt the railroad to service urban needs. Existing and future stations, however, are not truly convenient to neighborhood commercial districts. Costing over \$200 million, improvements to the Fairmont Line are expected to boost ridership by only 1,600 trips a day. Last-mile solutions feeding stations have unexplored potential.

Three community members attended. Judeth spoke to the potential of the Fairmont Corridor, envisioning a franchise for solar collectors above the 9.2-mile (15km) line. Enough energy to power 100,000 passengers on ATN each day is anticipated. She explained how solar PRT branches could bring Fairmont-Lite service to travelers well off the rail line. Much Q&A got everyone engaged.

### Legislative Activity

Wednesday morning began with briefing of key aides of Representatives of the Massachusetts legislature in the historic state capitol atop Beacon Hill in downtown Boston. With only 45 minutes available, presentations were shortened. Discussion after these presentations focused on what the Massachusetts could do to assist the industry. The attendees were very interested in the future of urban mobility.

## ROBOCAR REALITIES AT TECHNIX 2014

The next *Technix* will take place Saturday January 11, 2014 at the University of Maryland, outside the District of Columbia but well within the power-rich Beltway.

The format of *Technix* is changing in response to the growing interest in automated ("autonomous") vehicles. Perhaps as ATRA Chair Kornhauser puts it, the term "crashless vehicles" will put us over the top. There are real legal issues. How should police respond? How will revenue be generated and managed? There are many implications for city and regional officials. How should planning and zoning

accommodate robocars?

What does it all mean for classic PRT – in which vehicles are firmly locked into guideways which provide power and dedicated communication infrastructure?

Larry Fabian, Bob Johnson, Alain Kornhauser and Stan Young make up the Technix Task Force. They are developing the program centered on application studies. If you have suggestions or want to help, email [lfabian21@gmail.com](mailto:lfabian21@gmail.com).

## ATRA APPROACHES FORTY

ATRA leadership – looking forward to 2014 when we turn 40 –sees need to establish a new position to handle external relations. Interest in PRT is surging. The coming reality of smart cars – robocars that can be summoned, for example, from remote parking – is forcing a political rethink of roads, cars, highways and urban transit. The new ATRA Director of External Affairs will respond to a growing stream of queries. He or she will look for opportunities with other groups.

“This is an exciting time to be knowledgeable in PRT and PRT-like technologies,” beams Professor Alain Kornhauser, career academic at prestigious Princeton University. Alain is the Chairman of ATRA’s increasingly active Board of Directors. “With four decades of knowledge and vision, many others are turning to ATRA for help. Next January at the Annual Meeting during TRB, I hope we will amend our by-laws to create the position and empower someone. The trickle of queries is growing into a steady flow.”

“This will be a great way to meet new people who are opting out of 20th century car dependencies, and to increase ATRA membership,” adds ATRA secretary Kjensmo Walker. Stan Young, President, thinks that many who contact ATRA will be happy to learn that they can easily join ATRA and get lots of membership benefits. “Hopefully the new ATRA Director of External Affairs will convince inquirers to do so. They won’t be disappointed.”

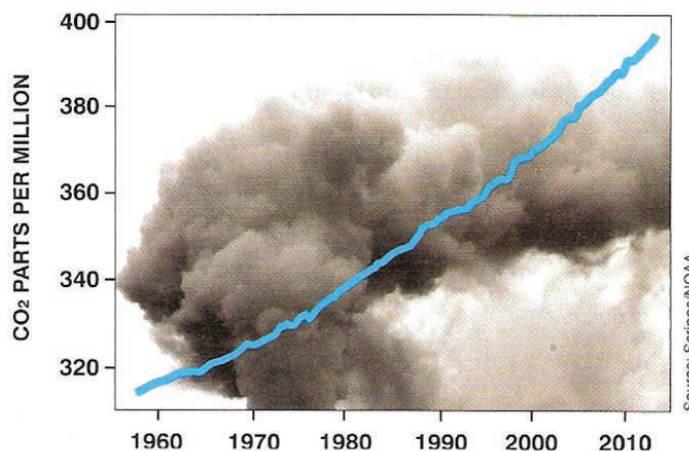
### Better Discipline Today

In 2016 ATRA will mark its fortieth year. Special campaigns and commemorations are planned. If you have thoughts or interest, contact Stan at (301) 792-8180. The new *Ext-Aff* director will have the opportunity to work on those. “ATRA’s history is a very important asset,” asserts Christer Lindstrom, the Swedish politician behind the Podcar movement. 2016 will be on ATRA’s agenda in January.

During the 1980s and 1990s, ATRA limped along from January to January, occasionally doing a project. As the 21st century opened, ATRA became more organized and active. In 2013 there are monthly telecons of the Executive Committee. A refreshing sense of discipline and stability is in place. “Working toward 2016 will be fun and hopefully lucrative,” states Treasurer Tony Newkirk. “The topic of modern mobility is getting hot within the Beltway.”

