

Podcar City 9

Innovative mobility in the era of automation

4-6 november 2015, Silicon Valley, California

Silicon Transportation!

www.podcarcity.org

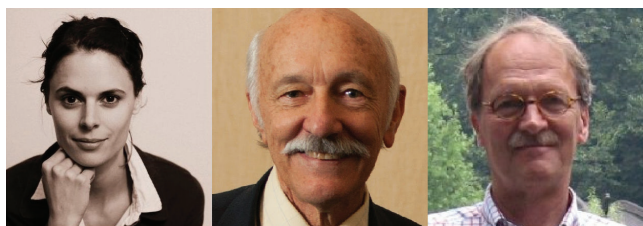
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CONFERENCE NEWSLETTER

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WELCOME TO PODCAR CITY 9 NOV 4-6



This year we will be in Silicon Valley, the place where many things in life originate and propagate all over the world. Since our San Jose conference in 2010, many things have happened. The rise of driverless cars has significantly changed the way we think about transportation. Zipcar, Uber, Carshare and other ideas on how to move around have already gotten a foothold. The existence of large fleets of buses addressing the need/lack of public transportation for all those Silicon Valley employees has heated the transportation discussion even more. For the Automated Transit Network (ATN) industry, a lot of this is very beneficial to the debate, not the least for those now deciding to invest in systems around the world. Indeed, since 2010 there have been millions more passengers using Podcars, and they are more than happy — they are excited and display pure joy after spending a very relaxing and entertaining ride on the several systems now available for use in the US, Mexico, Europe, Middle East and Asia. We welcome you to a truly game-changing experience in innovation and creativity, with mobility powered by renewable resources in the near future.

Aurora Lindstrom, Project Manager Sweden, Ron Swenson INIST Director, Ingmar Andreasson Program Committee Chairman

Opportunities for presenters

The conference provides the prime opportunity for reaching a leading professional group of individuals and institutions in the Automated Transit Network community, and organizations involved in related development. All proceedings are recorded and distributed through INIST, the Podcar City website, and YouTube. The material gets considerable attention with many downloads every year. The conference program will address the role of podcars and automated transit networks ("ATN") in multimodal shared mobility; and the interplay between mobility, energy, cityscape and livability. We invite you to submit an abstract for a paper, poster and/or presentation by April 30.

Please see www.podcarcity.org for more information.

STUDENTS INNOVATING SOLAR TRANSPORTATION

The International Institute of Sustainable Transportation ("INIST") is fostering the development of Solar Skyways — automated transportation networks powered 100% by solar energy. A continuous solar photovoltaic array 2 to 4 meters wide on top of the system's elevated guideway provides sufficient energy to transport 20,000 or more passengers per day depending on system size. Of course the majority of travel always takes place while the sun is shining, so combined with electrical grid access and state of the art energy storage solutions, the system will be operational and solar powered 24 hours a day all year long (cont. on page 2-3)



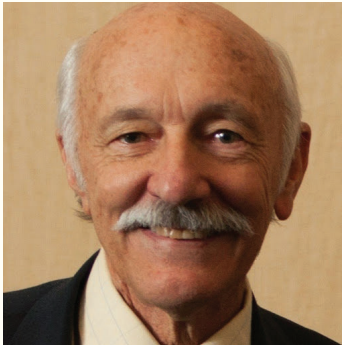
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Ron Swenson

Director, INIST



Why solar transportation?

Electricity is much more efficient for transportation - electrons are by nature "travelers" and so is sunlight. By using our most abundant energy source, we optimize the use of energy to a level way beyond fossil fuels and battery-operated cars. A dedicated track has the huge advantage of supporting the vehicle and the solar installation — providing all the energy needed without carrying heavy and inefficient energy storage "on-board."



