

**Solar Transportation**  
***on the critical path***  
***to 100% Renewables***



**ED13B**  
**2016 Fall Meeting**  
**San Francisco**

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**S P A R T A N**  
**S U P E R W A Y**

# Abstract

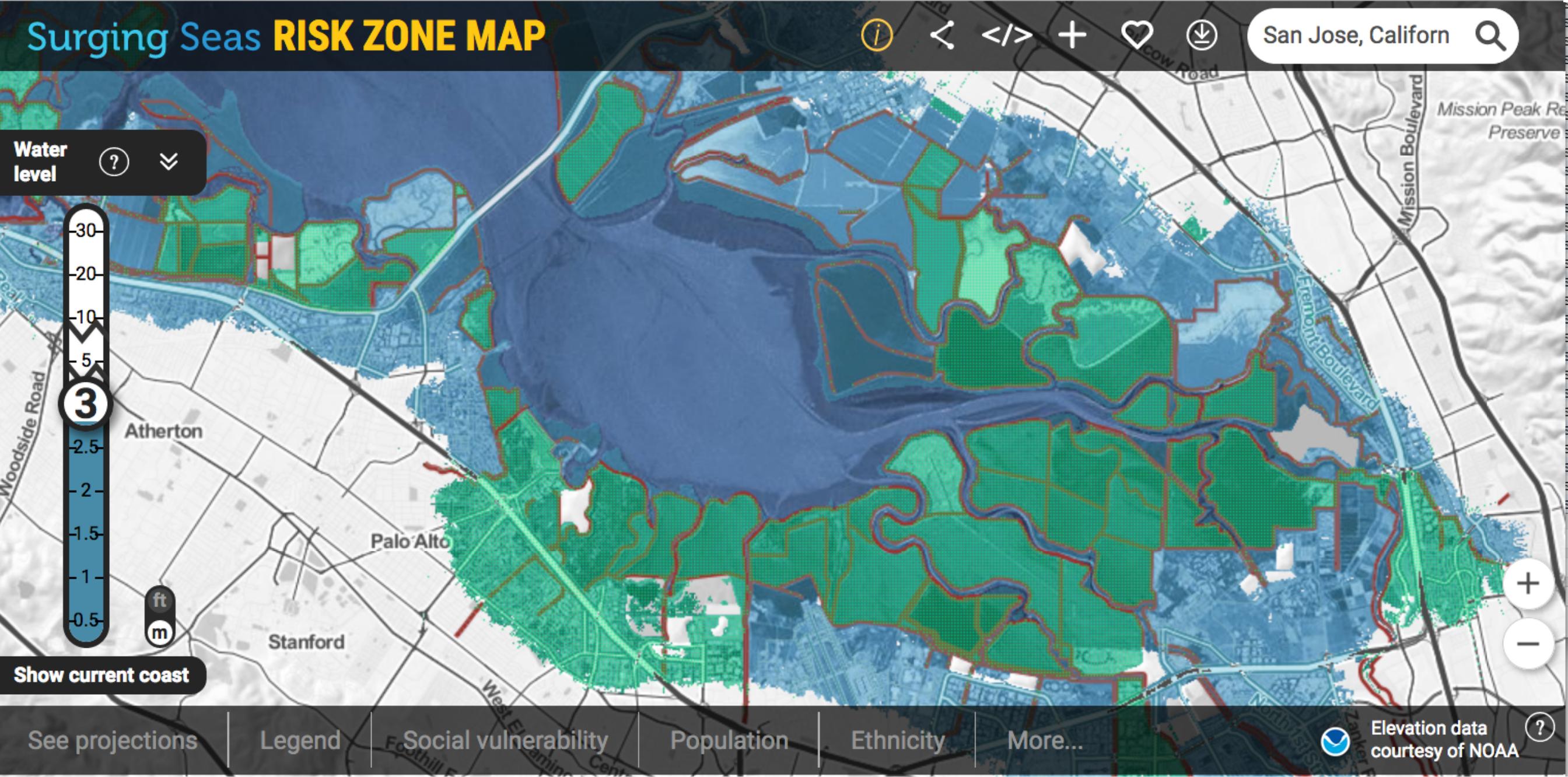
The path from hydrocarbons and climate change to 100% renewable energy requires a complete transformation of human mobility systems—from oil to solar electricity, and away from personal cars to shared transit. Electric (and autonomous) personal vehicles cannot scale rapidly enough to address CO2 increase and resource depletion. While atmospheric science can characterize the challenge, design science aimed at order of magnitude improvements in energy and resource consumption is needed to achieve carbon free transit that can scale rapidly for urban mobility.

