Welcome

May 2012

Where it all started

LIGHTYEAR


3
NunaS
TUDelft
NunaS


NISSAN


40
TU/e
STELLA LUX
ENEXIS
axians
PROPRIVE
VERMO
NXP
BRIDGESTONE
WORLD SOLAR CHALLENGE

2013

2015

2017

LIGHTYEAR

November 2015

Back to the drawing board

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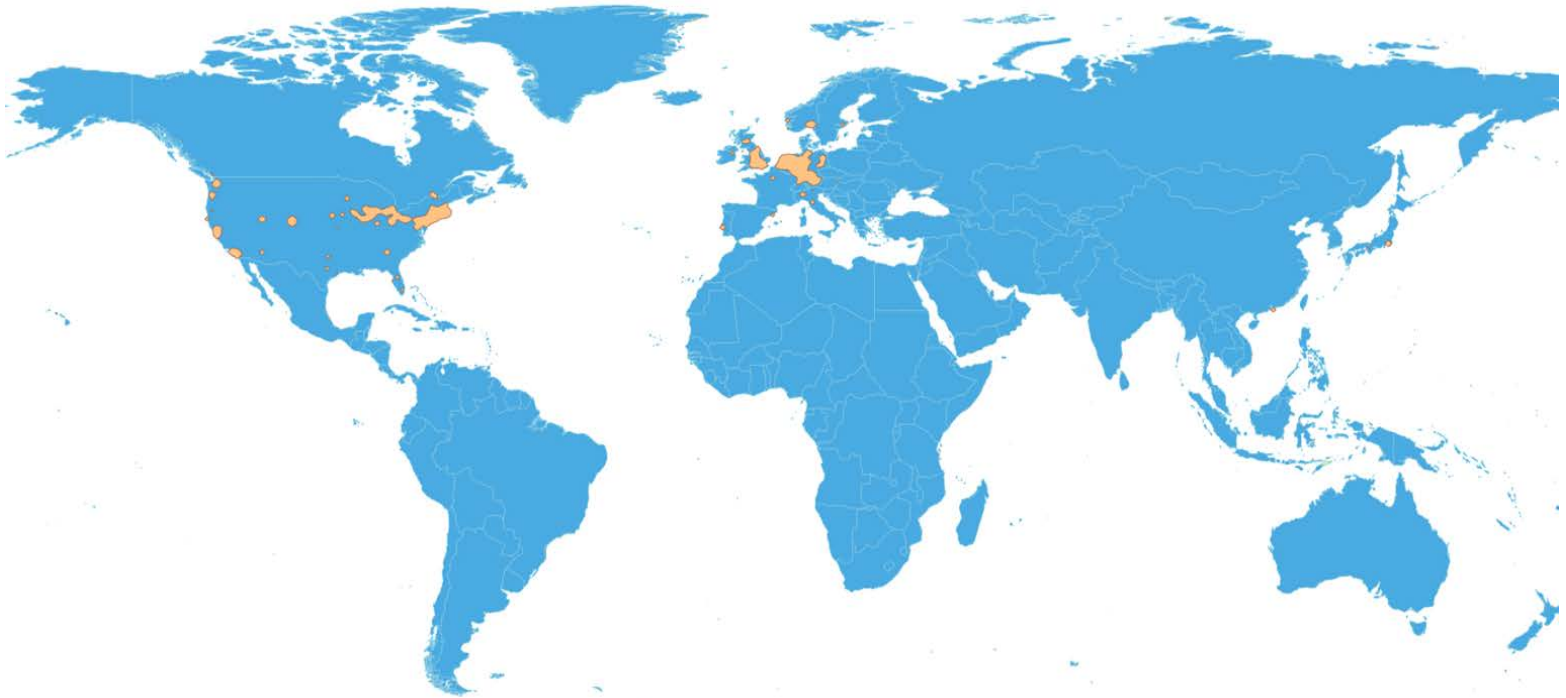
Problem: Only 3% of the world lives near charging points



September 2016

Solar cars can provide a solution. How do we reach mass market?