Students innovating solar transportation

The International Institute of Sustainable Transportation ("INIST") is fostering the development of Solar Skyways — an automated transportation network powered 100% by solar energy. A continuous solar photovoltaic array 2 to 4 meters wide on top of the system's elevated guideway provides sufficient energy to achieve high ridership of 20,000 or more passengers per day. Of course, the majority of travel takes place while the sun is shining and, with industry-standard electrical grid interconnection, the system will be operational 24 hours a day all year long. Furthermore, the solar arrays will be supported by the guideway, reducing costs to grid parity and offering smart cities a great opportunity to promote clean energy.

No commercial company to date has completed the engineering of this unique combination of proven technologies (solar energy, elevated guideways, and automated transportation). Therefore, within its charitable educational mission, INIST has chosen to encourage the development of Solar Skyways through multi-disciplinary university engagement. With San José State University taking the lead in Silicon Valley, the initiative is gaining momentum in several US states (California, Illinois, Pennsylvania, North Carolina) and other countries (Sweden, Netherlands, México, France, Italy, Poland, China). Academic disciplines include Engineering, Computer Science, Urban Planning, Industrial Design, Architecture, Business, and more. Inspired initially by an animated video produced by the Nerds 'n Squares, a student team from Delft University in early 2012, the Spartan Superway team at San José State University is now in its third year of development.



For more information, please see www.superway.us

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In the first year 2012-2013, a 1:12 scale mechanical model was built and used to test sensors, electronics and computer software. In 2013-2014, the scale model and other model platforms were built to further develop electronics and software, and a full sized prototype incorporating the beam, wheel set ("bogie") and cabin was constructed and demonstrated at two high profile events — the Maker Faire at the San Mateo County Fairgrounds in May and Intersolar at the San Francisco Moscone Center in July.

Now in its third year, the Spartan Superway team has redesigned the 1:12 scale model to more closely resemble the functionality of the intended operational system. A steel guideway with a functioning switch is being built for the full scale prototype, which will include a new, more realistic cabin and an upgraded solar system. They will be presenting the results of this intense building program at Maker Faire, May 15-17. Join us there!

Working for the City of Santa Cruz in California, a team of architectural students at Southern Illinois University is designing three solar ATN stations, including a minimal station for a residential area, a medium sized station for a university stop, and a large podcar station integrated with an existing busy transit hub.

Student research teams have been working for several years with Modutram in México; two University teams are starting in Lyon, France — one tackling the business case, another doing engineering; and the solar powered Tubenet Transit System is being developed in China.

To become part of the game-changing transition from burning fossil fuels to better transportation solutions based on solar energy, join the Solar Skyways Challenge, and come to Silicon Valley to participate in the University Research Track at Podcar City 9 on November 4-6.



Dr. Burford Furman
Professor at SJSU



Buff is a professor in the Mechanical Engineering Department at San Jose State University, where he has been affiliated since 1994. He is also a registered professional engineer in the state of California in mechanical engineering since 1984. Prior to arriving at SJSU, he worked at IBM in San Jose in the development of disk drive actuators and spindle motors. He has also been a consultant in the optomechanical and laboratory automation industries. His areas of teaching and research are focused primarily in Automated Transit Networks, mechatronics, precision machine design, and engineering measurements.



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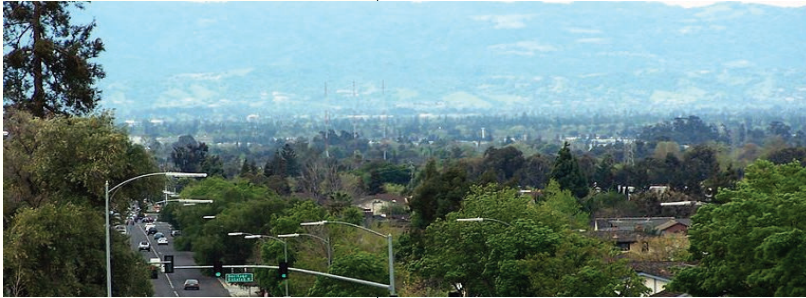


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PROJECT PERSPECTIVES - San Jose Airport and the MTI Report

By Larry Fabian, Trans.21

Silicon Valley, California



Silicon Valley is a nickname for the southern portion of the San Francisco Bay Area of Northern California in the United States. It is home to many of the world's largest high tech corporations, as well as thousands of tech startup companies. The region occupies roughly the same area as the Santa Clara Valley where it is centered, including San Jose and surrounding towns. The term originally referred to the region's large number of silicon chip innovators and manufacturers, but eventually came to refer to all high-tech businesses in the area, and is now generally used as a metonym for the American high-technology economic sector.