An NGO and University engineering team collaboration has led to a multi-disciplinary international program creating prototypes and test tracks to demonstrate the efficacy and economics of solar-powered, automated, non-stop origin-to-destination, elevated on-demand transit systems. With their aptitude for innovation, students in the Solar Skyways challenge have convened from several countries in order to propel development and overcome resistance from the automotive industry incumbency. Innovation has been occurring in lesser developed countries as well as in the industrialized world.

An online curriculum has been developed and will be presented to encourage international participation and rapid acceleration for sustainable zero-net-carbon transportation.



# Climate change will change Silicon Valley



**If Silicon Valley were perfect, with zero emissions, what good would it do?**

$$\frac{3,000,000}{7,400,000,000} = 0.04\%$$

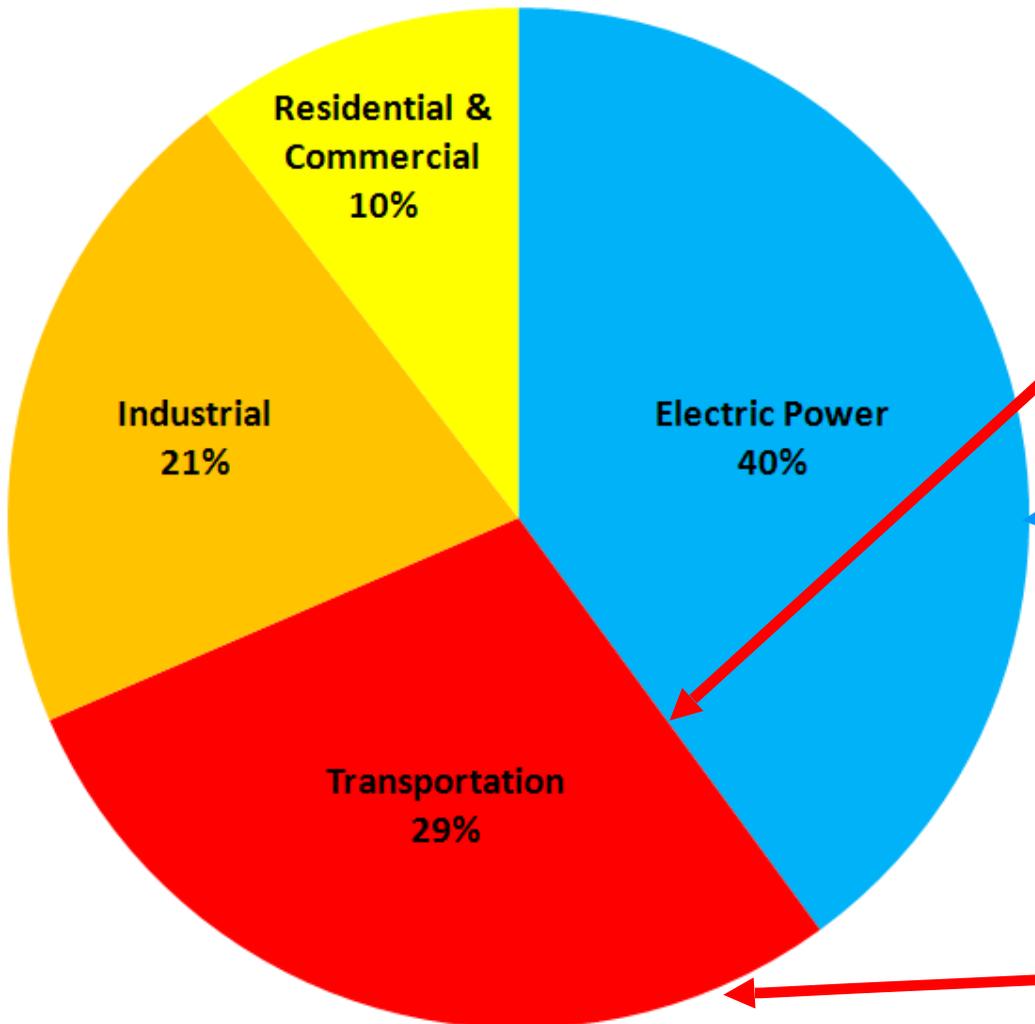
**If Techies are serious about survival, their only option is to export zero emission solutions**

