TRANSITPULSE
www.advancedtransit.net www.podcar.org
Produced by Trans.21 www.airfront.us Boston

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.

May/June 2011

AIRFRONT WORKSHOP: JUNE 16

ATRA's workshop focusing on profitable airfront development strategies, dubbed *Maximizing Airport Landside* Value has moved from May 6. It will take place Thursday, June 16. The venue is the same: Baltimore-Washington International Airport, well known as BWI. To register, visit *www.advancedtransit.ne*t.

Conference chair Alain Kornhauser focuses on airfront lands that in the past were reserved as environmental buffers, or have been put to less valuable uses because of noise and pollution. Tomorrow this land can be substantially upgraded to provide additional revenues for airports. It can also make the airport itself a more active and diverse destination. For example, Minnesota's Mall of America is well known as a flyIn-flyOut destination for Japanese and others around the world. in large part because of proximity to MSP Airport. Even more attractive is perceived easy proximity, and that is achieved through direct, on-demand services to many destinations offered by APMs, especially PRT.

Much impressive talent and experience will go into the Workshop. For example, Owen Curtis of HNTB thinks that airside experience can inform and facilitate landside applications. Peter Muller of PRT Consulting will speak on PRT parameters and concepts for airport planning. Curved alignments are easier to negotiate than heavy and light rail and even APM guideways. Station location is more flexible. Slopes are more generous than for rail. Steve Cornell of TY Linn will address airport project challenges.

Paul Shank of BWI looks forward to hearing presentations by Ben de Costa (Atlanta) and Bill Lebegern (NY, MWAA). Dave Little of Lea+Elliott will speak on *Quantifying Airport Land Value.*

IN THIS ISSUE

Masdar in Service 2
Moelndal Town 3
Sept. 7-8 in Stockholm 4
Norfolk Interest, No Cash.....4
Unmet Transit needs of Seniors 6
APM 2011.....7
Fresno Update 7
APMs as Driverless Metro....9
Accidents Happen..... 10
Minnesota Dongs.....11
Airports 11

How can PRT's flexibility and small scale make life for air travelers easier?

Retail cashflows help drive the economics of airfront development.

“Remoting” Relieves Curbside Pressure

Informed of the lower unit costs and configurational advantages of PRT, planners and engineers at other airfronts across the country and the world can design physically and financially feasible development. Jim Green of Aecom will share experience with developing configurations that can relieve terminal congestion by “remoting” terminal and curbside functions to peripheral locations, made effective with APM links, and more flexibly so with PRT.

Attendees will also learn much about BWI plans and issues. Moreover, David Holdcroft, now leaving the BAA, will describe the PRT parking-to-terminal starter shuttle at London Heathrow Airpot.

Questions? Email *lfabian@airfront.us*.

MASDAR IN SERVICE

The small *2getthere* version of PRT – robocars operating on an open but sequestered 1.5km running surface – is in service. Approvals for operation came 26 months after the official Letter of Intent. Vehicles design, usually finalized before contract signing, was part of that process. The exterior was approved in October of 2008, and the interior in March of 2009. With ten passenger vehicles and three freight units (with a third freight station), it opened last fall and now carries 600-800 passengers a day. A new peak was set April 9 when many transit officials attending the UITP congress in nearby Dubai caused a surge up to 2146.

2getthere is proud of this achievement, and credits previous experience and good organization. They work with “expert third parties” on a way that permits them to scale up and down quickly and easily. Robbert Lohmann explains that at one point over fifty people were working on the project, but only 5-10 of them were employees.

2getthere’s older installation distributing from a rail station near the Rivium office district outside Rotterdam shut down to allow construction of a new building near the track. This 8-11 week period provides time for “major” maintenance work. The O&M contract for the next five years will be put out to bid soon.

Next Projects for *2getthere*?

Will it expand to a 3000-vehicle fleet covering the whole Masdar district, which may eventually accommodate 50,000 employees and 40,000 residents? This is unlikely even in the long term. This does not mean, however, that some expansions are not possible. The system is in 18 hour/day service, and valuable lessons are being learned.

