

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

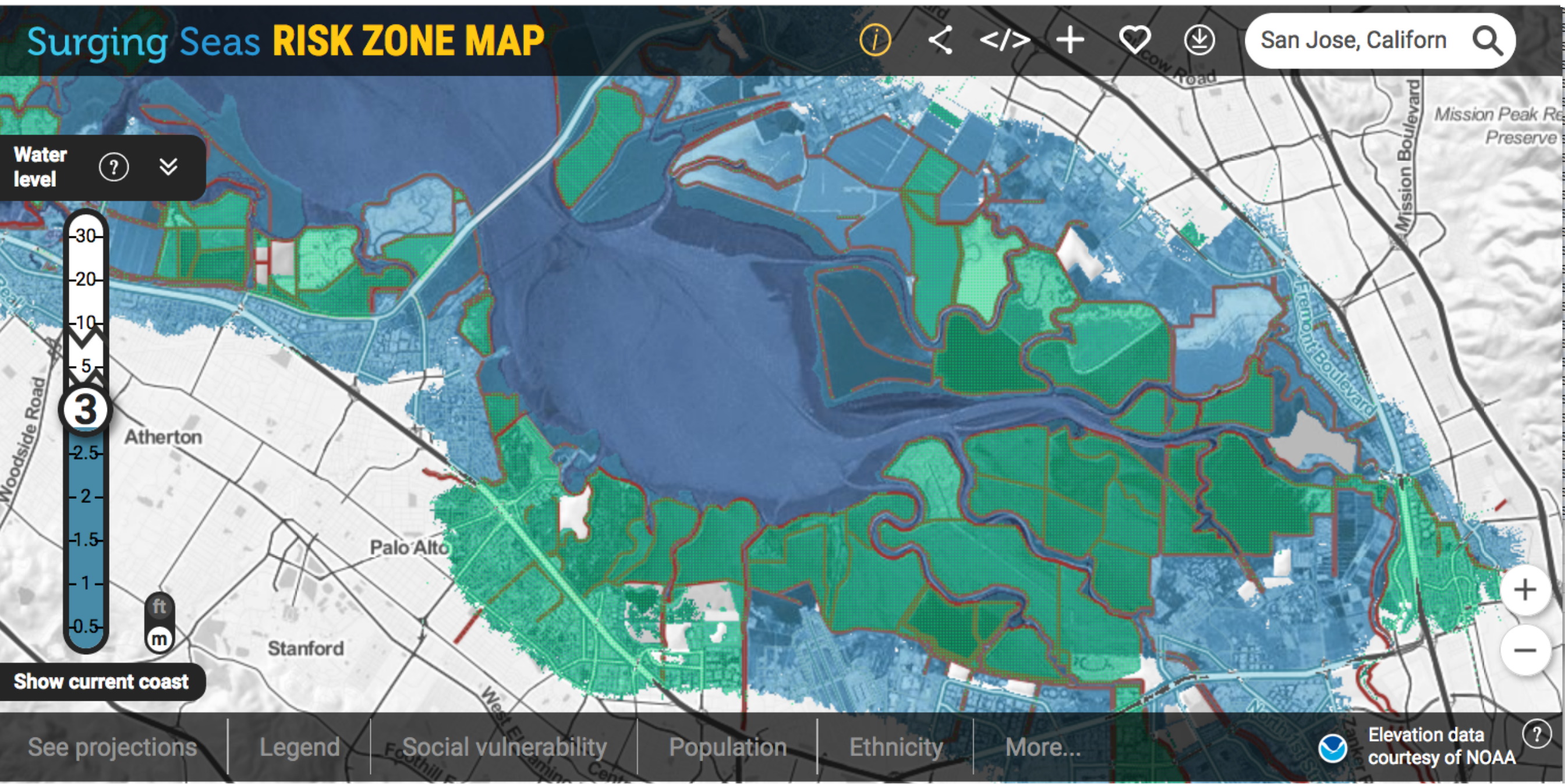
The path from hydrocarbons and climate change to 100% renewable energy requires a complete transformation of human mobility systems—from oil to solar electricity, and away from personal cars to shared transit. Electric (and autonomous) personal vehicles cannot scale rapidly enough to address CO2 increase 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?**