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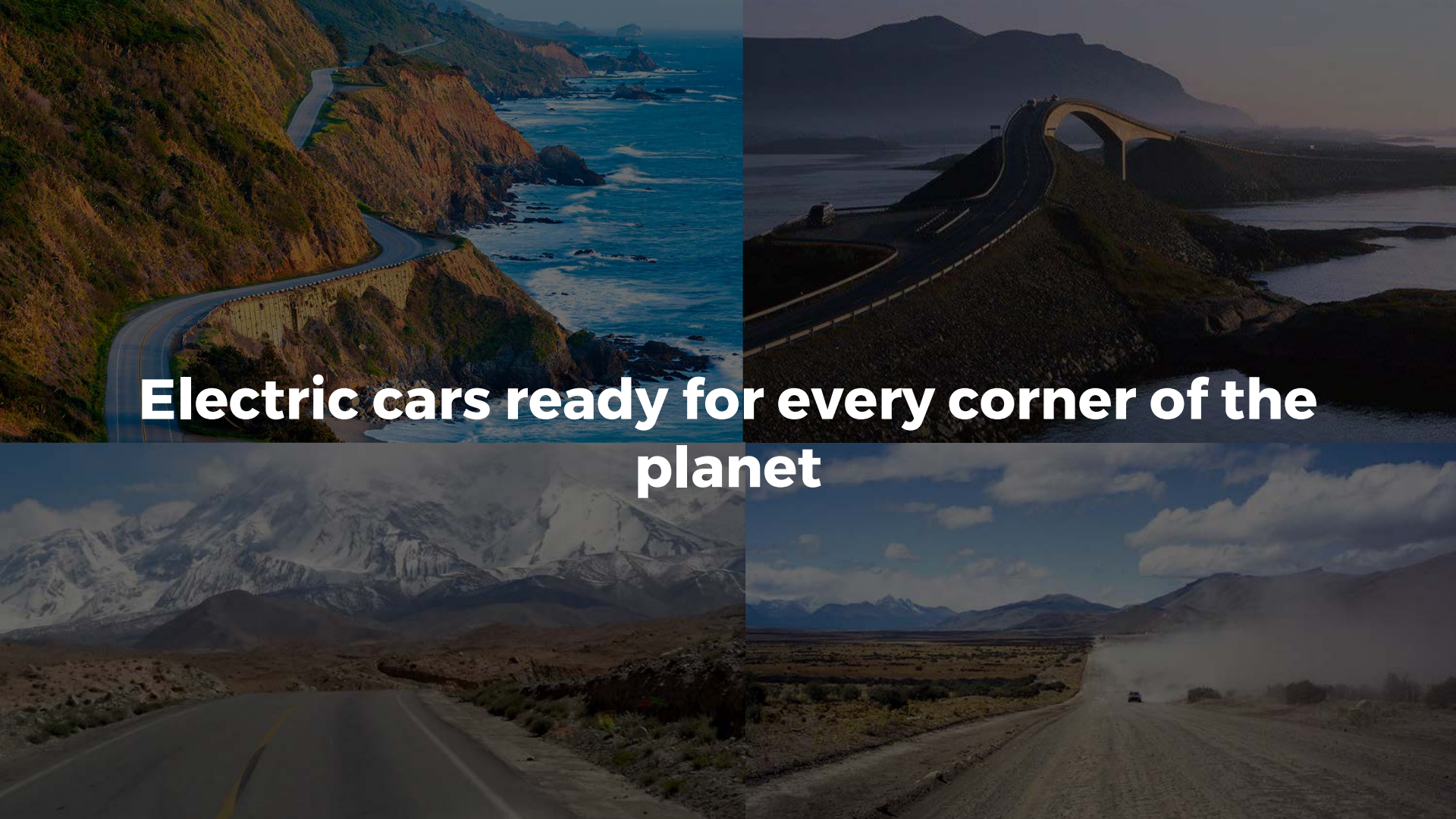

Electric cars ready for every corner of the planet

Charge anywhere

4 Wheel drive

Ground clearance

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Effortless Energy

Kilometres per year powered by the sun

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Step 1:
low volume, exclusive car

Introduce a reliable brand
Develop technology
Start production

Step 2:
High volume, TCO competitive

Set-up high volume production
Reach economies of scale
Enter mass-market

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400 km
Base model

800 km
Upgrade

€119.000 ex

Deposit regular edition: €19.000

Deposit Signature edition: €119.000

June 2017

The brand

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Public launch

5M+
Online press coverage

4M+
Dutch prime time news

150k+
YouTube views

The first pioneers

“I need a lot of driving range, finally a car that fits my needs”