## AN ALARMING TRAJECTORY

The rise in atmospheric CO<sub>2</sub>



*ATRA's activities are rising along with carbon dioxide levels.*

ATRA's Academic and Research Committee is finding new interest among professors and students. Larry Fabian wants to resurrect the idea of a PRT-centered novelette as a project to create a booklet and pdf to pass out, aimed at introducing PRT to today's teenagers who are so wired into new realities.

### Renew for 2014

Remember to renew your membership and encourage your friends and colleagues to do so as well. Ponder an additional donation to sustain ATRA activities, the publication of *TransitPulse*, the annual *Technix* exchanges, traveling *Podcar Roadshows* and presentations at conferences and seminars far and wide. You can earmark it to a specific purpose.

It is a great time to be in advanced transit. You can help make it even greater.

## APM@PHX + PRT

*Major input from Will Ackel*

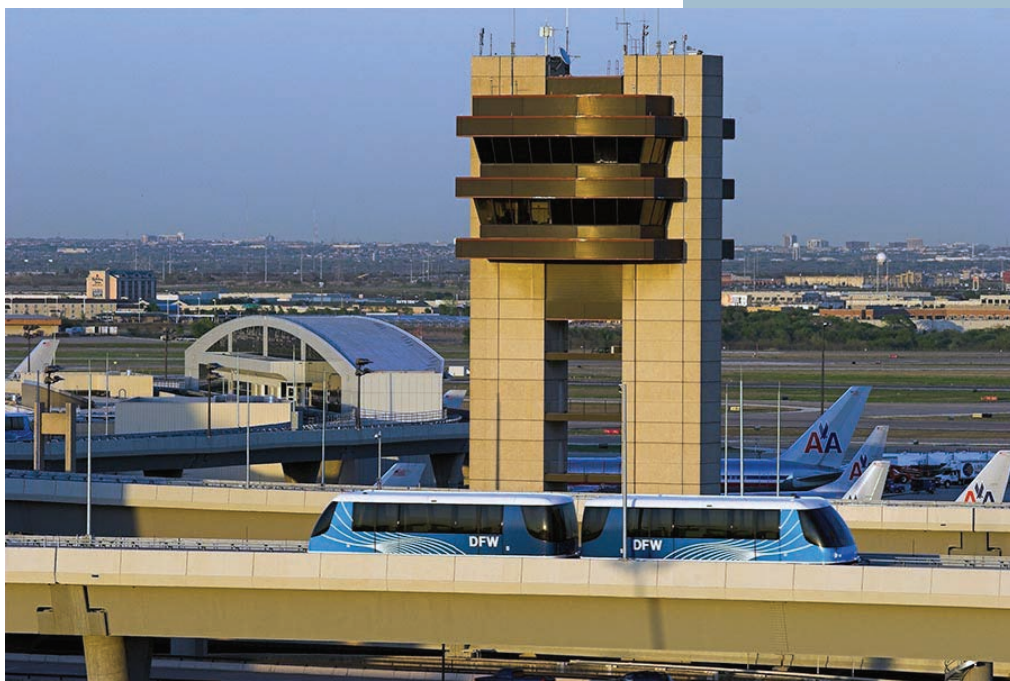
Another in the long series of APM conferences under the auspices of the ASCE (American Society of Civil Engineers) was held in Phoenix last spring. Among the large crowd of perhaps 500, there was a clear trend of increasing interest in PRT. The program contained three PRT-themed sessions that were well attended.

The traditional focus of APM conferences in the US is airport installations and operations. In fact in Phoenix a pre-conference workshop dealt in detail with O&M issues.

Conferences overseas cover airport APMs but shared with strong attention to metros – new projects and retrofits of classic ones.

The context of APM13 was the \$1.6 billion APM at the airport that opened smoothly and on time. There was no news of new projects at US airports. One ATRA member detected an undertone of concern: the infrastructure costs are paralyzingly high.

Laura Stuchinsky of the City of San Jose and Jeral Poskey of Google attended. There were presentations by Arup and Aerospace. Sparks flew when someone asserted that the costs of PRT guideway and stations compounded by issues of visual and other environmental impacts were just too much. PRT, he claimed, isn't worth it.



*Classic APMs such as this one at DFW Airport were at the center of talks at the April APM conference in Phoenix, with growing interest in PRT.*

## MEGA METRO MARKET

Metro suppliers and contractors are busy around the world. In the US, a metro project is a slow expensive process. In China, India and the Arabian Peninsula, they are being planning and procured by the network.

The world standard has become driverless. Riyadh just unveiled a 6-line network — 176km and 87 stations for about \$20 billion. A comparable project is underway in Makkah. There is other driverless metro news in Milan and Istanbul — too much to fit into this issue.