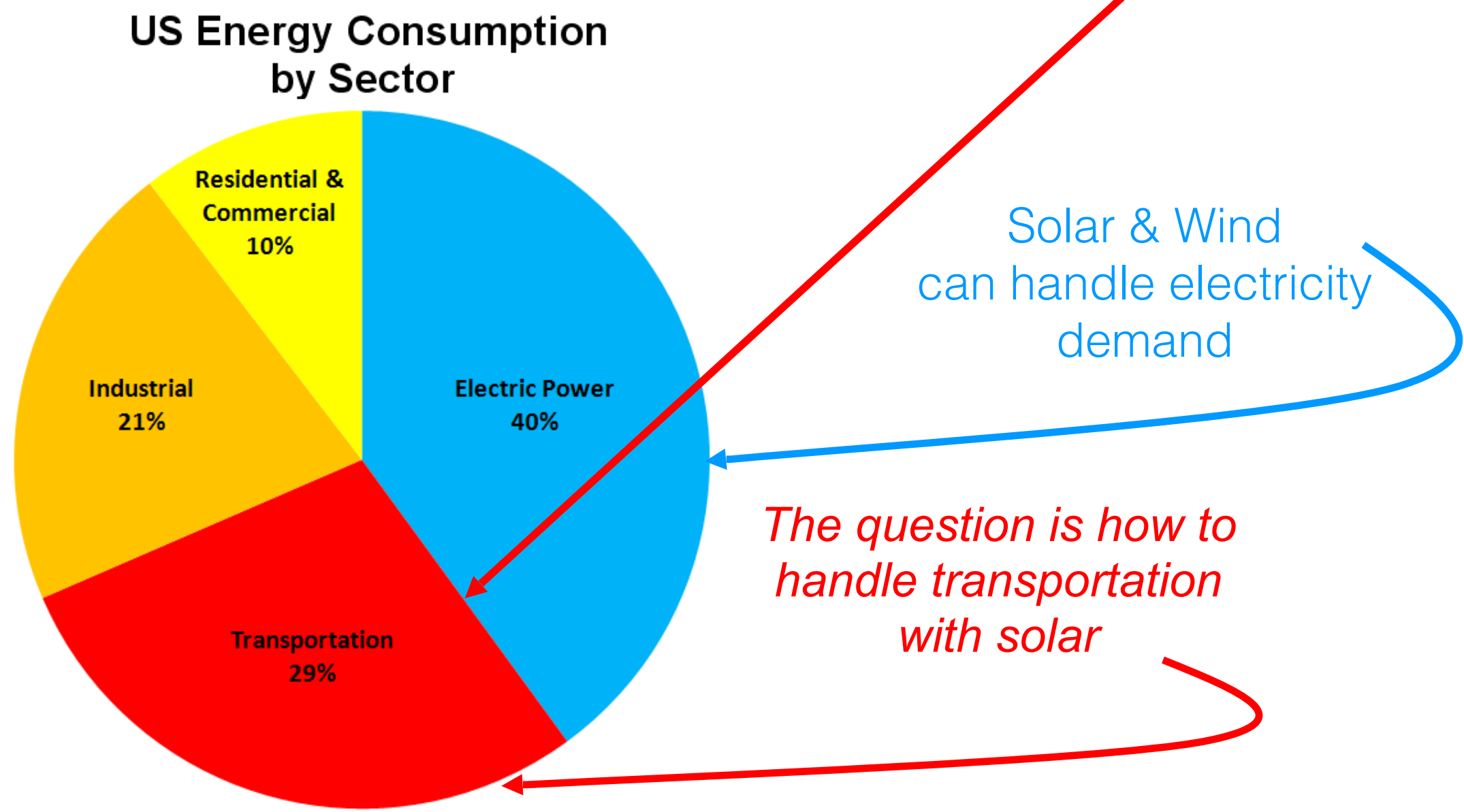
$$\frac{3,000,000}{7,400,000,000} = 0.04\%$$