# COP21 set the stage for the clean energy revolution



# 100% Renewable needs 100% Renewable *Transport*

US Energy Consumption  
by Sector

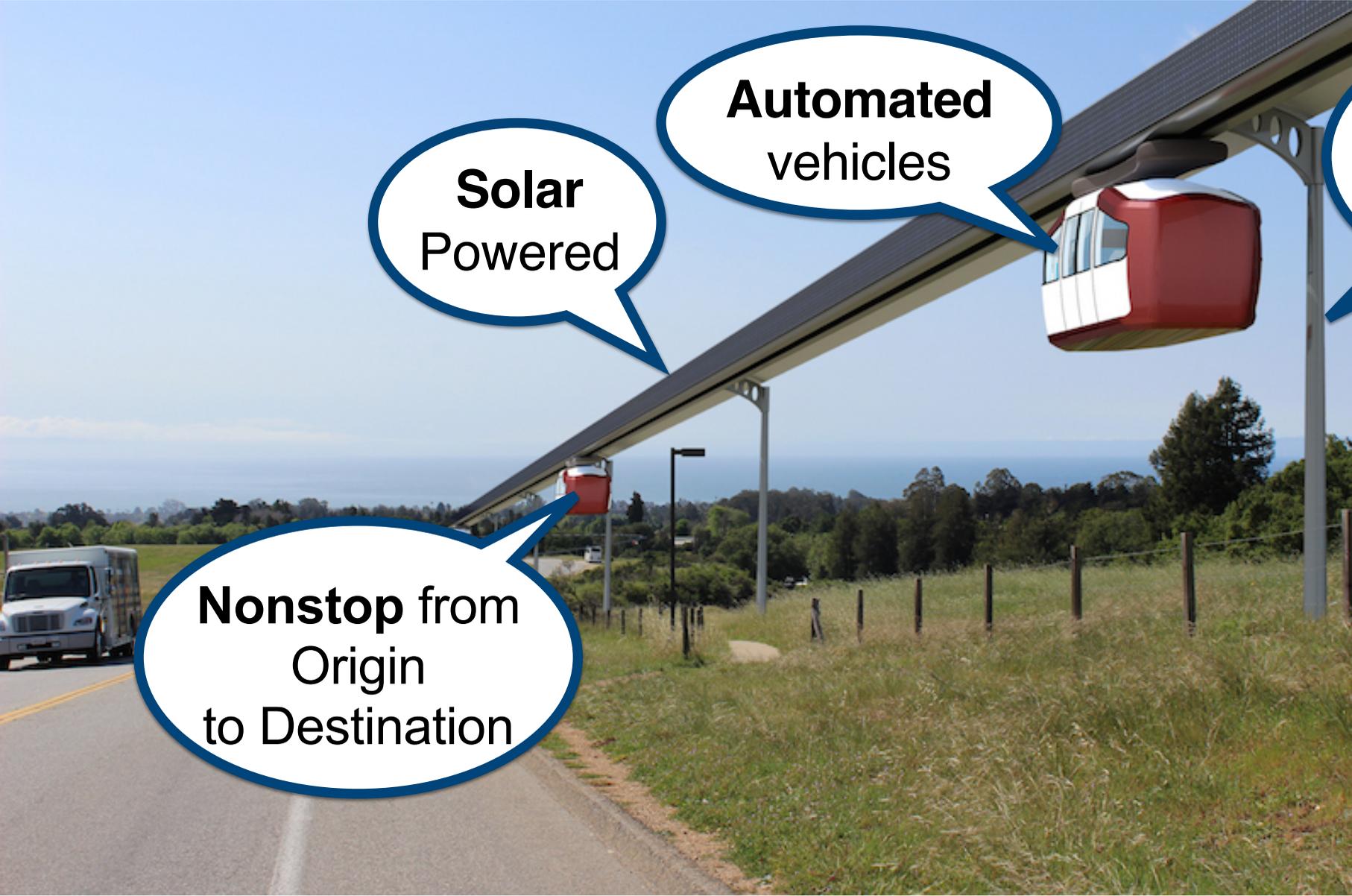


Solar & Wind  
can handle electricity  
demand

*The question is how to  
handle transportation  
with solar*

Data source: US Energy Information Administration 2007

# Solar Automated Nonstop Elevated Transportation Networks (“Podcars”) are unique & robust



**Solar  
Powered**

**Automated  
vehicles**

**Elevated**

**S A N E**

**Nonstop from  
Origin  
to Destination**

**Solar mobility offers cities a powerful tool to mitigate climate change and build a viable future**



# The Spartan Superway has completed 4 years of R&D



# The Spartan Superway is now in its 5th year



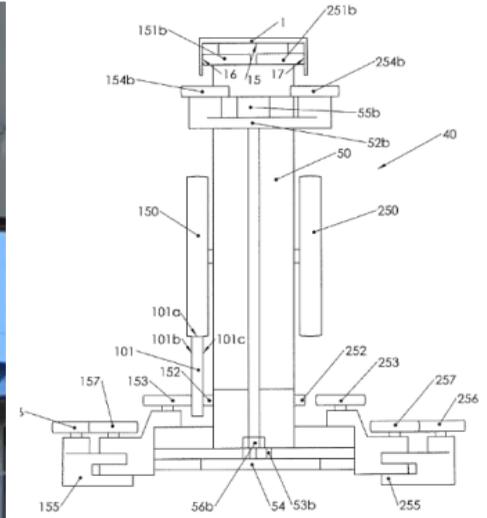
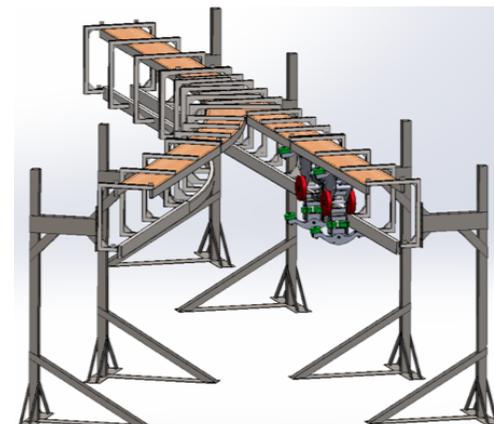
# The Curriculum is simple

**Design**

**Build**

**Test**

# Students and interns have designed, built and tested key elements of Solar Podcar Systems



# We have a well-equipped workshop



# A key curriculum tool is rapid, hi-profile publishing



Home | Spartan Superway Home | Solar Skyways Network | Photos | Solar | Simulation and Modeling | GoFundMe

Our Sponsors | High-Tech-nique | Universities | Library | Background Reading | Connect! 

## 2016-2017 Team Blogs

-  **Vehicle Controls Team**  
3 days ago
-  **Track fabrication and process team**  
3 days ago
-  **Half-Scale Mechatronics Team**  
4 days ago
- 

Wednesday, September 7, 2016

## Spartan Superway: Sub-Team Project Definitions & Fall / Spring 16/17 Deliverables

### Deliverables for all sub-teams during the Fall 2016 semester:

- All sub-teams must be able to design, rapid-prototype (out of MDF wood, foam-core, etc), test, and then prototype (metal, aluminum, etc.), and test a model within the Fall 2016 semester. (This may differ for the Full-Scale Test Track sub-team; we will keep you updated.) The Fall 2016 semester is extremely important for working out the flaws that may come from initial designs, which will help all

## Upcoming Events

- 2016-11-17 USDOT T3e Webinar featuring Spartan Superway
- 2017-04-08 Paseo Public Prototyping Challenge and Festival
- 2017-05-18 Maker Faire 