The cost was about $10 million, but the bean-counters and currency converters are still working.

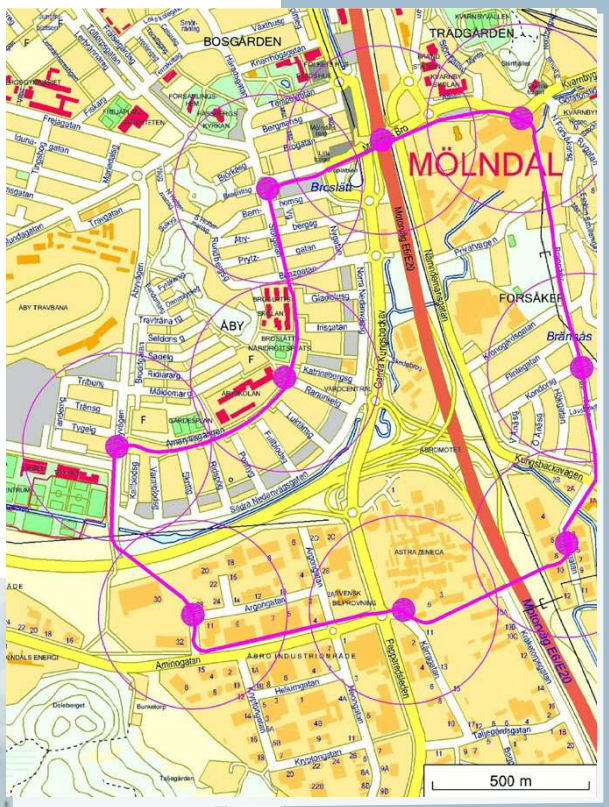
2getthere's first urban project was outside Rotterdam, The Netherlands.

MOELNDAL TOWN: *Suburbs and Motorways*

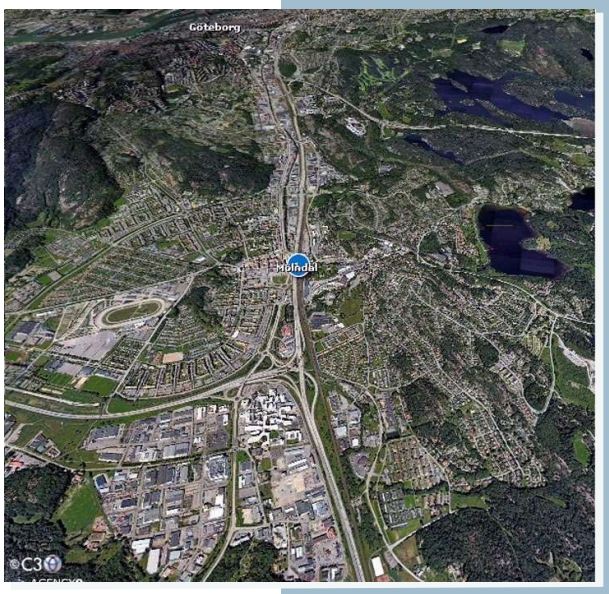
by Magnus Hunhammar
Institute for Sustainable Transportation (IST)

Most suburbs were developed in the late 20th century, i.e. in the era of cars. Good access back and forth by car to city areas is essential. Planning oriented to motorways linking suburbs and central areas may be good for regional traffic, but not always for local circulation. In many cases, motorways cause major physical barriers in suburban communities that limit integration, accessibility and mobility.

The town of Moelndal has about 50,000 residents, situated south of Gothenburg, the second largest city of Sweden (metro: 510,000). The town has a long industrial history as a city when manufactured goods were carried by riverboats direct to Gothenburg. The metropolitan region of Gothenburg is growing, and now includes Moelndal. Today the Moelndal goods move by truck to multiple directions.