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

COP21 set the stage for the clean energy revolution

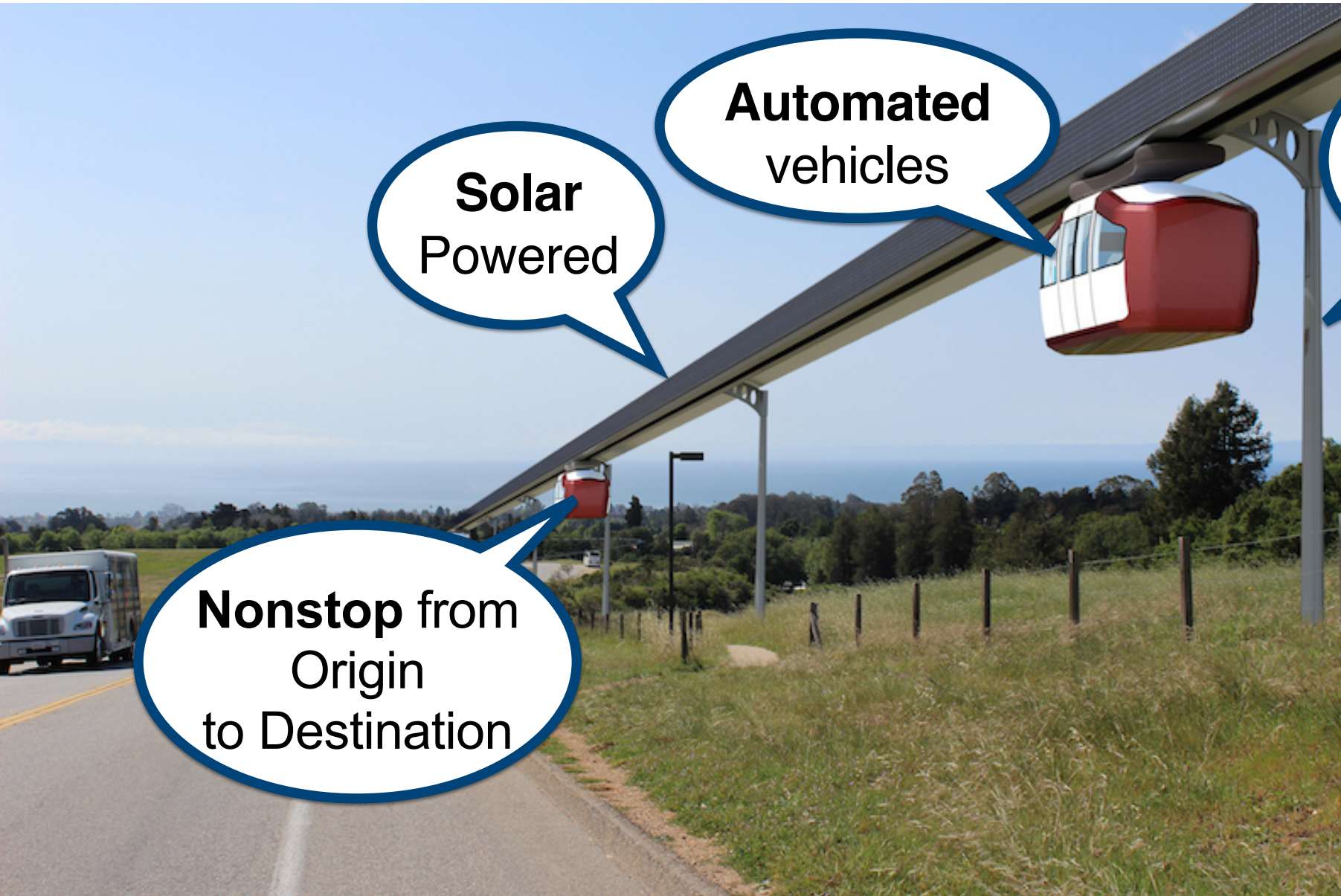


100% Renewable needs 100% Renewable *Transport*



Data source: US Energy Information Administration 2007

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



**Solar
Powered**

**Automated
vehicles**