## 2016-2017 Blogs

-  **Claude Michel**  
2 days ago

# An extensive library is also available

## INIST Library



Root

File name ▲	Size ▼	Last changed ▼
..		
2016-09-02.Belarbi etal.French team 2016.Spartan Superway.pdf	7.33 MB	02.09.16 11:27:27
2016-08-25.Swenson.Solarevolution.Energies-09-00676.pdf	5.9 MB	25.08.16 06:35:59
2016-08-10.Olivera etal.Civil Team Summer 2016.Spartan Superway.pptx	42.15 MB	03.09.16 10:04:25
2016-08-10.Civil Environmental Engineering Team.A Solar Powered Automated Transportation System 2016.Spartan Superway.pdf	3.56 MB	09.08.16 10:36:02
2016-07-22.Cahill Símon Sanchez.Summer 2016 Bogie Team Final Report.pdf	3.05 MB	08.08.16 16:12:49
2016-07-22.Cahill Pereira Vinícius Símon.The Bogie Sub-Team.pptx	40.31 MB	08.08.16 16:07:50
2016-07-12.Gendler.A study on the effects of shadow impingement on solar powered transportation.ASES.pdf	2.76 MB	03.09.16 16:22:24
2016-07-12.Furman.The Spartan Superway A Solar Powered ATN.ASES Solar 2016.pdf	1.63 MB	01.09.16 15:15:32
2016-07-12.Branco etal.Case Study Solar Power Installation for ATN San José.ASES Solar 2016.pdf	1.18 MB	01.09.16 15:15:20
2016-05-25.Alvarez (ed).Spartan Superway Spring 2016 Report.SJSU ME 195B.pdf	18.16 MB	23.06.16 22:41:39
2016-05-13.Valenzuela et al.Spring 2016 Final Presentation.SJSU ME195B.pptx	295.5 MB	14.05.16 09:16:32
2016-05-04.Swenson.Solarevolution More with Less.SJSU ME 195.pdf	35.52 MB	06.05.16 15:42:18
2016-05-04.Swenson.Reflections on the Solarevolution.doc	27 KB	06.05.16 16:06:35
2016-04-12.Vermont Kittle.Spartan Superway gets a little closer to reality.Spartan Daily.jpg	493.2 KB	17.04.16 15:29:23

**We offer 3 ways for you to get involved**

**2017 Urban International Design Contest**

**short  
course**

**Spartan  
Superway  
Summer  
Internships**

# URBAN INTERNATIONAL DESIGN CONTEST

The rapid development of autonomous vehicles for private and public transportation creates a completely new playground for urban development.

The UIDC series of workshops will combine the know-how and creativity of academics and students, city planners, transportation specialists, and developers to create and propose new urban designs, incorporating the new possibilities that can be achieved with elevated and road-based autonomous vehicles.

*Best practices for  
Automated Public Transit*



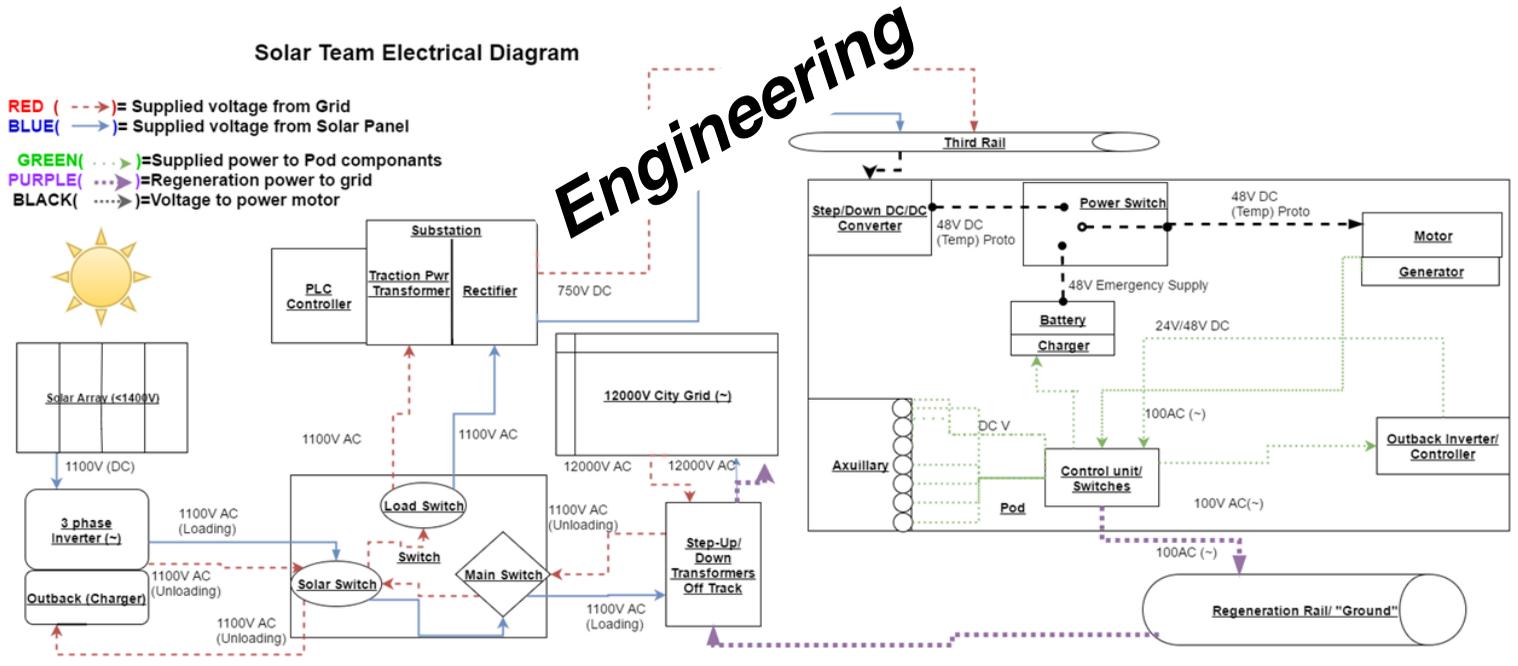
# The Urban International Design Contest will culminate at Podcar City 11 next November