From the air, it is easy to see how the motorways and their intersections divide the urban setting. There are industrial areas in the SW, commercial in NW and residential areas to the east. The main motorway intersection takes a large chunk of land and handles over 100.000 daily trips.



To overcome these highway barriers, the Town of Moelndal is investigating podcars. A feasibility study was done by IST last year. Starting with a modest loop around the junction is proposed. The northern portion of this loop will the local train station to the bus terminal to each other and to industrial areas in the south, home to companies such as Astra Zeneca. The loop opens new possibilities for redevelopment of the land east of the motorway.

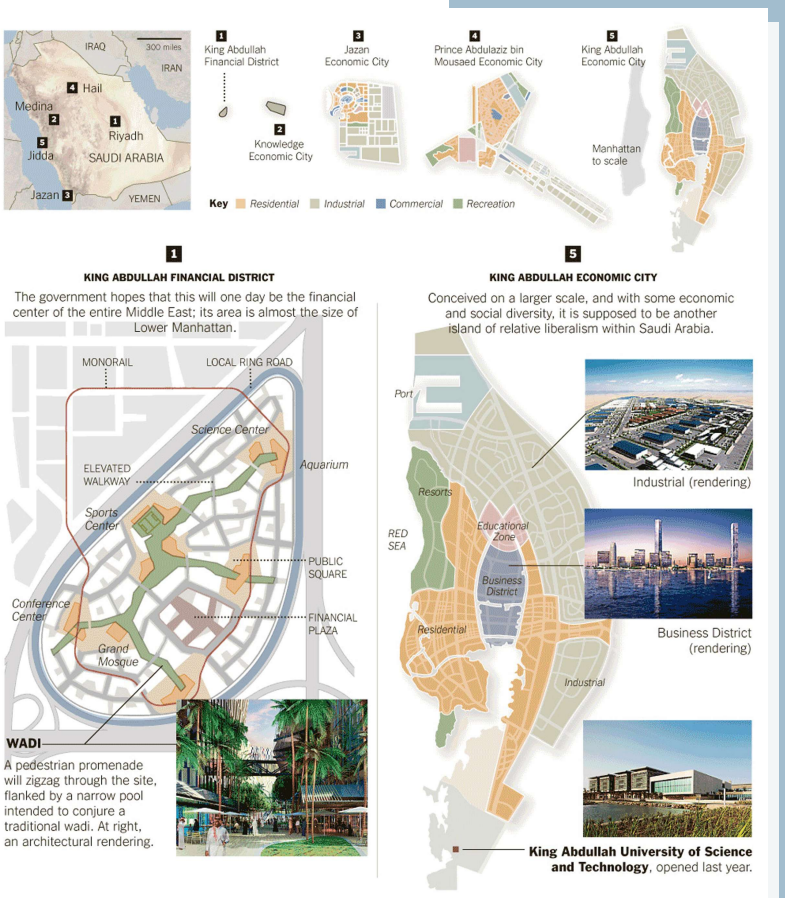
LRT currently connects Moelndal's commercial core to Gothenburg. It would be hard to expand it due to deep clay pockets in the area. A podcar network with lighter guideways and stations will be able to overcome these geological challenges. If this loop is successful, further loops and branches are anticipated.

SEPTEMBER 7-8 in STOCKHOLM

The 5th of the Podcar City conference series will take place in Stockholm, beautiful capital of Sweden – the soul of Scandinavia. It is a beautiful island-laced city with sophistication and comfort. No country has studied, analyzed, envisioned and dreamt about PRT more than Sweden, a society that ardently embraces environmental values and reaches across cultural differences based on sincere human values. The aim of PCC5 is clearly to lay the foundation for the next generation of urban mobility.

This fall on September 7-8, 2011, why not join hundreds of professionals, entrepreneurs and policy-makers from Sweden, Denmark, and Norway. Others will come from all over Europe, Asia and elsewhere for a working conference focused on advancing an already growing PRT industry. Americans and British are more than welcome. English is the conference language.