Elevated

**Nonstop from
Origin
to Destination**

S A N E

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



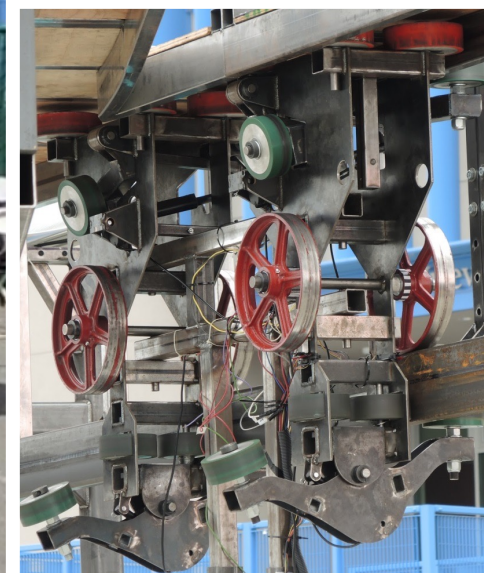
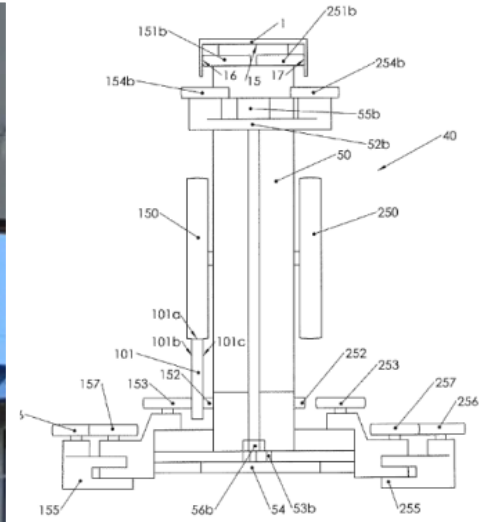
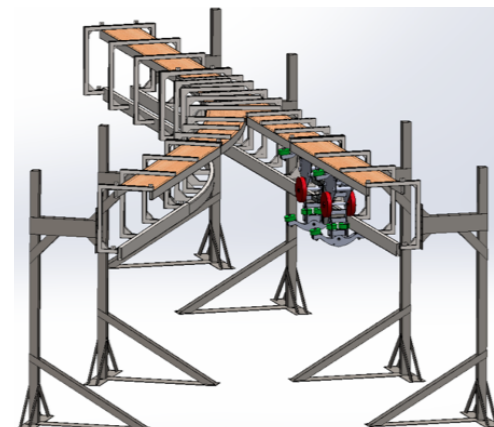
The Curriculum is simple

Design

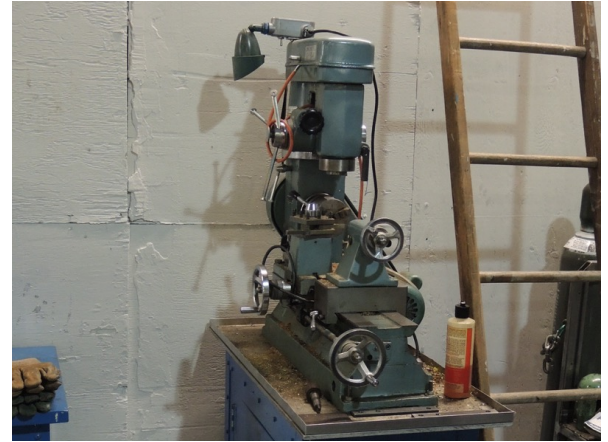
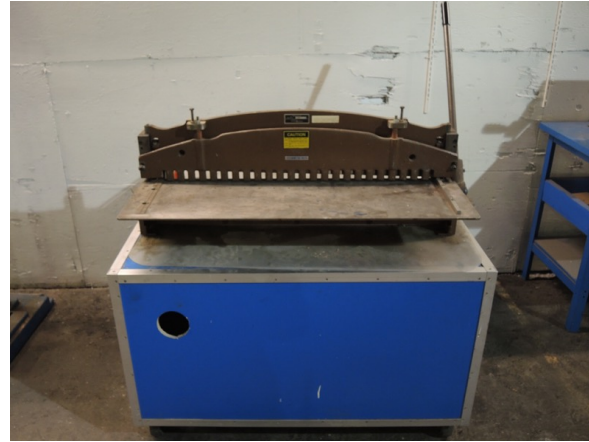
Build

