

“You Wouldn’t Download a Car”: The Car Industry, Intellectual Property, and Innovation Law

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RIKISHA TO RAPID TRANSIT

Urban Public Transport Systems
and Policy in Southeast Asia



Peter J. Rimmer

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Introduction

TOM HARDY

CHARLIZE THERON

MAD MAX FURY ROAD



George Monbiot

- Our roads are choked. We're on the verge of carmageddon. Cars for everyone was one of the most stupid promises politicians ever made. Cars are meant to meet a simple need: quick and efficient mobility. Observe an urban artery during the school run, or a trunk road on a bank holiday weekend, and ask yourself whether the current system meets that need. The vast expanse of road space, the massive investment in metal and fossil fuel, has delivered the...

George Monbiot

- ... freedom to sit fuming in a toxic cloud as your life ticks by. The primary aim has become snarled up with other, implicit objectives: the sense of autonomy, the desire for self-expression through the configuration of metal and plastic you drive, and the demand for profit by car manufacturers and fossil fuel producers whose lobbying keeps us on the road rather than moving along it.

Structure

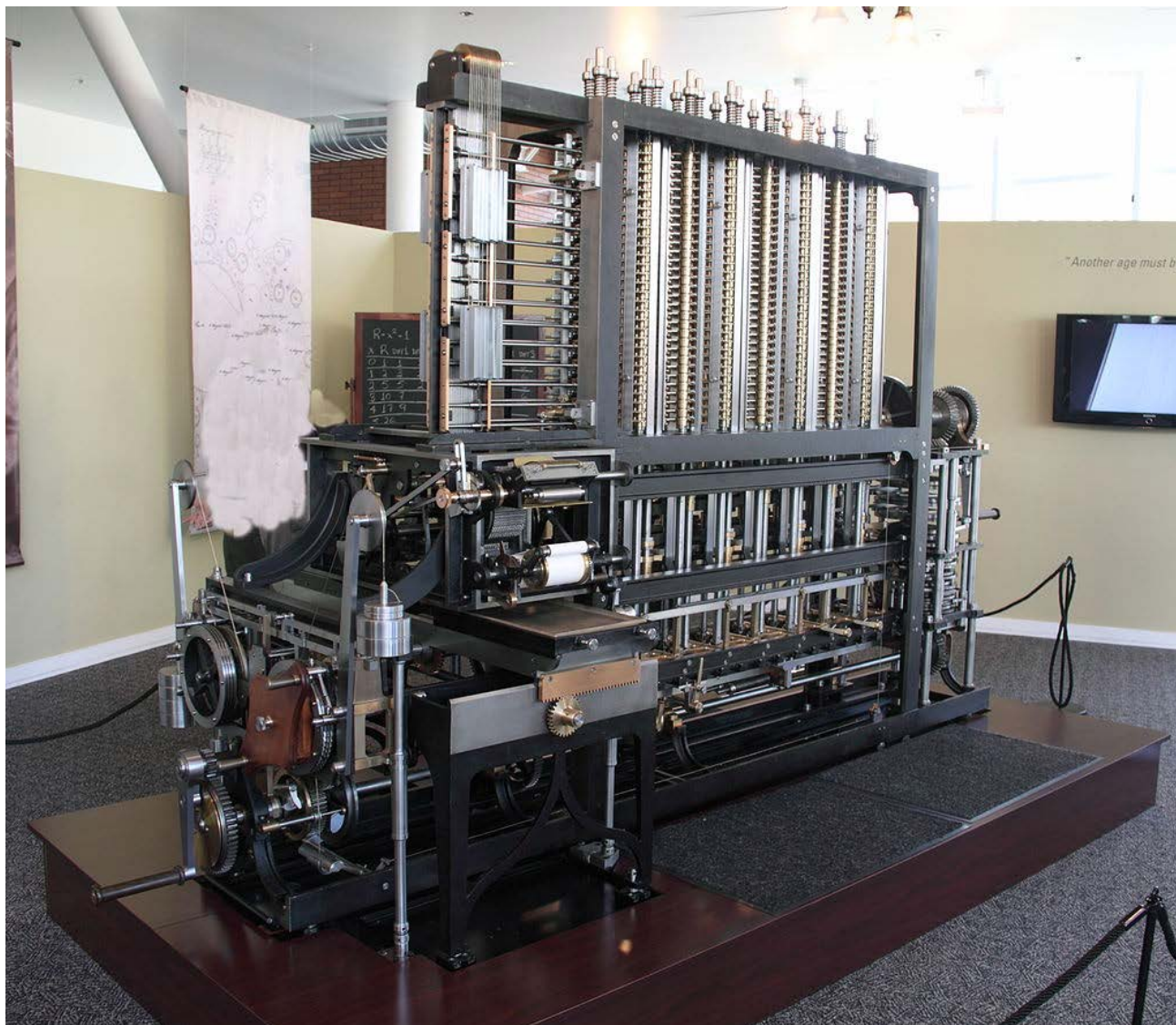
- 1. Intellectual Property and Self-Driving Cars: Waymo v Uber
- 2. Tesla Motors: Intellectual Property, Open Innovation, and the Climate Crisis
- 3. “You Wouldn’t Download a Car”: Intellectual Property, 3D Printing and the Car Industry

