

**TOYOTA**  
*Let's Go Places*

Jason Schulz  
Toyota Motor Sales



9 million vehicles sold worldwide.  
2 million in the US alone.



We invest in Research and  
Development. **\$1 million per hour.**



Hybrids

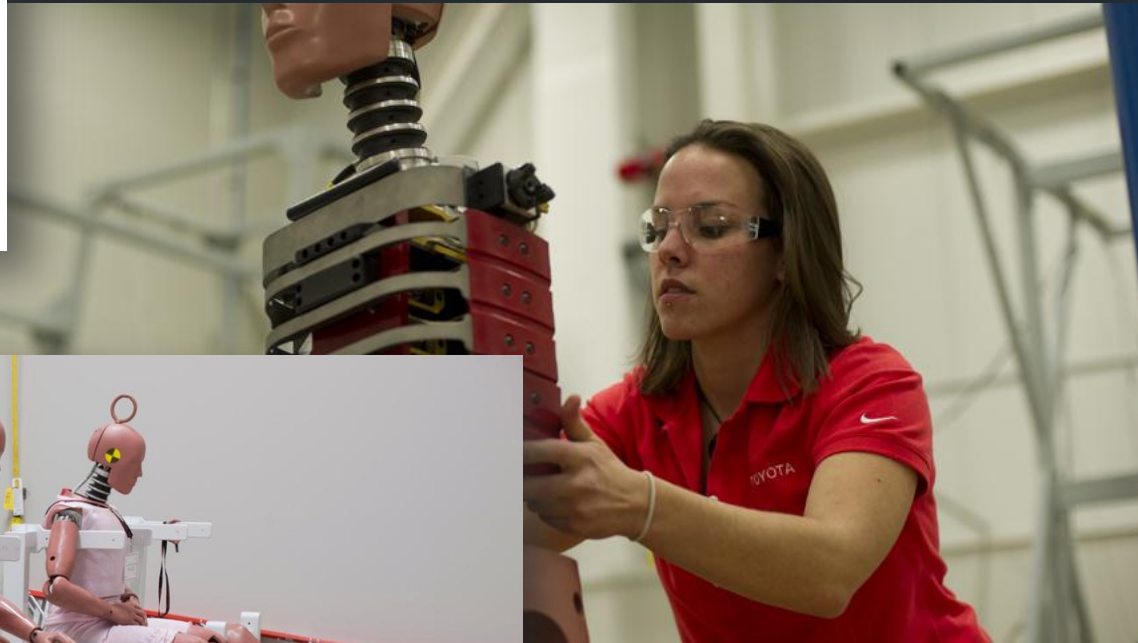


Alternative Fuels

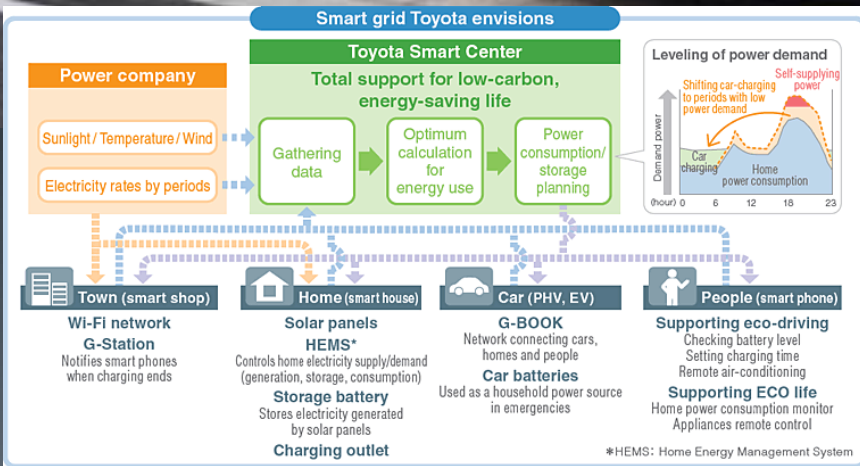
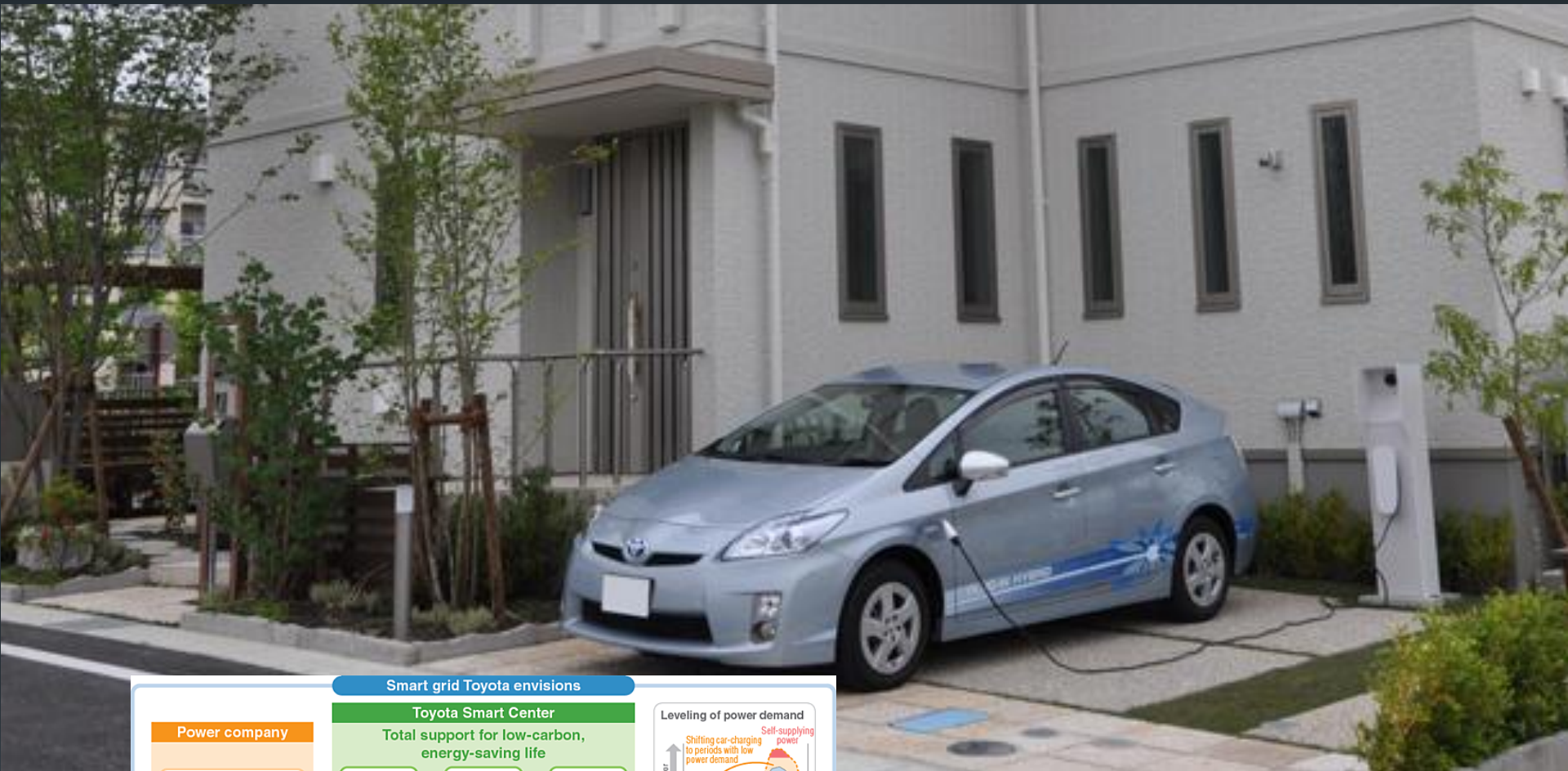