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




SPARTAN SUPERWAY

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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*



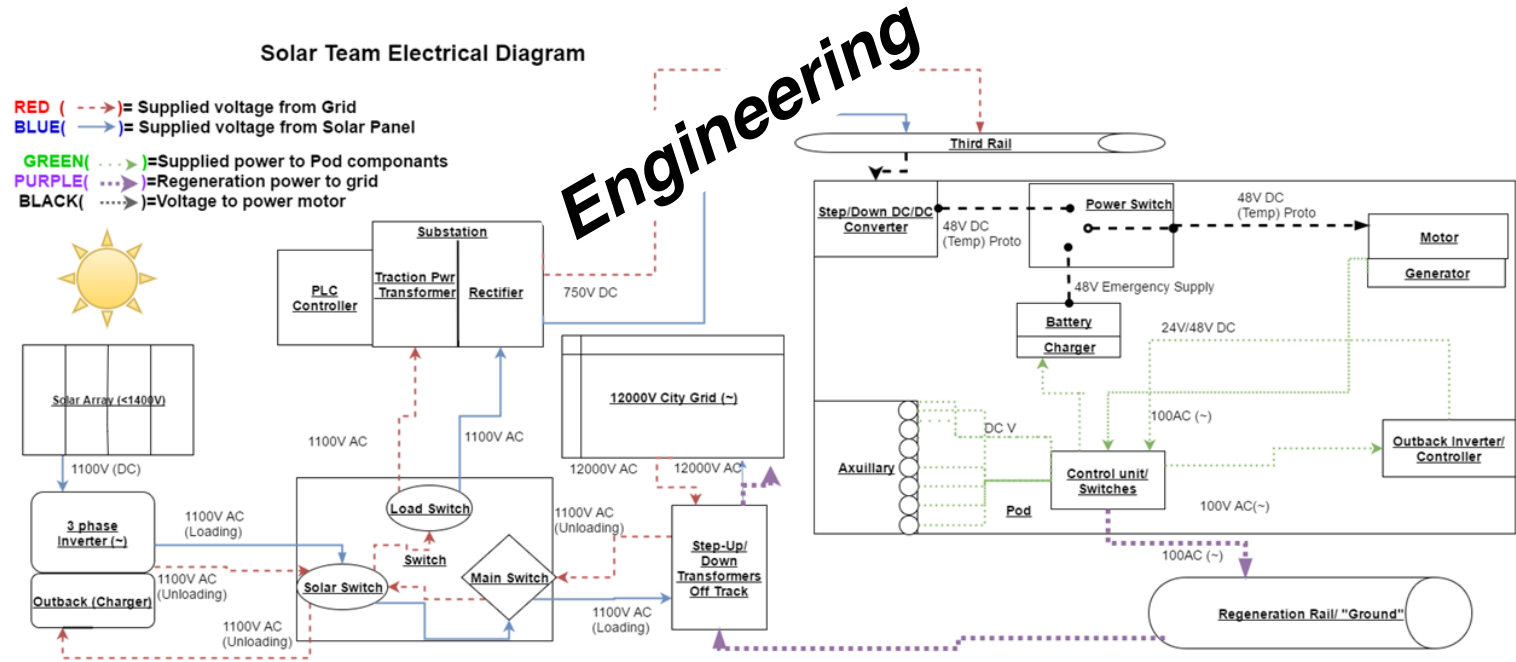
The Urban International Design Contest will culminate at Podcar City 11 next November