1. Intellectual Property and Self-Driving Cars: Waymo v Uber

The Computer History Museum



The Babbage Difference Engine



Google's Self-Driving Vehicle

Google's Self-Driving Vehicle

Second Generation, 2012

Google's self-driving vehicles understand where they are and what's around them through sensors that are purpose-built to help the vehicles perceive their surroundings accurately, and software that processes the information received.

Laser

This sensor gives the vehicle a 360-degree understanding of its environment so the car can sense objects in front of, beside, and behind itself at the same time, all the time. The laser also helps the vehicle to determine its location in the world.

Processor

Information from the sensors is cross-checked and processed by the software so that different objects around the vehicle can be sensed and differentiated accurately, and safe driving decisions can then be made based on all the information received.

Position sensor

This sensor, located in the wheel hub, detects the rotations made by the wheels of the car to help the vehicle understand its position in the world.

Orientation sensor

Similar to the way a person's inner ear gives them a sense of motion and balance, this sensor, located in the interior of the car, works to give the car a clear sense of orientation.

Radar

This sensor detects vehicles far ahead and measures their speed so that the car can safely slow down or speed up with other vehicles on the road.



Safety drivers

Drivers also test the vehicles daily, reporting feedback on how to make the ride more safe and comfortable.





Eight Great Technologies

Robotics and Autonomous Systems

A patent overview



Thomson Reuters

- The global auto industry is in the midst of three simultaneous, and interconnected, technology revolutions. The first is the quest for cleaner alternatives to internal-combustion engines. The second involves connectivity and linking cars to information or data services. Lastly, the autonomy revolution is the effort to develop self-driving cars that could enable services in which electric cars connected to the Web can be summoned to provide rides on demand.

Thomson Reuters

- Toyota is, far and away, the global leader in the number of self-driving car patents, the report found. Toyota is followed by Germany's Robert Bosch GmbH [ROBG.UL], Japan's Denso Corp (6902.T), Korea's Hyundai Motor Co (005380.KS) and General Motors Co (GM.N). The tech company with the most autonomous-driving patents, Alphabet Inc's (GOOGL.O) Google, ranks 26th on the list.



Griffith Hack

- Google have filed hundreds of US patents that are directed towards autonomous vehicles. Approximately 195 of these Google patents have now been published. The published Google patent applications show that Google is investing heavily in developing computer software for autonomous cars.
- <http://griffithhack.com/ideas/insights/what-can-patent-records-tell-us-about-the-worlds-second-most-valuable-brand/>



UBER



WAYMO

Alex Davies, Wired Magazine

- Until today, the race to build a self-driving car seemed to hinge on who had the best technology. Now it's become a case of full-blown corporate intrigue. Alphabet's self-driving startup, Waymo, is suing Uber, accusing the ridesharing giant of stealing critical autonomous driving technology. If the suit goes to trial, Apple's legal battle with Samsung could wind up looking tame by comparison.