<i>Winter &amp; Spring 2017</i>	<i>Build your local team</i>
<i>Summer 2017</i>	<i>Design internships in Silicon Valley</i>
<i>September &amp; October 2017</i>	<i>Local design workshops (charrettes)</i>
<i>November 2017</i>	<i>Compete at Podcar City 11</i>



# We provide curriculum & staff for 2 week courses

**short course**

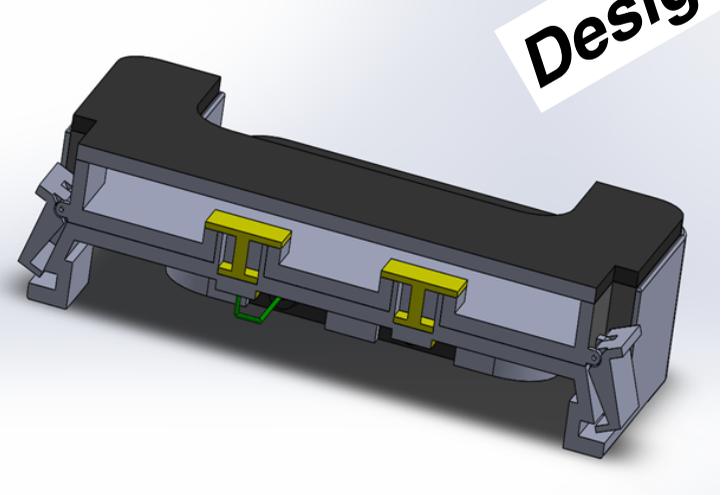


**Engineering**



**Urban Planning**

**Design**



**Architecture**



# Join the Spartan