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

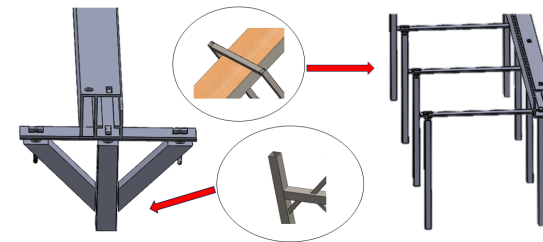


We provide curriculum & staff for 2 week courses

short
course

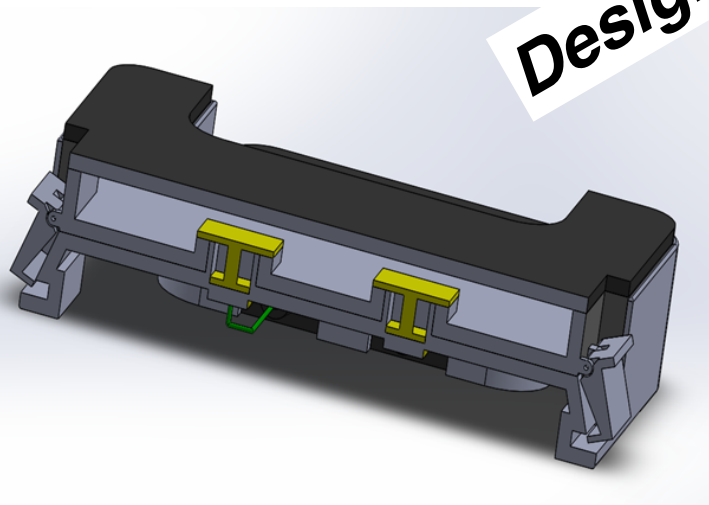


Engineering



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



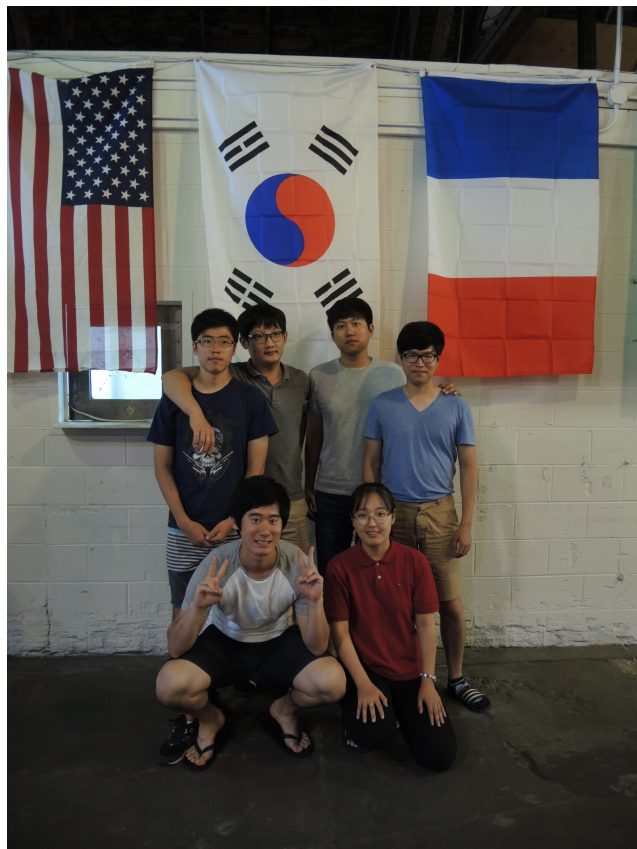
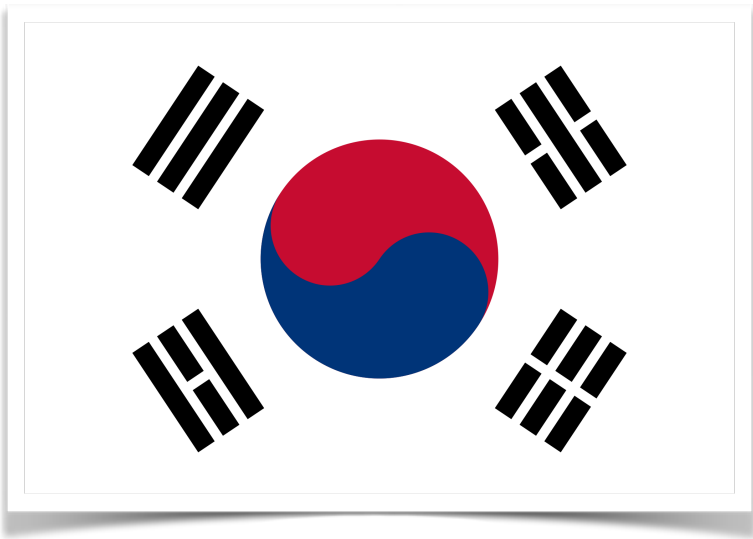
UPPSALA
UNIVERSITET