If you are interested in sponsorship and exhibiting, contact Magnus Hunhammar at *magnus.hunhammar@podcar.org*. If you have questions about logistics from North America or relationship with ATRA, contact *lfabian@airfront.us*.



Perhaps growing Saudi interest in PRT will be discussed at PCC5.

NORFOLK INTEREST, BUT NO CASH

There is a sprawled metropolis at the southern tip of the huge, highly urbanized coastal stretch from Maine to southern Virginia. The core of this mega-region is Bos-Wash. The northern tip is Portland, Maine – a neat, vibrant, dense urban core surrounded by a few suburbs where lobsters are plentiful and winters are bleak.

The southern extreme has six large towns that vie for attention and identity — Hampton, Newport News, Norfolk, Portsmouth, Virginia Beach and Williamsburg. Distances are

stretched out by large tracts of military bases and beautiful stretches of water – the Chesapeake Bay and mouth of the river that the English labeled the James in the early 17th century. The region has no large airport: several small ones compete. Searching for a regional identity, the transit authority and the MPO call themselves Hampton Roads.

The largest and perhaps best known city is Norfolk. *The Tide* –a soon-to-open LRT—will run streetcar-style through potted, hopefully revitalizing downtown commercial blocks. It is haunted by 50% cost overruns and political talk of cleanup.

Norfolk's new LRT will service a stadium with on-street inter-modality.

Norfolk applied for the DPM program back in the 1970s but never got funds. Federal policy-makers later saw unimpressive results in three DPMs that did open in the late 1980s. These experiences led Norfolk to build a LRT as another form of downtown revitalizer. Who will be counting the traffic accidents?

Competing for transit projects in the Hampton Roads region are calls to maintain and improve congested roadways.

PRT Potential?

Newport News ATRA Bill Newton member sees potential for PRT to distribute out from the eastern terminus of the LRT at the Virginia Beach line. That town has purchased the abandoned railroad but refused to be part of Norfolk's *Tide*. A comparison of a line-haul option in that right-of-way to a PRT network using it as a spine could be very informative. No one is pursuing that. There is a guideway alignment in the comprehensive plan for Newport News. One local politician, Pat Woodbury, sees wisdom in exploring PRT options.

Outside Bill, Pat and now perhaps a few friends, most citizens and officials are largely unaware of the unsustainable nature of their car-addicted lifestyles. This obliviousness is not unique to southeast Virginia. America as a whole and most Obama Administration pronouncements are missing the point too. Our problem is roads and vehicles. It is the $50-$100 each of us sends to the Persian Gulf via a gas pump every week. Average US cars end up costing $8000/year. As a society, we have arterial sclerosis. We can do better.

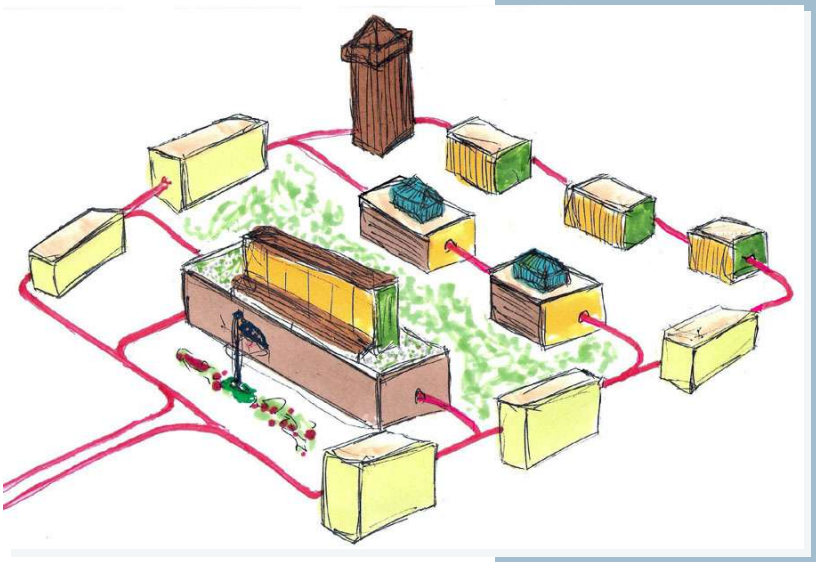
Last January, a Newport News reporter labeled me a guru who is pushing PRT and counterpoised me to Vuchan Vuchic! OK, I got ink, as they say, so maybe I should be flattered. Joe Lawlor, the young but not local journalist (from Michigan) was so wrong. My message was and is this: *our current life styles and infrastructure are not sustainable.*