“Great to see that this is finally happening”

1st
Signature edition sold

10
Regular models sold

58
In pipeline

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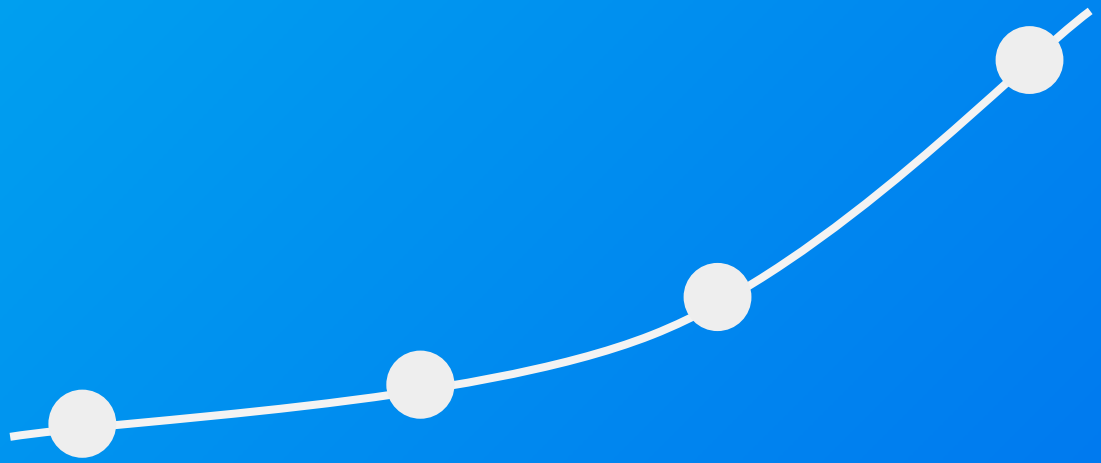
September 2017

Scaling

Roadmap



Design
June 2017

R&D milestones
March 2018

Prototype
End of 2018

10 Deliveries
End of 2019

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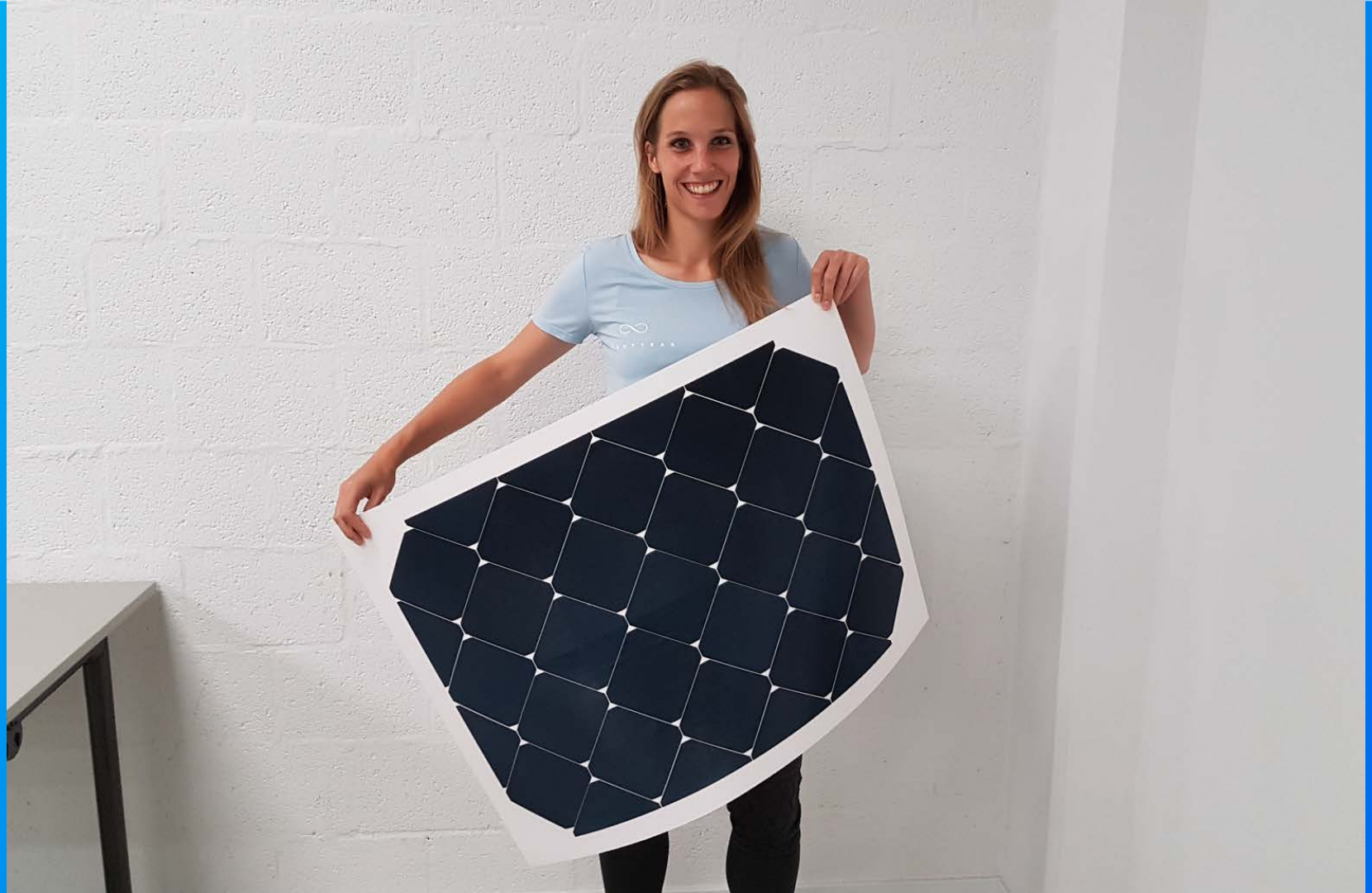
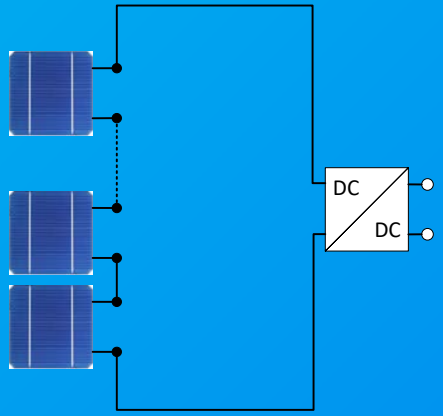
The PV System