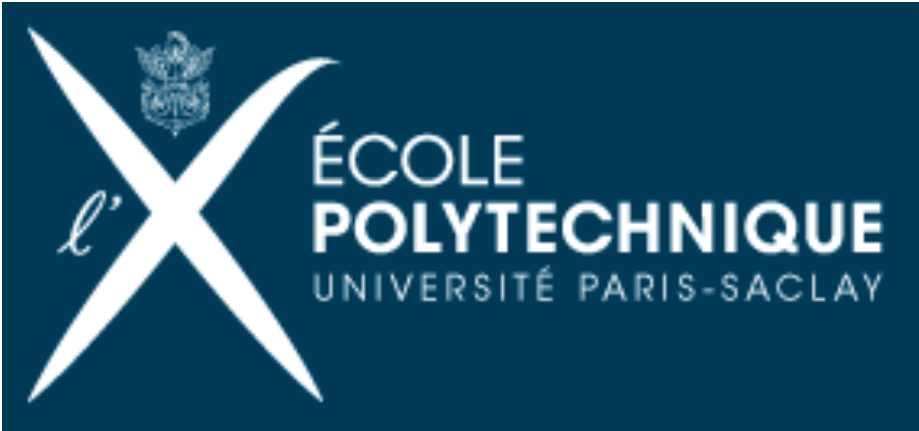
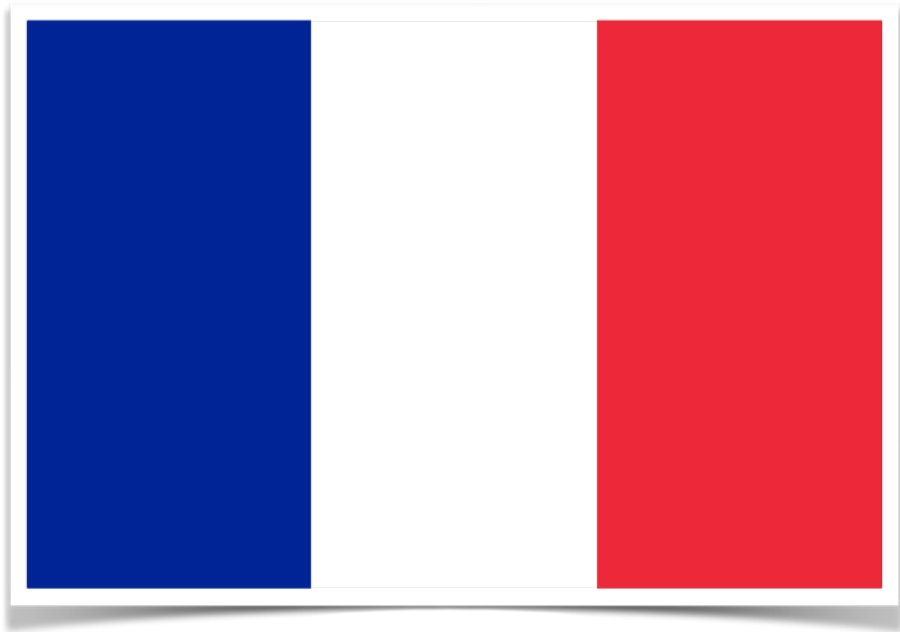
li.u LINKÖPING
UNIVERSITY



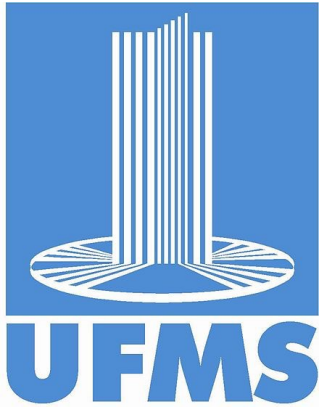
Interns from South Korea have participated