There are better options. In our toolboxes are – zipcars, robocars, electro-bikes, smart shuttles, driverless guideways and PRT.

UNMET TRANSIT NEEDS OF SENIORS

by Jerry Kieffer

In 1976, I helped form ATRA to foster the development, testing, and practical demonstration of transit systems called personal rapid transit (PRT), whose much lower capital and operating costs would permit the widening of public transit options for all metropolitan area age groups. From my involvement in ATRA, my role as staff director of the 1980 White House Conference on Aging, and my service as member of my county commission on aging, I recognized that PRT has special promise for improving mobility for one of the fastest growing portions of the U.S. population — ***people over 80 years of age*** – the senior seniors.
As someone said, "It happens sooner than you think."



Certain districts, perhaps primarily for seniors, can be planned around PRT networks to capture a majority of trips.

Senior Isolation

Through better and more widely available health care, we have succeeded in producing a considerable expansion of the 80+ population. However, as metropolitan areas spread out over the past fifty years, we failed to give adequate attention to the upcoming mobility needs of these people. Most of them tend to gradually reduce their driving, eventually giving up auto ownership completely. Many also walk less, have problems using stairs, and prefer to avoid moving about on crowded streets.

Many senior communities provide special vans to take residents to health centers, shopping centers, senior activity centers, movies, and restaurants. However, the doorways of these vehicles, as well as those of urban transit buses, typically are not flush level with boarding platforms. In my assisted living community, senior seniors must negotiate steps when entering and leaving. Stairs are a barrier to people who use motorized scooters. Mostly special vans used in senior communities also operate under rigid time schedules, which strongly restrict the opportunities to make spur-of-the-moment trips. Our bodies risk becoming immobile long before our minds! Isolation is not good.

The loss of mobility of the 80+ population further deepens the isolation they tend to experience as they lose friends and relatives on account of sickness and death. They lose their ability to travel to and from community activities, routing shopping and medical trips. They and gerontologists are just beginning to assess the full range of social outcomes (including private and public costs) that result from the mobility loss.

Public Transit for 80+ Population

Heavy and light rail and buses are the main transit modes serving U.S. metropolitan areas. However, their scale is huge. Walks to and station platforms is long. Capital and operating costs and large land requirements are high, meaning that only a few transit lines operate in metropolitan areas. Buses have low capital but high operating costs. Speeds are slowed by the need for many stops. Buses also have to compete with auto and truck traffic on congested roads. BRT offers some improvements, but in sum, conventional transit modes do not appear to have much to contribute to increasing the mobility of the 80+ population.

The low unit costs of personal rapid transit (PRT) make it possible to envision much more extensive geographic coverage by transit services. PRT's operating characteristics make it attractive to all citizens, especially seniors. These include simplicity of use and quickness of trips. On departing from a PRT station, the traveler need know only the station he or she wishes to reach. The PRT user, traveling alone, or with a friend or friends in small vehicles would board the next empty vehicle which would leave immediately and travel non-stop to the chosen station. No other passenger could board the vehicle, and it would stop only at the chosen destination. Climbing stairs to get in or out of the vehicle would not be necessary. Transfers would be necessary only where PRT service has been linked to another transit mode as a feeder or extender.