Silicon Valley is a leading hub for high-tech innovation and development, accounting for one-third of all of the venture capital investment in the United States. Geographically, Silicon Valley is generally thought to encompass all of the Santa Clara Valley, the southern San Francisco Peninsula, and southern portions of the East Bay.

Source: Wikipedia

This is the first in a series of profiles of project plans that include podcar or podcar-like mobility infrastructure. Owners and stakeholders need assurance that the investment of tens or hundreds of millions of dollars has sufficient payback. They must assess whether both current and future design will fit into their turf. Detailed studies have been made of a podcar installation connecting San Jose International Airport to rail transit and to serve

remote parking as well as off-airport commercial development. Future business centers and a soccer stadium are foreseen. The study did not estimate this, nor additional growth that would be induced by the project.

The ATN is designed to connect the airport to the existing LRT to the northeast and a future intermodal (Caltrain, BART, HSR and more) facility to the southwest. Six stations will serve airport parking lots. Others will serve existing and future airport-related development, including an international soccer stadium.



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Phasing: There are two one-way ATN loops — one connecting the terminal to an existing LRT station and the other to long-term parking and a Gateway complex. A two-way expansion goes to parking (and future stadium and Business Center) and a future BART/HSR station.

APM/PRT Dimensions: The configuration assumed 15-meter (50') radius as the smallest guideway curvature and 3.1-meter (10') guideway width including walkways. Maximum guideway gradient was taken as 10% upslope and 6% downslope. The recommended network comprises a total of 10.2km of guideways (with the two-way section to BART, this translates into 16.5 lane-km) and 10 stations, two of which will be of considerable size and complexity.

APM/PRT Cost:	\$537-909m capital;
O&M	\$11-14m/yr
Estimated Ridership:	2011 - 6000pax/d and 570/peak hour 2030 - 14,000pax/d and 1255/peak hour
ROI:	Revenue streams to be identified and quantified.

Implementation Status:

A City-sponsored application study by Arup and an ATN technology assessment by Aerospace were completed in 2012. Arup recently started a 6-month comparison of an alternative alignment. The City also has a design contract with INIST to envision a podcar system in an “urban village” in another part of San Jose.

San Jose Airport

Norman Y. Mineta San Jose International Airport[1] (IATA: SJC, ICAO: KSJC, FAA LID: SJC) is a city-owned public airport in San Jose, Santa Clara County,



California. It is named for San Jose native Norman Mineta, Transportation Secretary in the Cabinet of George W. Bush and Commerce Secretary in the Cabinet of Bill Clinton. The name also recognizes Mineta's service as a Councilman for, and Mayor of, San Jose. It is a U.S. Customs and Border Protection international port of entry. It is two miles northwest of Downtown San Jose near the intersections of U.S. Route 101, Interstate 880, and State Route 87. The dominant carrier is Southwest Airlines with Alaska Airlines as the second largest. The airport has free Wi-Fi in all terminals.

Source: Wikipedia

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Fast development in the world of

Personal rapid transit (PRT), also called podcar, is a public transport mode featuring small automated vehicles operating on a network of specially built guide ways. PRT is a type of automated guideway transit (AGT), a class of system which also includes larger vehicles all the way to small subway systems.

Podcar/ATN Technology

- * Public transportation
- * Separate guideway
- * Off-line stations
- * Elevated (mostly)
- * On Demand
- * Non-stop 24/7
- * 25-35 mph (currently)
- * Very low energy use
- * \$2-5 per trip
- * No congestion issues
- * High Capacity

PRT vehicles are sized for individual or small group travel, typically carrying no more than 3 to 6 passengers per vehicle. Guide ways are arranged in a network topology, with all stations located on sidings, and with frequent merge/diverge points. This allows for nonstop, point-to-point travel, bypassing all intermediate stations. The point-to-point service has been compared to a taxi or a horizontal lift (elevator).

