Presented by
Swedish Institute for Sustainable Transportation
and Connect Ithaca LLC

CONFERENCE NEWSLETTER #3 – September 11, 2008

BREAKING NEWS: THE SWEDISH INSTITUTE FOR TRANSPORTATION AND COMMUNICATIONS (SIKA) PUBLISHES ENCOURAGING NEW REPORT ON PODCARS

Stockholm: "Podcar systems are socio-economically viable, have less impact on the environment and lead to less congestion and fewer accidents" announces a report from the National Institute for Transport and Communications (SIKA). A Podcar is a driverless vehicle for personal use that automatically travels on an elevated guideway above the usual traffic. Podcar systems do not yet exist in the Swedish market, but most of the technology is currently under development.

According to SIKA, Podcars can also be faster and more flexible than current public transport. The institute has studied two potential Podcar systems, one in Stockholm and one in Malardalen. SIKA's annual analysis shows that without Podcars, transport policy objectives cannot be reached, even with dramatically increased investment in current infrastructure.

IN THIS ISSUE:

TIME TO MOVE FURTHER

Since I initiated the Institute for Sustainable Transportation in late 2001, the world has changed. It is now much more obvious that we cannot sustain our current mode of living and moving around. My colleague Magnus Hunhammar, CEO of IST, has achieved real breakthroughs in the understanding of Podcar possibilities through a series of successful presentations, seminars and the first Podcar City Conference in Uppsala.

Among them, the joint effort of cities in the Kompass group from Sweden and the UK is advancing at full speed. After ten years work, the efforts of PRT proponents from Santa Cruz, California has resulted in a RFQ by the city for a Podcar system, and has promoted the simultaneous benefit of

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Move Further (cont.)

better cooperation with the University of California Santa Cruz. Two major PRT developers, ATS Ltd and Vectus, have raised enough capital to build test tracks adhering to the highest professional standards, and now the ATS system *ULTra* is being implemented at Heathrow airport for commercial use. I could go on about recent achievement and momentum… Masdar, Ithaca, Beamways, MISTER, Unimodal, RUF, Encitra, ATRA, etc…

However, I want to say that it is time to move further. The first steps have been taken and the Podcar industry is now more than a good idea. We need to look farther down the track and start thinking about more than just intelligent transportation and good land use. It's not *failure* of the Podcar technology that is a threat at this point, it is its *success*. How do we integrate several systems located close to each other and scale them up into a larger network? How do we make universal ticketing compatible for Podcars, regional high speed rail, busses, car-share and bike rental for a seamless journey? How do we transform the car industry and other manufacturing facilities into "green factories" for Podcar assembly and development of accessory technology? And very importantly, how can we upgrade Solar and Wind infrastructure as an optimal renewable energy source to feed the entire system?

I am very interested to see how all this will be discussed at the Podcar City: Ithaca Conference and am excited to see it all happen at Cornell U with support from the fantastic Ithacan spirit of commitment and sustainability. We expect approximately 200 people from all over the world, together with many inquisitive students from Ithaca College, Cornell University and Tompkins Cortland Community College.

Let's move on and make this a great conference that will blaze the way to real solutions.

Christer Lindstrom

PRESENTER PROFILE: CRISTA LOPES

Crista Lopes is an Associate Professor at the University of California, Irvine, in the Department of Informatics. She made her career in devising programming technologies that make the process of programming simpler. She is an expert in software engineering and programming languages. She is co-inventor of Aspect-Oriented Programming, a programming technology considered "One of the 10 emerging technologies that will change the world" by the MIT Technology Review in 2001. Recently, she has been working on virtual worlds as viable platforms for Web 3D, a vision of the world-wide web in which everyone will have access to very rich, highly interactive multi-dimensional content in social virtual environments. She is co-founder of Metaverse Ink, a search engine for Second Life and OpenSim-based virtual worlds. She is also co-founder of Encitra, a company focused on improving urban planning processes by using virtual worlds. She is the recipient of a prestigious National Science Foundation CAREER award (2004), as well as several other NSF grants.

Ms. Lopes will be speaking Monday Sept 15th at 3:25pm in the Statler Auditorium, Cornell University about The Encitra Virtual City Initiative

QUICK FACTS ON PODCARS or PRT (PERSONAL RAPID TRANSIT):

- Travel is non-stop from point of departure to destination. Off-line stations allow pods to pass on a "main track" while others are loading. Average speed is 35mph, but with no stops at intersections or in traffic.
- Elevated guideways make street space available for emergency vehicles, bikes and pedestrians.
- Costs for a given level of service are lower than surface trolleys, light rail or major road widening.