ATRA's Vision for Senior Mobility

PRT may not offer door-to-door service, but it could be lobby-to-lobby, lobby-to-mall, mall to cultural center. In low density areas, PRT stations cannot be located on every block. Still needed is be a practical means to get from a starting point (a residence or an office) to and from stations. Some 80+ plus people could walk several blocks or communities could operate neighborhood circulator services driven by bonded, part-time drivers, paid or volunteer.

ATRA should engage in a dialog with groups such as the AARP, gerontologists, public policy officials, and campus planners on the benefits of PRT for senior mobility.

APM 2011

The 13th APM-ATS Conference will take place in Paris, France, May 22-26. The international conference organized jointly by the Transportation & Development Institute of the American Society of Civil Engineers and the Ingénieurs et Scientifiques de France will host three panel discussions and 79 technical presentations by authors from 18 countries in four continents. The presentations represent automated transit systems in the areas of Driverless Metros, Airports, Activity Centers, and Personal Rapid Transit.

FRESNO UPDATE

by Stan Young

Recall that the City of Fresno (CA) allocated funds to a New Technology Reserve as part of a larger sales tax initiative to fund transit infrastructure improvements a few years ago. ATRA member Dennis Manning was influential in advocating this and has been a key figure in providing guidance and direction in this public process. The study of PRT was included as part of a Public Transportation Infrastructure Study now coming to completion. The portion dedicated to PRT is available on ATRA's website. In short, PRT was studied in several scenarios, the most notable being at Cal State University at Fresno (CSUF). Other applications within Fresno County were also investigated to a lesser extent.

The objective of the PRT assessment is to

Here is one interesting application of PRT for Fresno leaders to consider.

describe to Fresno County's decision-makers the requirements to implement this new technology from a technical and cost perspective and to identify and evaluate potential applications. The technical and cost description is based on a detailed prototypical application of PRT at the California State University Fresno campus.

Key findings from CSUF

- PRT on the campus is technically feasible to construct and operate. There is space for the guideway system, stations, storage and maintenance facility and other ancillary fixtures. It can be operated efficiently and would capture about 17% of the daily pedestrian travel on campus.

- The PRT system provides high level of service, can accommodate a moderate proportion of the campus' daily pedestrian travel between classes and between parking and the main campus, can be configured to accommodate high demand sporting events or special events, and can connect all of the campus' points to the Campus Pointe development and a transit intermodal center.

- The largest technical challenge for PRT is to accommodate peak surges of riders at class change. Passengers may experience delays during the peaks, and the system incur extra cost for more vehicles and track to handle peak demand.

- Walking is the main competitor with PRT. Campus parking is relatively close to most campus destinations, and because the interval between classes is short, delays caused peak surges resulted in competitive travel times with walking. This issue could, in part, be resolved with using GRT rather than PRT on high demand segments of the system.

- Because many of the campus' trips travel similar origin-destination pairs, some segments of the system could more effective by using GRT based on a line-haul function with connecting loops of PRT for less traveled routes.

- The cost of the system was conservatively estimated at $265m or about $25m/mi ($15m/km). However, with more installations costs are expected to reduce dramatically to $7-15m range are feasible.

In addition to the CSUF prototype case study, five types of development within the county were also studies for applicability to PRT which included:

- Major activity center (office/retail/entertainment/high-density housing)
- Downtown / Central Business District
- Regional medical center and surrounding medical-related districts
- Individual compact residential / commercial development
- Large-scale new town on fringe of metro area

The study compared application criteria such as type of demand, size and extend of development, parking and access to existing buildings, and land use in discussing applicability of PRT and GRT options. Advanced transit is just a small portion of the PTIS study, and results in terms of future action have yet to be determined.

Next Steps

A PRT test facility would allow existing funds to be leveraged with state and federal matches, create jobs, create an operational platform to evaluate performance and costs, provide a platform to evaluation safety and regulatory concerns, showcase a HSR feeder technology at Fresno Station, and assert Fresno as a leader in clean technology development. Stay tuned as Fresno prepares to take bold steps to provide

its citizens with an effective mobility system for the future. For details, contact past ATRA chair and president Dennis Manning at *john.manning4@comcast.net*.