Anthony Levandowski



Timeline of the Waymo v Uber saga

TIMELINE OF THE WAYMO, UBER SAGA

According to complaint filed by Waymo



Bloomberg

Source: Court filing

2. Tesla Motors: Intellectual Property, Open Innovation, and the Climate Crisis

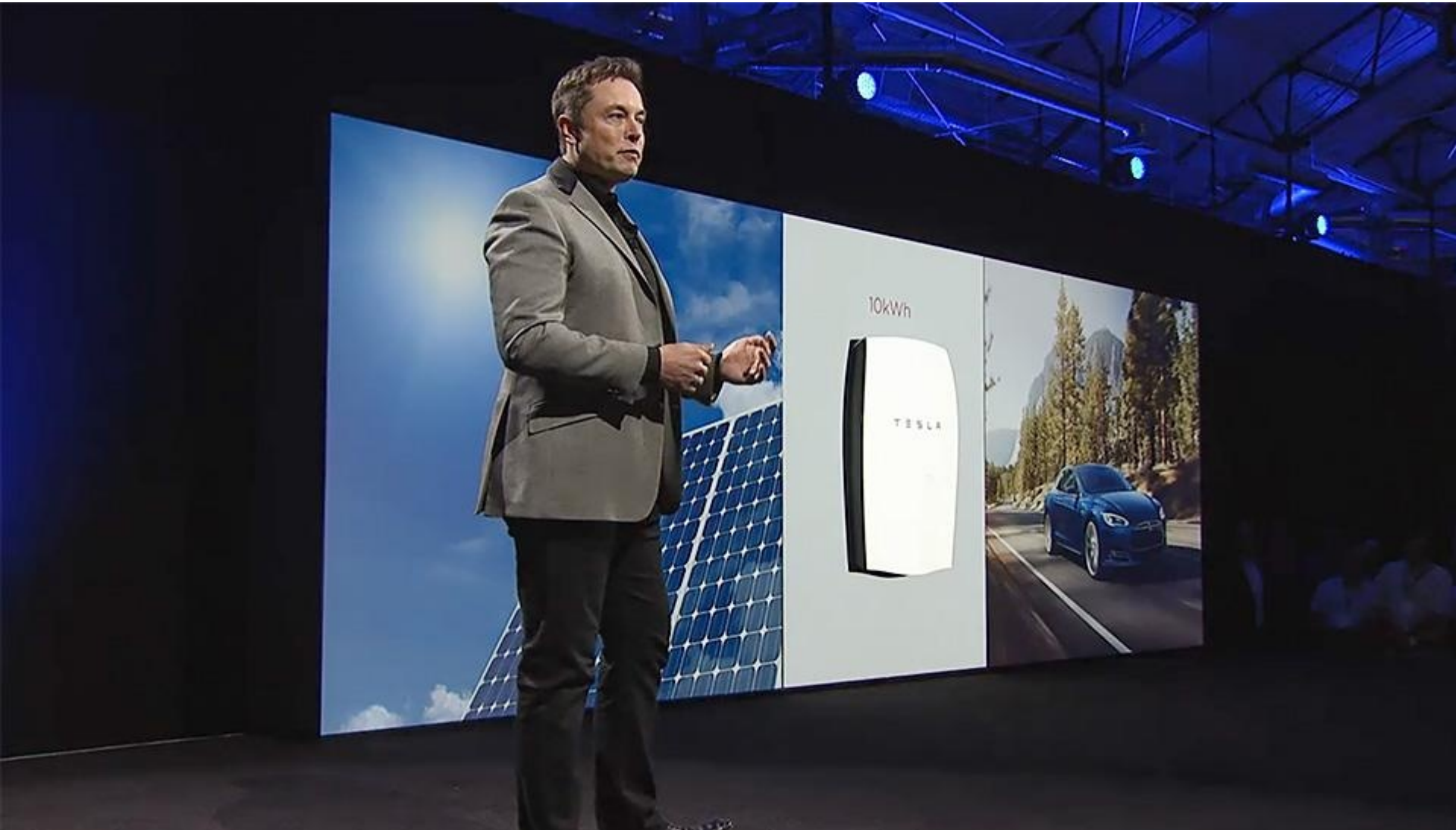
Faster, Higher, Farther

The Volkswagen Scandal

Jack Ewing




Elon Musk





Tesla Motors





TESLA

PATENT INFOGRAPHIC

AN INFOGRAPHIC BY DELTAUGHT.COM & ENVISIONIP.COM

172 ISSUED
PATENTS

123 PUBLISHED
APPLICATIONS

BATTERY & CHARGING



MOTOR & DRIVE CONTROL



FRAME & CHASSIS



DOORS & LATCHES



HVAC



MISCELLANEOUS



SUNROOF



USER INTERFACE & MULTIMEDIA APPS

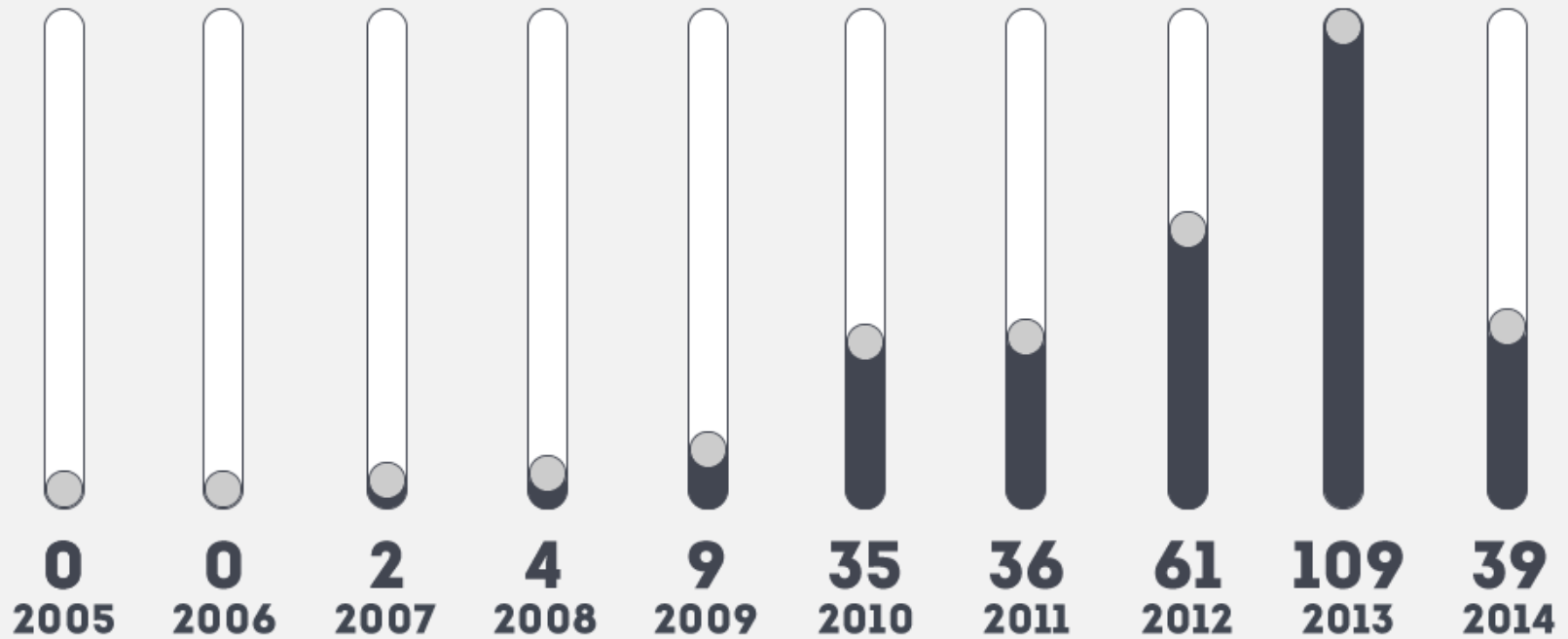


DESIGN



ACTIVITY OVER TIME

PATENT PUBLICATIONS PER YEAR



PATENTS BY INVENTORS

FOUNDER AND TOP INVENTORS BY NUMBER OF PATENTS



TANG YIFAN