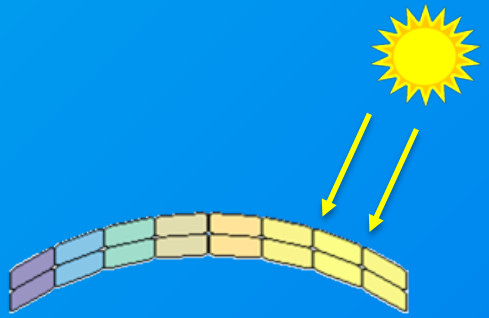
LIGHTYEAR





State-of-the-art for SEV:

- 3 strings of 125 cells
- The **weakest** cell determines the string current



Curved Surfaces and **Shadows** cause mismatches between cells

Therefore, Stella and Stella Lux had flat solar roofs

This limits **design freedom** and **aerodynamic** performance

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Grouping Efficiency: *ratio between the individual cell MPPs and the suboptimal group MPPs*

$$\eta_{group} = \frac{\sum P_{mpp,group}}{\sum P_{mpp,cell}}$$

$\eta_{group} = 98.6\ \%$

$\eta_{group} = 75\ \%$

Solution: Smaller groups, AKA Distributed Maximum Power Point Tracking

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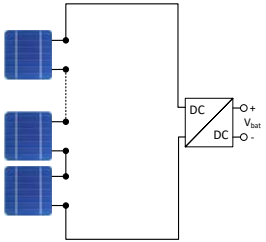
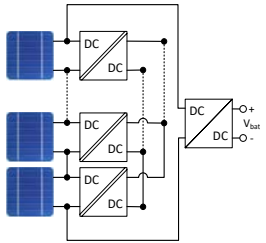
More Curvature



Old System	Grouping Efficiency		99%	80%	75%
	Conversion Efficiency		98%	98%	98%
	System Efficiency		**97%**	**79%**	**74%**
New System	Grouping Efficiency		100%	99%	98%
	Conversion Efficiency		96%	95%	94%
	System Efficiency		**96%**	**94%**	**92%**

-1

+15

+18

Thank you!

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