Stay tuned as Fresno prepares to take bold steps to provide its citizens with an effective mobility system for the future.

APMs as DRIVERLESS METRO

The US transit industry has stepped forward into the 21st century as final arguments about Honolulu's long-planned $5.5 billion, 32km elevated metro subside. At $178m/km ($275m/mi), this is hardly a bargain. Honolulu is very linear and dense and badly needs something to relieve traffic and allow smooth flows for the millions of tourists that come every year.

Open air, at-grade driverless metro seems possible in Riyadh.

Guideway transit was already well studied for Honolulu back in the 1980s and 1990s. Millions of dollars have been spent on more studies and on fighting lawsuits in a dance that highlights the overall dysfunctionality of American transport planning and infrastructure management. Lots gets studied. Little gets done beyond patching up potholes and bridges and praying for the best.

Sadly, in the current American political context, the regional planning is more about bringing project and study money into the local economy from Washington. Whether the infrastructure makes sense is too often of secondary importance. It is all quite remote from the lives of ordinary citizens with real mobility needs. This includes a wide range of people, but certainly includes senior citizens, school kids, and many who cannot legally drive.

Honolulu, Are You Real?

Latest word on the Honolulu elevated metro project is that Ansaldo was selected over Bombardier and Sumitomo in a process that should be simple and straightforward but has become dizzyingly complicated in a bloodsucking process pver which lawyers and analysts hover at every step.

We build highways well in America. The transit, well, is an import business. Bombardier is Canadian. Sumitomo is Japanese. Ansaldo is Italian. They are to be commended for putting up with the endless contortions (and expenses) of the Honolulu metro project and most others across the 49 other states. These international companies have plenty of viable projects and collaborative opportunities in Asia, the Middle World, Latin America and Africa.

Overseas Projects

Milan and Turino are expanding their driverless metros, using Ansaldo and Siemens-Matra technology respectively. Dubai continues expanding its metro, supplied by Thales-MHI. A 13km line in Seoul, South Korea just opened with Thales-Hyundai technology as Line 4 between Busan and Gimhae.

Macao recently selected MHI for a 20km, 21-station line planned to open in 2015. Kawasaki with Alstom signaling was just announced for a 17km, 18-station line in Taiching, Taiwan's second largest city at a cost of about $1 billion. It is to open in 2017.

These are complex, multifaceted projects that disrupt commerce and community life along their length. The need widespread political consensus and coordination. Such conditions are more readily in place overseas than in the short-sighted politics of the auto-addicted USA.

ACCIDENTS HAPPEN

The USDOT maintains statistics on many aspects of transportation, including safety. It tracks operating numbers for all modes including accidents and fatalities.

There were APM fatalities in 1990 and 1998. Really? Were they passengers or staff? Does this survey include airports? A note cautions that the numbers include only those areas that officially reported to Washington. There may be others.

Numbers are numbers. Critics point out inconsistencies – such as excluding pedestrian-LRT accidents from the transit total.

There were over 3000 fatalities by all urban transit modes from 1990 through 2007. That is about 170 per year. About half of them are bus accidents. Rail safety improved considerably over this period. The numbers for LRT did not decline, probably because several new operations begun during this period.

Updating this through 2010 should now be possible, along with an investigation of how and when APM accidents are included.

U.S. TRANSIT FATALITIES TRENDS

	1990	1995	2000	2005	2007
Motor bus	92	69	82	49	76
Light rail	5	10	22	15	18
Heavy rail	51	43	19	7	25
Commuter rail	63	56	56	28	22
Demand responsive	0	1	4	7	8
Van pool	0	0	0	0	0
Automated guideway	**1**	**0**	**0**	**0**	**0**
Total	**212**	**179**	**183**	**106**	**149**

Source: USDOT, abbreviated from a file maintained by Martin Lowson.