16



PETER DORE RAWLINSON

15



KURT RUSSELL KELTY

20



FRANCISCO LEPORT

12



WESTON ARTHUR HERMANN

57



ELON REEVE MUSK | **FOUNDER**

3



Tesla's Autopilot



PATENTS BY COMPETITORS

ELECTRIC VEHICLES RELATED US PATENTS OWNED BY MAJOR AUTOMOTIVE MANUFACTURERS



AN INFOGRAPHIC BY DELTAUGHT.COM & ENVISIONIP.COM



**"WE BELIEVE THAT
SOLAR POWER WILL
BECOME THE WORLD'S
PREDOMINANT
SOURCE OF ENERGY
WITHIN OUR LIFETIMES"**

-ELON MUSK, FOUNDER OF TESLA MOTORS



#PutSolarOnIt

SolarCity

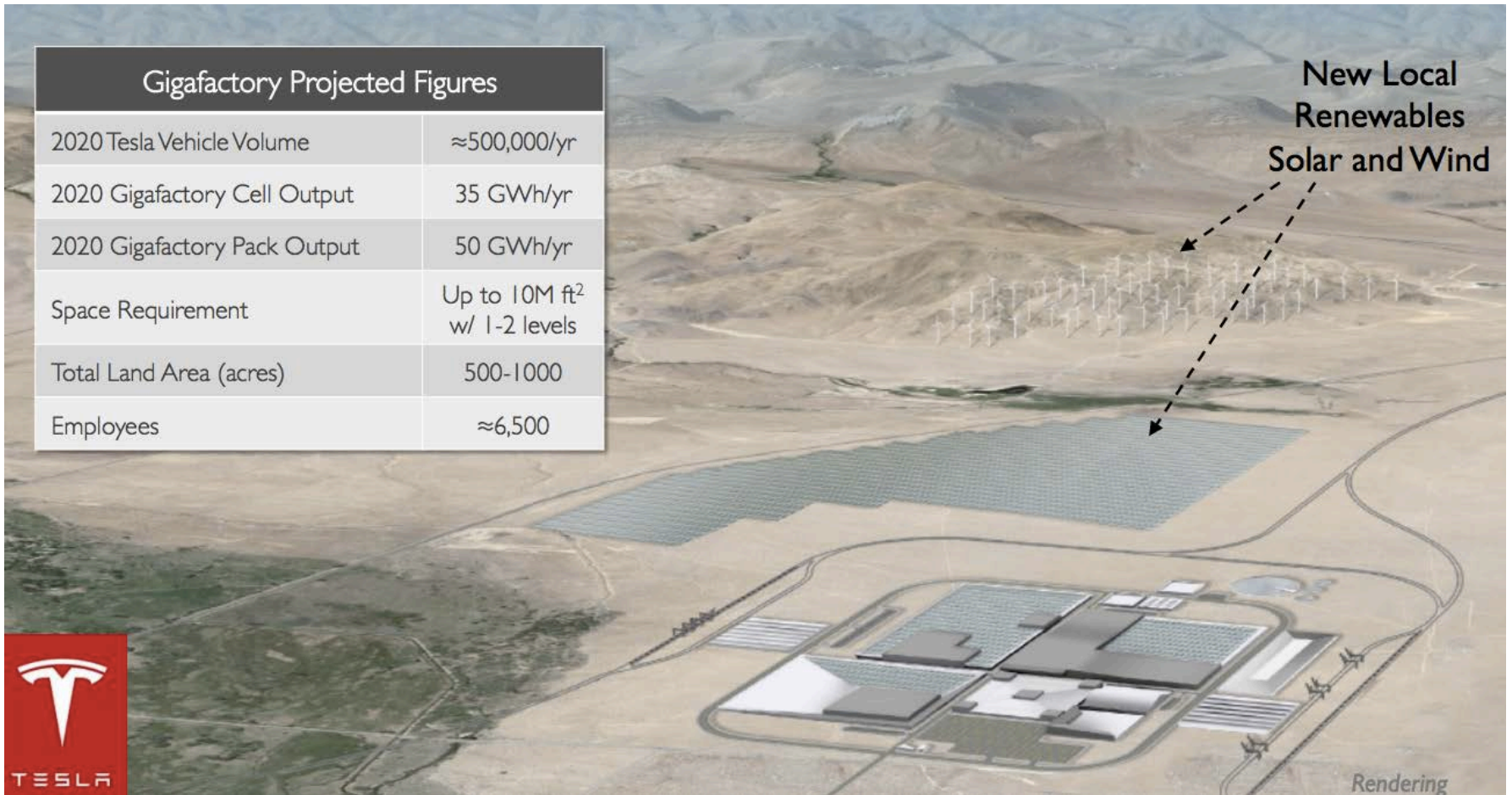


The Gigafactory

Gigafactory Projected Figures

2020 Tesla Vehicle Volume	≈500,000/yr
2020 Gigafactory Cell Output	35 GWh/yr
2020 Gigafactory Pack Output	50 GWh/yr
Space Requirement	Up to 10M ft ² w/ 1-2 levels
Total Land Area (acres)	500-1000
Employees	≈6,500

New Local
Renewables
Solar and Wind



Tesla Energy