Collaborative Safety Research Center

TOYOTA



Collaborative Safety Research

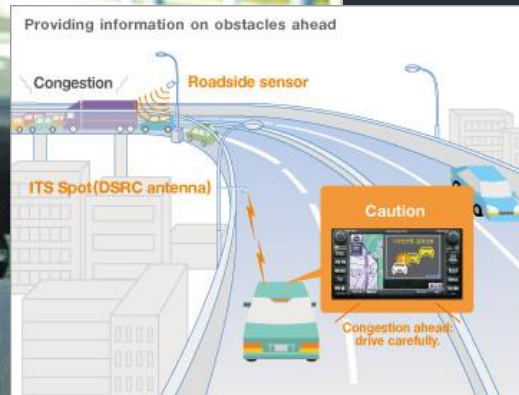


# Home Energy Management



# Connected Vehicles





# Intelligent Transportation Systems



Autonomous, Automated Technologies



Robot Car **What is**

**Automated** Self-Driving  
Autonomous

**Driving?**  
Driverless

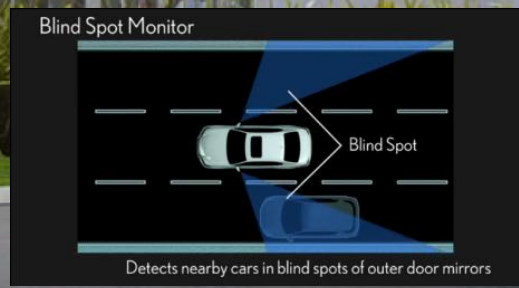


# For Toyota, Automated Driving is...

- Part of an autonomous, automated technology vision where...
  - The driver is ultimately in control
  - The technology serves as an always-attentive, virtual co-pilot to add to the skill of the driver
- Achieved through a layered approach of increasingly advanced, active safety systems



2013 Lexus LS



We're actively testing automated driving at **two unique locations, halfway across the globe.**



# ADVANCED ACTIVE SAFETY RESEARCH VEHICLE

## Position and Orientation System (POS) using Lidar, Radars and Cameras

Forward Facing HD Color Camera

GPS Antenna (2)

Forward Facing Radar (2)

LIDAR

Inertial Measurement Unit (not shown)



Side Facing Radar (3 per side)

Side Facing HD Color Cameras (1 per side)

Rotary Encoder

# Intelligent Transport System Proving Grounds

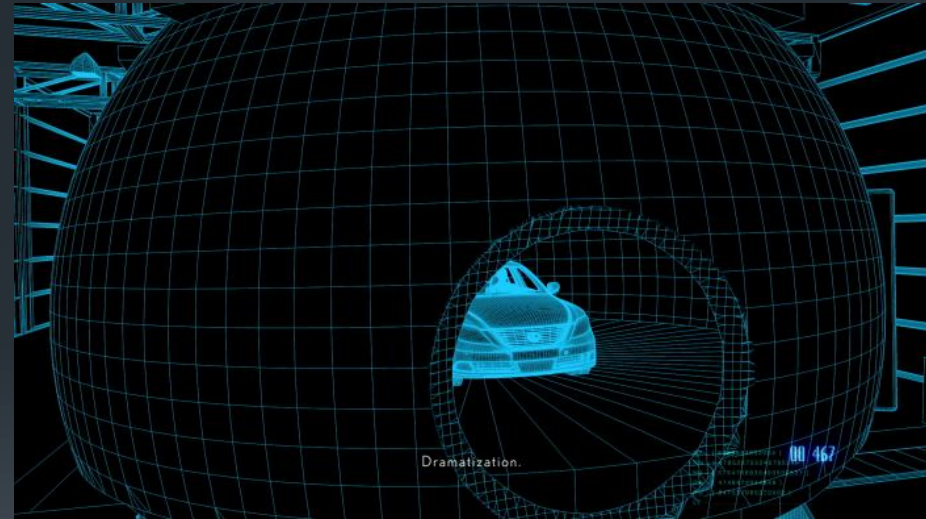


- A new 375,000 SQFT urban test environment
- Testing vehicle-to-vehicle, vehicle-to-infrastructure
- Located in Higashi-Fuji, Japan
- Launched in November 2012





Dramatization. U.S. model shown. Projected images simulation only. Vehicle(s) shown with optional equipment.



## The World's Largest Driving Simulator

This state-of-the-art research facility is designed to gather the most realistic data of how drivers respond to situations when they are behind the wheel. We continue to strive for the technology that prevents and minimizes the damage of an accident in any situation by using real drivers in real situations without real consequences.

While not part of the ITS Proving Grounds, this is still an essential part of our overall philosophy and approach.

# What are the hurdles?

Technology

Society


Regulatory

# Where are the opportunities?

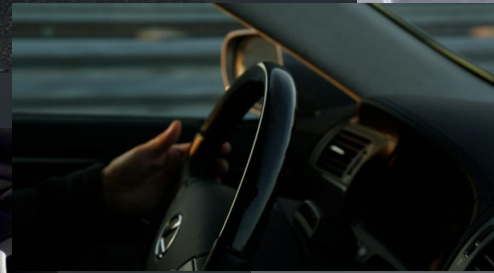
Safety

New Business Models

Traffic/Fuel Reductions



How can we work together to bring about a thoughtful, speedy introduction of these technologies?



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