U.S. Recorded Fatalities and Injuries, by Mode

Totals for period 1990-2007

	Injuries (000)	Fatalities
Bus	287	1434
LRT	6.4	207
HRT	5.0	514
CRT	2.6	840
Demand-Responsive	7.5	45
Vanpool	0.6	4
APM	**0.001**	**2**
Total		**3046**

MINNESOTA DOINGS

by Drea Walker

The Minnesota CPRT is putting out a call for computer simulations, models, and other physical demonstrations for the 2011 Building Community Exhibition, taking place for a full week (Monday to Friday) in July. Exact dates of the Expo are not yet firm." For info, email *walk828@gmail.com*.

For the 2011 Building Community Exhibition 1,500 to 2,000 patrons are expected over the week. The Building Community Exhibition offers a sneak peek at the future of urban communities here in the Twin Cities. Come and see scale models, renderings, computer animations and multi-media displays of planned, ongoing and recently completed construction projects that are shaping our urban communities in Minneapolis, Hennepin County and greater Minnesota!" Hours are Monday 12 noon–6:00 pm, Tuesday - Thursday 8:00 am–6:00 pm, Friday 8:00 am–2:00 pm. Link for more info: *http://www.pedestrianstudies.com/news/BldgCommunity.html*

Additionally, CPRT is gearing up for our summer events. We will be at the Midwest Renewable Energy Association 22nd Annual Energy Fair June 17-19. Each year the MREA Energy Fair transforms rural Central Wisconsin into the global hot spot for renewable energy education. The Energy Fair brings over 20,000 people from nearly every state in the U.S. and several countries around the world to learn, connect with others and ready them for action at home. The Energy Fair is the nation's longest running energy education event of its kind see *https://www.midwestrenew.org.energyfair*.
.

At the 22nd Annual CTS Transportation Research Conference, May 24-25, 2011 Ferrol Robinson (Humphrey School of Public Affairs, University of Minnesota) is presenting on “Viability of Modern Personal Rapid Transit Applications.”

AIRPORTS

The just-starting APM project that will link Oakland Airport to the nearby Coliseum BART station is the lowest in per-km cost of current airport APM projects.

CURRENT US AIRPORT PROJECTS

Airport	Cost ($m)	Length (km)	$m/km	Supplier
Atlanta (ext.)	63	0.4	158	Bombardier
Las Vegas	43	0.4	108	Bombardier
Miami	259	2.4	108	MHI
Oakland	492	5.1	96	DCC
Phoenix	1100*	3.5	314*	Bombardier
Sacramento	43	0.3	143	Bombardier

**Bombardier contract is $186m — $53/km.*

Yet, to tell an interested architect, developer or city planner who can see benefits in a high-performance transit link that it requires $100 million per kilometer ($160m/mi) is to end the discussion. Period. Next?

This underlines the value that airports derive from quality APM connections. Phoenix is investing some $1.1 billion for a 3.5km APM spine that interconnects terminals, parking, a remote car rental center and the metro-LRT. Why? Because the benefits are tangible, including accommodation of growing traffic.

The standard for airports — in this case Phoenix -- expensive but worth it!

The Middle World

One of the main regions of the Middle World – Mideast to Europeans and Midwest to Indochina – is the Persian Gulf and the many countries with trillions of dollars from oil and natural gas assets. Growth is rampant, sometimes frenzied. **Dubai** symbolizes much of this. Air traffic there rose 15% in 2010 to 47m/yr. The driverless metrio has put two stations at the airport, and Concourse 3 with an APM is to open next year.

Cairo is installing a 1.8km APM supplied by Poma-Leitner. New **Doha** is to open this December with a 0.6km APM connection by Doppelmayr/DCC.

Saudi Arabia is expanding facilities at Riyadh, Jeddah and elsewhere and building new regional airports, but so far without APMs. Kuwait? Iraq? Bahrein? Oman? Who is next?