Tesla Powerwall



Tesla's Big Battery





JAY WEATHERILL?

ELON MUSK?!

WAIT... THIS IS NOT WHAT IT LOOKS LIKE, ELON!

THIS IS JUST THE COMPANY CAR!

I'M ACTUALLY A RICH, AGILE, INNOVATOR!!

JUST LIKE YOU!!!

AUSTRALIAN ENERGY POLICY

OZ-POL

S.A. ENERGY CAR

POPE
14.3.17

Toyota Hydrogen Cars



3. Carmageddon: Intellectual Property, 3D Printing and the Car Industry

Music Industry Copyright Advertisements



YOU WOULDN'T
DOWNLOAD A CAR

Summernats

A promotional poster for the 'Summernats 31 Street Machine' event. The central focus is a large, stylized tire with 'CAR FESTIVAL' written on the tread. In the foreground, a blue classic muscle car is on the left and a black classic muscle car is on the right, both with smoke rising from their tires. A man in a black jacket with white stripes on the sleeves stands on the left, cheering with his arms raised. On the right, a woman with a black face-paint mask and a man are also cheering. The background shows a crowd of people at a car show. The text 'Street MACHINE' is written in a red, italicized font above the main title 'SUMMERNATS' in large, bold, white letters. Below the title is a red triangle containing the number '31' in white, with 'RARE SPARES' written in a blue box below it. At the bottom, the dates '4TH - 7TH JANUARY 2018' are written in white, followed by 'ENTRIES OPEN NOW!' in large, bold, red and white letters. The website 'SUMMERNATS.COM.AU' is at the very bottom in white.

Street
MACHINE
SUMMERNATS
31
RARE
SPARES
4TH - 7TH JANUARY 2018
ENTRIES OPEN NOW!
SUMMERNATS.COM.AU

Professor Mia Woodruff's A-Z of 3D Printing: C is for Car



Maker Faire – New York 2014



Obama, Biden, and a 3d-printed Shelby Cobra (2015)