PODCAR ACTIVITIES IN SWEDEN

In Sweden we do not see PRT as a transit system just for people on a local basis. More and more Swedes see PRT or Podcars as a new transport mode for urban and regional movement of passengers and goods. But how to get there?

The Vectus PRT test track in Uppsala Sweden has, since its opening at the last Podcar City Conference in Oct 2007, been visited by many Swedish municipalities. To see Podcars in reality has been an eye opener. Now, concrete implementation plans are taking place.

Ten Swedish cities are now investigating the possibilities for Podcar networks. For example, the City of Uppsala is planning a Podcar network between the old city centre and an external shopping mall. A major player at this shopping mall is IKEA, whose large parking lot might be used as a park n' ride area (i.e. a place to leave one's car in favour of a more car-free city centre).

The KOMPASS Network was established this spring in order to strengthen the local initiatives. KOMPASS is a group of cities pursuing Podcar initiatives and we welcome international cities to join. Our experience tells us that there are too many risks involved for a single city to proceed alone with a new technology such as PRT/Podcars. The KOMPASS Network is a catalyser for governmental agencies and ministries to start to support local initiatives.

A governmental agency, the Swedish Institute for Transport and Communications Analysis (SIKA) is analysing how a country wide Podcar network can be designed and what the benefits are compared to conventional transport systems. The results are very promising.

Some findings in feasibility studies for city networks of Podcars, as in the city of Eskilstuna and in Värmdö, are the needs for; higher speed links, train coupling of pods and handling of goods.

The above topics will be discussed at the next Podcar City Conference in Ithaca, NY. We hope to see you there, to share and discuss experiences and challenges.

Magnus Hunhammar
CEO, The Institute of Sustainable Transportation

PODCAR CITY: ITHACA will feature the world's top manufacturers of PRT, GRT (Group Rapid Transit), and other forms of sustainable transit innovation. Do not miss the opportunity to meet with top scientists, investors and CEOs in this exciting new field of public transportation!

INDUSTRY UPDATE: Exploding interest in the Vectus System

Vectus' aim has always been to provide a commercially viable system that fulfils the requirements for the 21st century urban transportation. By commercially viable, Vectus does not only mean the functionalities and safety, but also the aspects on reliability, availability, maintenance, durability and passenger-perceived qualities. In the past few years, Vectus has had incredible progress in achieving these goals.

Activities at the Test Track

A full scale Test Track with one off-line station was built in Uppsala, Sweden, in 2006 where all running scenarios in a typical commercial system could be tested. Currently, there are three vehicles in full operation, using the safety approved control system including ticketing, station control etc. All functionalities planned for the test track have been tested, and the next phase will be operation to get sufficient amount of experience with the purpose of verify the complete RAM (reliability, availability and maintainability) model that has been made.

Vectus - Proven Technology

The Test Track has confirmed that the technical solution for Vectus System works very well. The Swedish Rail Agency has reviewed and approved the Safety Case, proving the Vectus system to have a safety level as good as or better than railway, metro etc currently operating in Sweden and Europe. The success of the Test Track, however, is not a coincidence. Prior to building the Test Track, years of R&D work had been done, especially to identify and simulate the system performance required for the full scale systems.

This has been the base for the requirements put on the control system and all other hardware solutions, giving the Vectus system unique features. These are some examples of the unique features of the Vectus System:

- Safe and reliable, e.g. by having the vehicles locked on to the track by means of mechanical guidance and on-board switching mechanism
- Light and small guideway suitable for elevated systems, but also very easy to install at ground level, tunnels, inside buildings etc.
- Steel track and hard wheels minimising rolling resistance (and energy consumption)
- Reliable and efficient electrical propulsion system with no live components exposed

Exploding Interest in Vectus System

The Test Track has proven to be a very powerful and successful tool to demonstrate the outstanding features of Vectus System. Politicians, city officials, city planners, architects, public transit operators, other potential customers and transportation stakeholders from all over the world have visited the Vectus Test Track at an increasing rate.

Vectus commercialisation strategy is to carefully select a suitable commercial application, and Vectus is confident that among all the business opportunities opening up at a rapid pace, the first system will soon be contracted.