Superway Summer Internship Program, June–July 2017 in Silicon Valley

**Spartan Superway  
Summer  
Internships**



# Interns from Sweden have participated



UPPSALA  
UNIVERSITET



**li.U** LINKÖPING  
UNIVERSITY



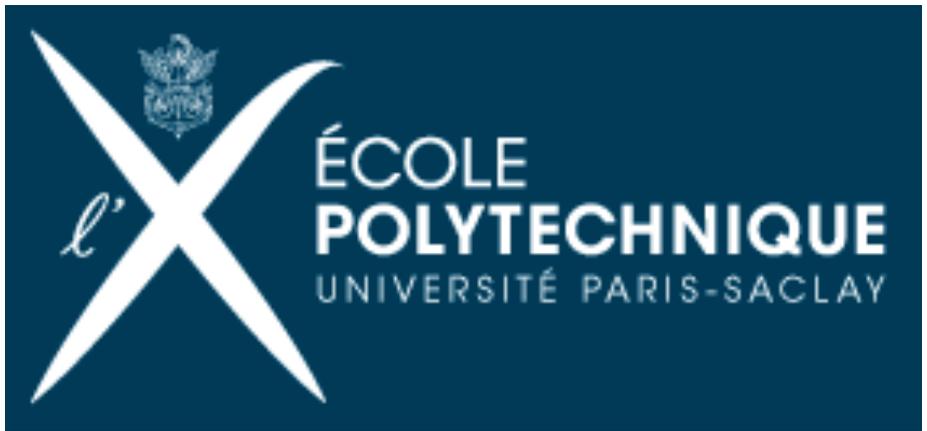
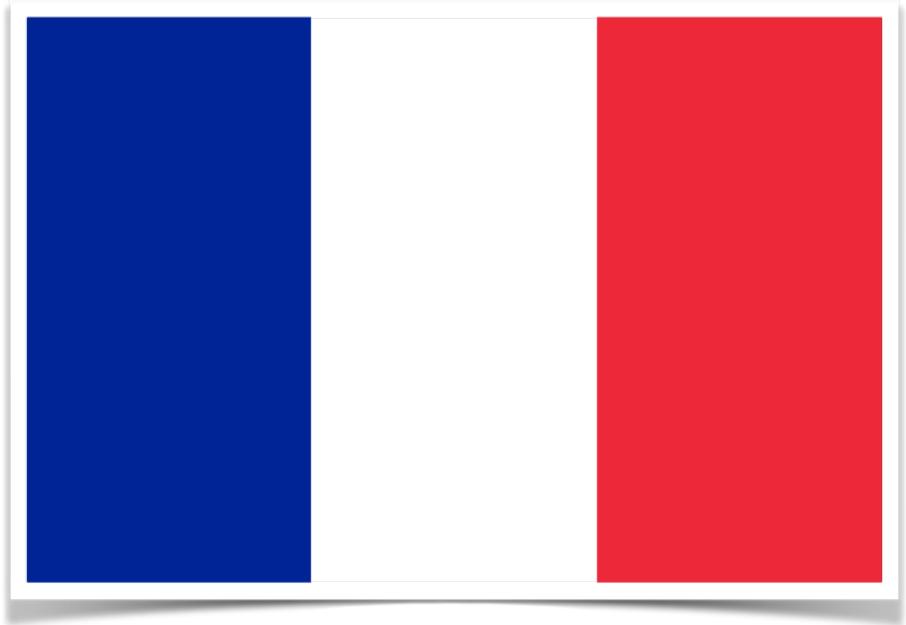
# Interns from South Korea have participated



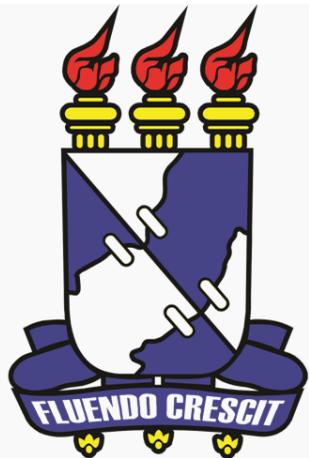
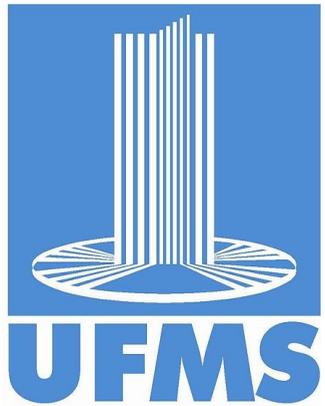
부산대학교  
PUSAN NATIONAL UNIVERSITY