As of July 2013, four PRT systems are operational: The world's oldest and most extensive PRT system is in Morgantown, West Virginia. It has been in continuous operation since 1975. Colloquially known merely as 'the PRT,' West Virginia University's system moves student and visitors alike to a number of popular destinations throughout the city. Since 2010 a 10-vehicle 2getthere system at Masdar City, UAE, and since 2011 a 21-vehicle Ultra PRT system at London Heathrow Airport. A 40-vehicle Vectus system with in-line stations officially opened in Suncheon, South Korea in April 2014 after a year of testing. Expansion of the Masdar system was cancelled just after the pilot scheme opened. Numerous other PRT systems have been proposed but not implemented, including many substantially larger than those now operating. (Source: Wikipedia)

Below: Vectus vehicle, design by Pininfarina



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Transportation Automation

An autonomous car also known as a driverless car, self-driving car and robotic car is an automated or autonomous vehicle capable of fulfilling the main transportation capabilities of a traditional car. As an autonomous vehicle, it is capable of sensing its environment and navigating without human input. Robotic cars exist mainly as prototypes and demonstration systems. As of 2014, the only self-driving vehicles that are commercially available are open-air shuttles for pedestrian zones that operate at 12.5 miles per hour (20.1 km/h).[5]

Autonomous vehicles sense their surroundings with such techniques as radar, lidar, GPS, and computer vision. Advanced control systems interpret sensory information to identify appropriate navigation paths, as well as obstacles and relevant signage. By definition, autonomous vehicles are capable of updating their maps based on sensory input, allowing the vehicles to keep track of their position even when conditions change or when they enter uncharted environments.

Some demonstrative systems, precursory to autonomous cars, date back to the 1920s and 30s. The first self-sufficient (and therefore, truly autonomous) cars appeared in the 1980s, with Carnegie Mellon University's Navlab and ALV projects in 1984 and Mercedes-Benz and Bundeswehr University Munich's EUREKA Prometheus Project in 1987. Since then, numerous major companies and research organizations have developed working prototype autonomous vehicles. (Source: Wikipedia)

Below: Google autonomous car



Self Driving Car Technology

- * Private transportation
- * Uses roads
- * Can park anywhere
- * On ground
- * On Demand
- * Charging required
- * 10-55 mph (currently)
- * High energy use
- * \$2-5 per trip
- * Caught in congestion
- * Low capacity

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City of Mountain View



Mountain View is a city in Santa Clara County, in the San Francisco Bay Area of California. It is named for its views of the Santa Cruz Mountains. From its origins as a stagecoach stop, it grew to a model suburb with a pedestrian-friendly downtown, free wi-fi, and a population of 74,066. The city borders on Moffett Federal Airfield and the San Francisco Bay.

Situated in Silicon Valley, Mountain View is home to many high technology companies. In 1956, Shockley Semiconductor Laboratory, the first company to develop silicon semiconductor devices in what came to be known as Silicon Valley, was established in the city by William Shockley. Today, many of the largest technology companies in the world are headquartered in the city, including Google, Mozilla Foundation, Symantec, Symphony Teleca and Intuit. The original Byte Shop, computer store was opened at 1063, El Camino Real, Mt. View by Paul Terrell and the first 50 Apple I Computers were delivered and sold from that location. The city's tax base helps support public education. Local transportation networks integrate the city closely with the neighboring cities of Palo Alto, Los Altos, and Sunnyvale.

Source: Wikipedia

CONFERENCE VENUE AND REGISTRATION

The conference will be held November 4-6, 2015 at the Center for Performing Arts in downtown Mountain View. The registration link is located at www.podcarcity.org. We will also provide links for hotels and motels, transportation information, travel packages for groups and much more.

Contact: info@podcarcity.org

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