Preview of the commercial Vectus System

At the Ithaca conference, Vectus will show the fully designed version of the Vectus urban transportation, having endless possibilities in every application. It will be a preview of the commercial applications based on Vectus technology for near future.

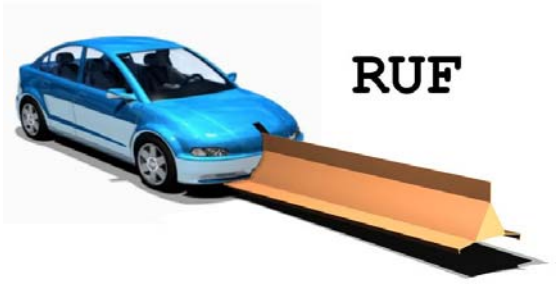
More information about Vectus can be found at www.vectus.se and www.vectusprt.com. If you have further questions or want to be part of the distribution list for our newsletter, please send an e-mail to webmaster@vectusprt.com.

INDUSTRY UPDATE: RUF

The Future of Transportation is Dualmode

By Palle R Jensen, RUF International

As long ago as 1974 prominent transportation experts realized that a dualmode system would be superior if it could be realized. A dualmode conference took place in the USA in that year and the expectations were great. Why didn't any dualmode concepts become reality? One reason could be the resistance from the established industries making cars and trains. Another reason could be the lack of inexpensive computer power at the time. The fact is that nothing happened despite all the positive analyses.



The situation was the same until 1988 when something happened in Denmark. I had made some other inventions which allowed me to use time to take on the complicated task to rethink transportation. I am an electronic engineer without any expertise in transportation but I was very frustrated about the war between car lovers and train lovers. No reasonable debate took place. It was very unconstructive.

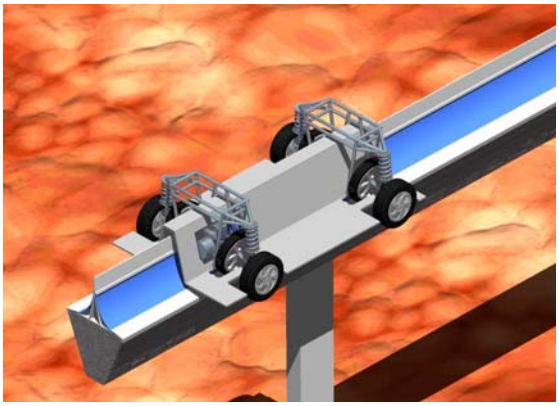
My solution after 2 years of deep thinking became the following:

It was clear to me that a car like vehicle was needed because so much of society's physical structure depends on the car and cannot easily be changed. It was also clear that a kind of public transport was needed and that it had to be much more attractive than the present system.

I had come to the conclusion that a monorail could be used to move the cars very quickly, safely and in a controlled manner, instead of using the highways. Many advantages would result from this transition. Cars could be electric and powered directly from the monorail, so small batteries could be recharged while driving at 150 km/h. The cars could be controlled in order to avoid congestion, and closely coupled to reduce air resistance.

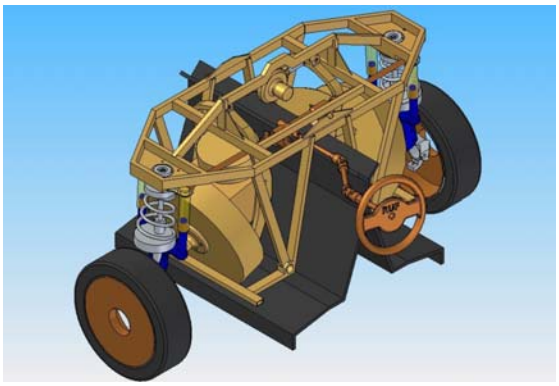
RUF (cont.)

This solution solved a lot of problems, but also created some new problems. In order to function properly, it was necessary to be able to access the monorail without stopping. In order to make this possible, a special (patented) drive system was designed and tested on a small test track in Copenhagen (www.ruf.dk/cnn.doc).



RUF has now been presented at numerous conferences around the world and a lot of experts have given RUF their very positive recommendations (www.ruf.dk/recommendations.pdf).