How 3D Printing will revolutionize the auto industry



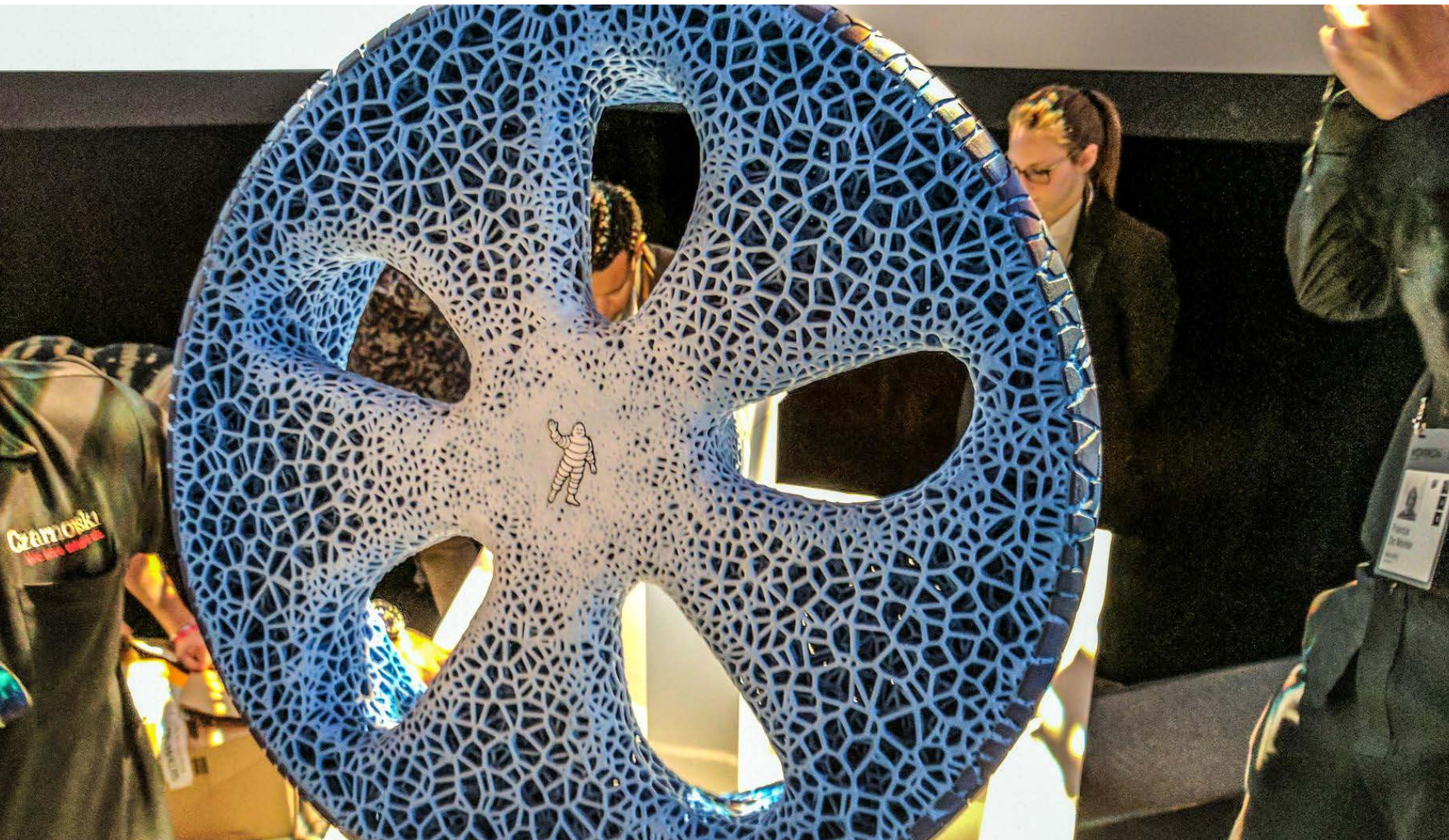
Jason Bekiaris (2015)

- Production Will Take Place Faster
- More Flexibility in the Design
- Eliminates Suppliers
- Helps the Planet
- <https://3dprint.com/111644/3d-printing-revolutionize-auto/>

McLaren Racing using 3D printing for Formula 1 Race Cars (2017)



Michelin's Tire of the Future uses 3D Printing (2017)



Conclusion