## WHAT POWERS PRT?

A Heartland company owned by French technology group Delachaux, Conductix has come to dominate a component market critical to the operation of podcars and less sophisticated APMs. Conductix manufactures and services power rails that get electricity to moving vehicles drawing power from guideways.

Richard Prell gets credit for this success, and he retired last month. Starting adult life as a school teacher, this smart farmboy graduated from the University of Nebraska. Itching for other work, he took on a sales job at Insul-8. This power rail manufacturer was later bought by the French technology Delachaux in 1975, combined with competitor Wampfler in 2006, and renamed Conductix. It is headquartered in Omaha, Nebraska, with a rail-making and shipping center in the small west Iowa town of Harlan.

Transit is only about 15 percent of Conductix sales. The first APM project was the Newark Monorail. Now they supply most Bombardier projects — which is a large share of the APM market — and other as well. For example, their technology helps run the Morgantown PRT. It was used on Raytheon's 1990s version with the Chicago RTA. Conductix power rail is today installed on Vectus's first project in Suncheon, Korea.

Richard has been a steady presence at the APM conference and in deliberations of the APM Standards Committee. He exudes a no-nonsense goodness and honesty that is the Heartland is famous for. He is being replaced by Keith Forman, who wonders how they can help bring the promise of PRT to widespread use.



*Richard Prell*

## ROCKY MOUNTAIN HIGH

Yet again Denver wants to be the epicenter of advanced ground transportation. In many ways, Denver is a microcosm of US sprawl and highway addiction; also spending billions of dollars for transit that is, in the big picture, not very effective. It wanted advanced transit in the 1970s, but USDOT policies nixed it. The result is the whole frontal region is turning the majestic summit of America into a sprawled, congested and unsustainable mess.

Perhaps another Summit will find ways to move Colorado and the whole heartland from bold thinking — as good as that is — forward into reality? This may be a subject October 23-25 in Arlington, Virginia when PCC7 takes place.

## Unlimited Skies

Blue sky thinking is common in and along the Rocky Mountains. Denver's 1970s plans called for a 150km GRT network (today it would be called ATN). There is a history of studies for a heavy duty rail spine up the I-70 corridors. Mountain towns and ski resorts have built up experience with an array of cable-drawn systems.

Something in the air of Colorado engenders bold civic thinking and Socratic ways. There is the Rocky Mountain and the Aspen Institutes with continental reach. Well-known principles of urban planning proudly bear the title of *Aspen Resolves*. Out-of-box thinking about solar power and green construction abounds. Big rail into the Rockies has been studied and restudied, but so far no action. Pontification seems to be the end result, not construction.

Colorado mile-high thinking produced a memorable ATRA conference in the 1990s. Bill and Kathy Flanigan remember an energetic gathering in Aspen. Meanwhile, Denver has "innovated" with a "successful" LRT transit mall and today, officials think in conventional bus and rail terms only – even for service out to distant DIA Airport.

Next month's event is organized by Zev Paiss (303) 413-8066. Registration is \$95 for two days in Broomfield, Colorado. This was first presented as the work of the ETC Foundation. Technology developers ET3, Jpods and Skytran are involved.

## AIRPORTS

There is a sort of British roulette game that shapes the future of **LONDON's** airports. Who owns each of the three major ones is not fixed. Spanish infrastructure investors bought Heathrow, Gatwick and Stansted several years ago. All three have internal APMs, Heathrow also having the Ultra PRT that stretches landside to remote parking. After the Spanish Acquisition, the British Government forced them to sell off one to enhance competition. Now Gatwick is owned by Global Infrastructure Partners, and Stansted is part of the Manchester Airports Group.

Yes, this is confusing. Is this competition good for the public interest? Is this ownership picture accurate, or has it changed again? London's mayor vows close Heathrow (relatively close in to the west), while BAA has plans to expand it including a second Ultra installation. Others propose big new airports in the Thames estuary to the distant east.

Will Stansted to the northwest see major expansion coordinated with the *CrossRail* project? One scenario sees the addition of a 4th runway which would boost airside capacity to 120m/yr and allow the closure of Heathrow.

### Rational Planning

All this may stabilize when the newly born prince is crowned in a few decades. For now, chaos is a better description. Berlin's consolidation of most traffic from three airports into Brandenburg seems to run the opposite direction – perhaps a reflection of Germanic rationality.

Mega-cities often have multiple airports. New York has JFK, LGA and EWR – a seemingly more balanced trio than



*DFW APM  
official David  
Taliaferro has  
connections to  
London.*

in London. Paris has Orly and CDG – with studies of a third at various sites but no commitment. Moscow also had three big ones. Istanbul has two with very ambitious plans for a third one.

Back to London and its airport unpredictably, there are two smaller airports that compete for London air traffic. London City is next to modern Docklands office towers and service by the DLR. Luton is to the north near England's main rail and highway corridor.