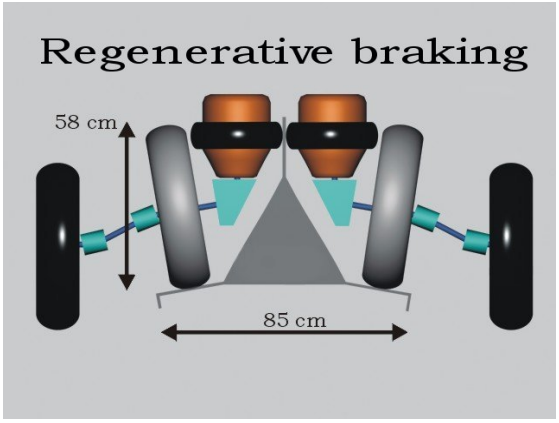
People at the political level in Denmark, Holland, Sweden and India have shown great interest in the RUF technology. Since nobody wants to be the first, RUF is still in the concept phase and needs further investment before being ready for the market.



The potential for RUF is huge. Since it can solve many problems together, it can conquer a large part of the market for cars, busses and trains. Since RUF is a modular system the cost of the infrastructure is very competitive. Since no leveling is needed in an elevated system, the construction cost of a network is very attractive seen from the perspective of the society.

The problem is that the train manufacturers want to produce large units because they have invested heavily in traditional train technology. This means that they will always tell the politicians to stick to proven technology.

Innovation has been held back in the transportation sector for many years, but now the time has come for a revolution. The reason is that now PRT systems can no longer be held back by the train industry. It will become evident that new technology is possible and attractive.



The investor which will discover RUF and make it ready for production will be able to conquer a much larger market than the PRT because RUF dual-mode solves many more problems than PRT.

Who is going to be the lucky investor?

Palle R Jensen, CEO RUF International
prj@ruf.dk

INDUSTRY PROFILE: BEAMWAYS

Key benefits

• Shortest travel times of all modes of local passenger travel including car.
• No change overs, no waiting, no time tables.
• Comfortable, private travel compartment.
• Lower investment cost than rail based systems.
• Low operating cost, no driver cost.
• Easier to accommodate in a city than trams.
• Significantly smaller sky-print than any other commercial PRT system.
• Lowest energy consumption of any motorized passenger travel mode.
• Compact layouts allow deployment in dense areas.
• ADA compliant (for handicap access).

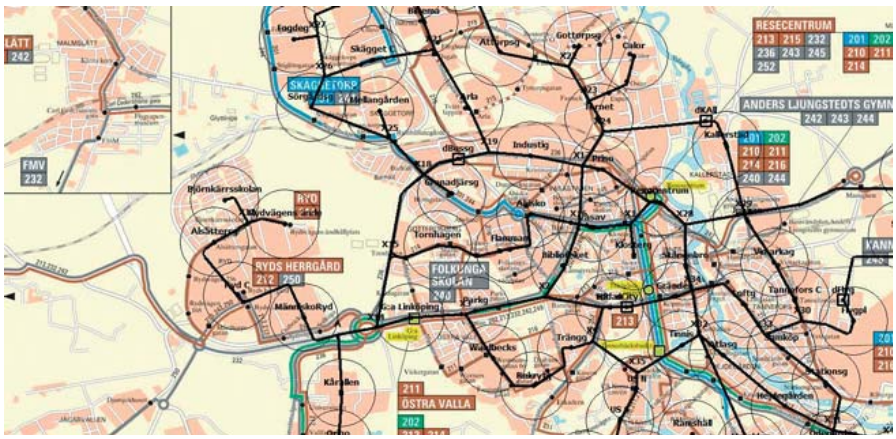
Target Specifications

• Line speed: 50 km/h
• Suspended system with cars hanging under the guideway.
• Normally dual-direction lines.
• Active banking, pitching and suspension system.
• Minimum curve radius: 3 m
• Maximum grades: 40% (floor horizontal)
• On board switching. No moving parts in the guideway.
• Redundant propulsion and breaking systems.
• Headway: 1 s

T. +46 (0)13-465 10 85
www.beamways.com
info@beamways.com

Beamways is the logical choice for new transit systems in the 21st century. Its outstanding capacity handles the large ridership attracted by the high speed and comfortable travel experience. Beamways is very energy efficient and runs on electricity directly from the grid. This allows the system to be powered by green electricity without significant economic impact. The natural resource use for infrastructure is comparable to that of tram lines. The reasonable investment and low operation cost allows transit agencies to build and operate systems for cities above 50,000 inhabitants with a profit (including amortization of capital).