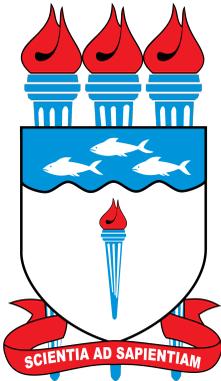
# Interns from France have participated



# Interns from Brazil have participated



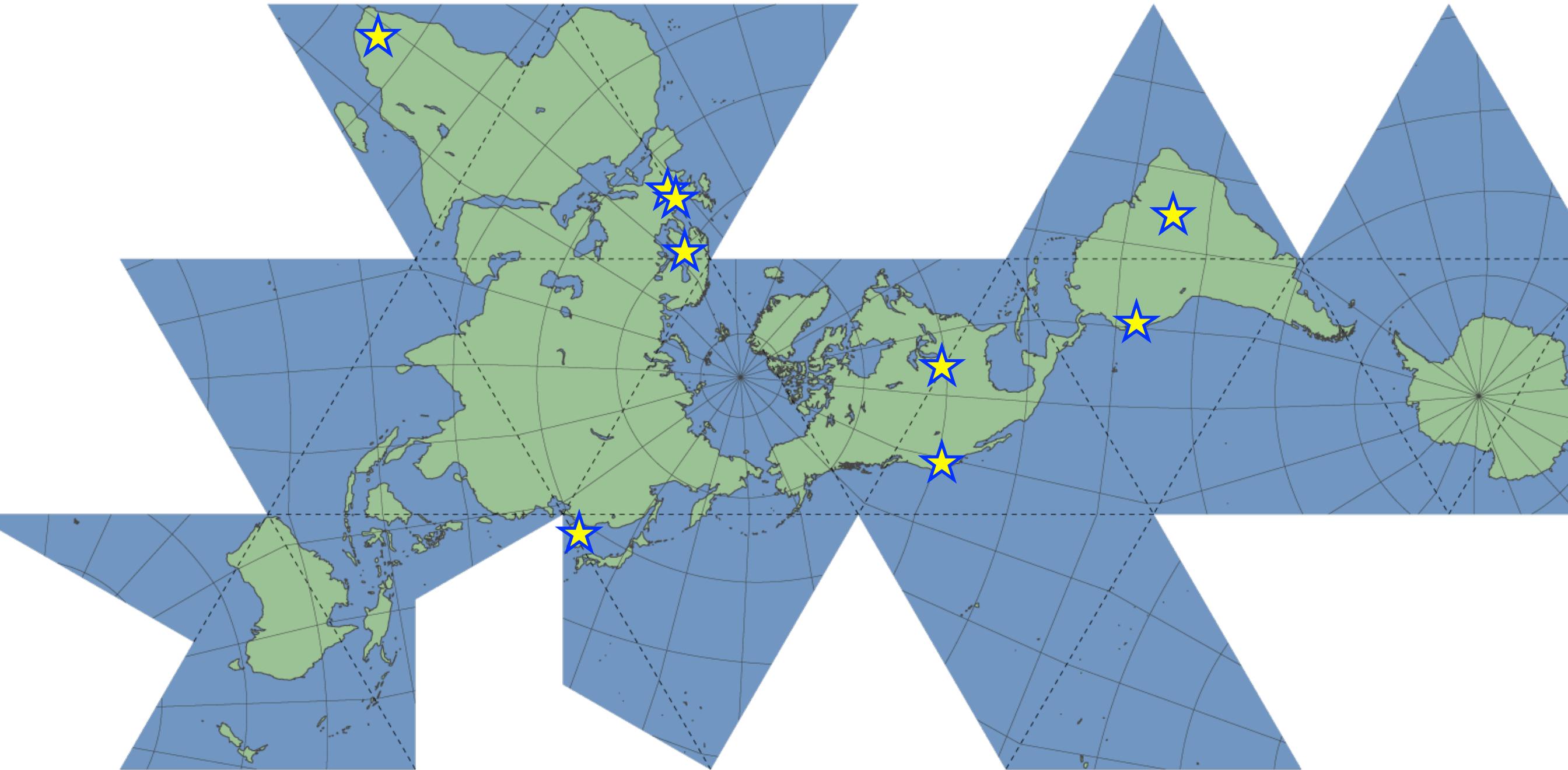
Universidade Federal de Sergipe



UNIVERSIDADE FEDERAL DE ALAGOAS



# The Solar Skyways Network is growing



For more information, go to [www.solarskyways.net](http://www.solarskyways.net)

# Solar Skyways Network



Bringing makers together from around the world to create solar transportation networks

- Home
- Podcar City
- Universities
- Spartan Superway
- Podcar
- INIST
- Library



Friday, November 4, 2016

## Announcing 2017 Spartan Superway Summer Workshop

The Solar Skyways Network is now reaching out to students from universities around the world to join us for the summer months of June and July (2017) as interns at the Spartan Superway Design Center in Silicon Valley. There you will collaborate with your peers from several countries to continue the multidisciplinary development of elevated solar powered public transit under the guidance of professors, mentors from industry, and guest experts. You will work in a well-equipped shop and will have support to obtain software and materials from a wide range of well-stocked suppliers and proficient specialty fabricators in Silicon Valley.

### Upcoming Events

- 2016-11-17 USDOT T3e Webinar featuring Spartan Superway
- 2017-04-08 Paseo Public Prototyping Challenge and Festival
- 2017-05-18 Maker Faire



### Solar Skyways