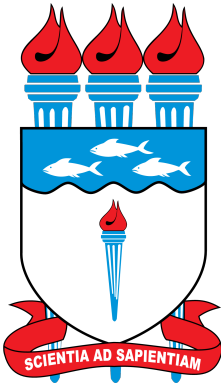
Interns from France have participated



Interns from Brazil have participated



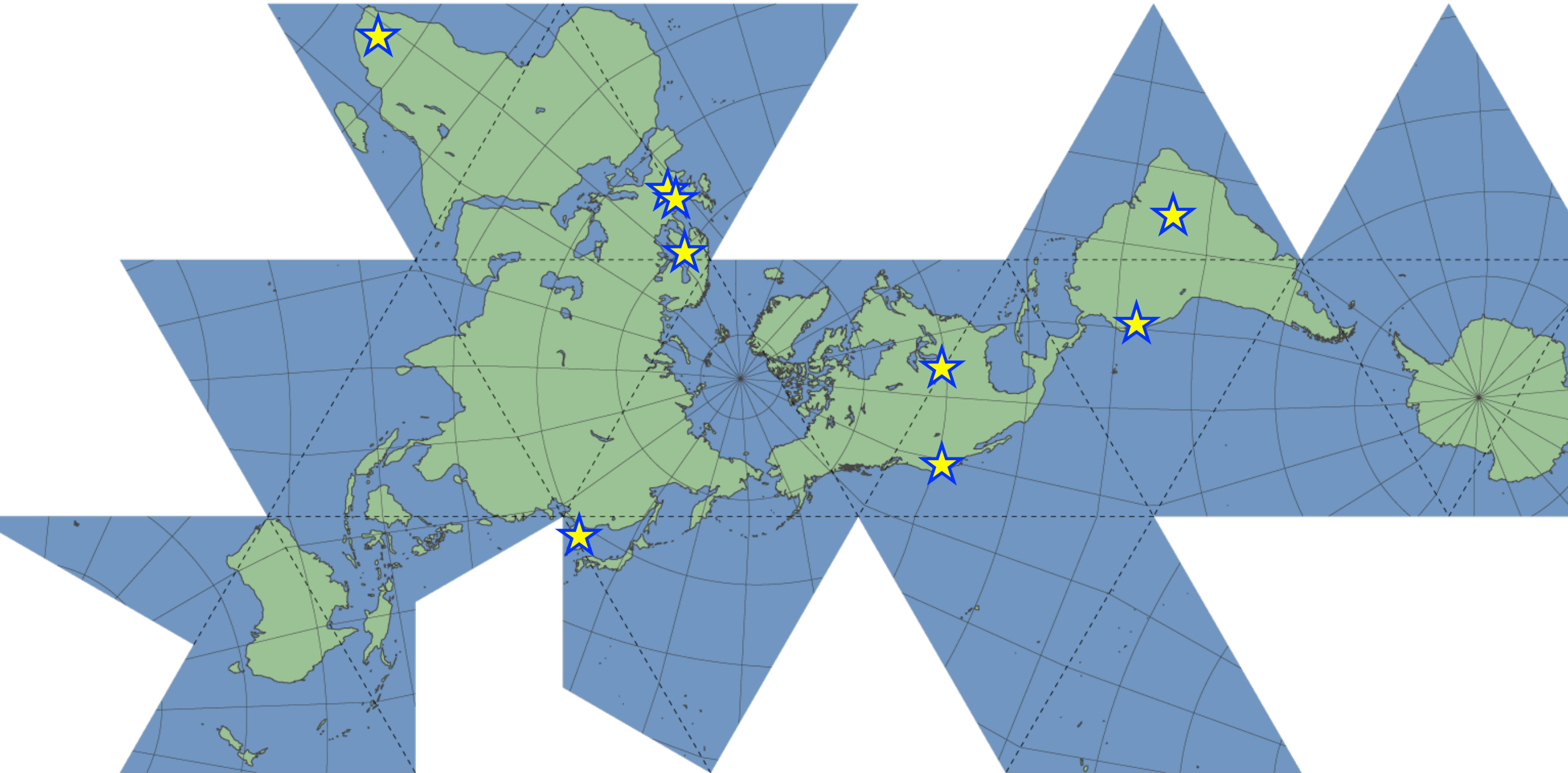
Universidade Federal de Sergipe



UNIVERSIDADE FEDERAL DE ALAGOAS



The Solar Skyways Network is growing



For more information, go to www.solarskyways.net

Solar Skyways Network



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

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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