Beamways system in Linköping. Image: Hans Kylberg



Typical Beamways network. Drawing created with BeamEd 1.0

This program was made possible by support from the Tompkins County Tourism Fund

PODCAR CITY: ITHACA ~ PROGRAM, TRAVEL & FEES

TRAVEL TO PODCAR CITY: ITHACA

For visitors from Europe, or any person traveling through Heathrow Airport, London, please contact **eutravel@podcar.org** for information on group arrangements that are being planned from London on Saturday September 13, with chartered bus from New York to Ithaca. This opportunity will include a visit to the ULtra System at London Heathrow on Saturday Sept. 13th.

US visitors arriving to Syracuse or New York City on Saturday, Sept 13th or Sunday, Sept 14th, please contact **ustravel@podcar.org** for possible shuttle service to your hotel in Ithaca.

Regarding your hotel, please find information when using the register function at our website: **ithacaconference@podcar.org**

REGISTRATION FEES

- Regular, all inclusive ($610.00)
- IST/ATRA/CityMobil/ULI/Group all inclusive ($395.00)
- Exhibitor, all inclusive, banquet for 2 ($690.00)
- Student (no icebreaker, lunch or banquet) ($60.00)
- Ithaca local citizen (no icebreaker, lunch or banquet) ($90.00)
- KOMPASS ($495.00)
- US/Canada government employees (planning, economic development, elected officials, etc) & university faculty. (no lunch or banquet) ($125)

DINNER BANQUETTE SOLD OUT!

TICKETS ARE SELLING FAST! TO LEARN MORE & TO REGISTER FOR **PODCAR CITY: ITHACA,** VISIT:
www.podcarcity.com

SUNDAY SEPTEMBER 14
5:30-7:30 Ice-breaking reception at the Johnson Museum

MONDAY SEPTEMBER 15
9.30am *Opening address* - Mayor Carolyn Peterson, Ithaca

Morning theme: *Lessons Learned and need for change*
Introduction by Magnus Hunhammar, CEO of IST

Sustainable Communities and Regions - Joan Bokaer, Ecovillage and Gay Nicholson, CEO Sustainable Tompkins. *Need for Joint Efforts* - Hans Lindqvist, former member of European Parliament, KOMPASS Group Chairman. *A Southern California Perspective* - Gus Ayer, City Councilmember, Fountain Valley. *Lessons learned* - Robbert Lohmann, 2Getthere, Netherlands. *Peak Oil and Renewable Energy* - Debbie Cook / Salley Odland, & Ron Swenson, CEO Ecotopia

Afternoon theme: *Evolving Projects and Solutions*
Introduction by Larry Fabian, ATRA

The Masdar initiative – Joan Bokaer, Ecovillage. *City of Daventry, UK*- Malcolm Buchanan , UK. *Dunsfold Park and Masdar plans* - Martin Tillman , UK. *Swedish Initiatives* - Magnus Hunhammar , Sweden. *The Encitra Virtual City Initiative* - Crista Lopes , University of Californa, Irvine *Heathrow Update* – Steve Raney

Panel Discussion:
Introduction by David Muyres, Artcenter, Pasadena

TUESDAY SEPTEMBER 16

** **Track A** - **Cities for the future** **
Santa Cruz, CA; Fountain Valley, CA; Ithaca, NY; Varmdo, Sweden, Are, Sweden, Stockholm, Sweden, Daventry, UK, and other cities, including members of KOMPASS.

** **Track B** - **Research and Innovation** **
Morgantown WVU, 35 years Later - Vishakha Maskey , *Extending PRT Capabilities* - Ingmar Andreasson, KTH Sweden, *Princeton Studies* - Alain Kornhauser, *Transportation financing paradigm shift* - Christer Lindstrom & Frost Travis, *SIKA Study* - Kjell Dahlstrom, *Vinnova Study* - Magnus Hunhammar - *Discussions - What's next in research?*

Historic State Theater - all attendees - Introduction by Jacob Roberts, Connect Ithaca, David Pimentel - *Biofuels and Transportation*, John Hogan - *Control System for Spaceship Earth* - Panel Discussion, moderated by Jake Roberts, C.I.

Closing Speech - Christer Lindstrom, IST