

Toyota Media Tour 2015 Tokyo Motor Show

# PRIUS

Toyota Motor Corporation  
Chief Engineer / Product Planning Div.

**Koji Toyoshima**



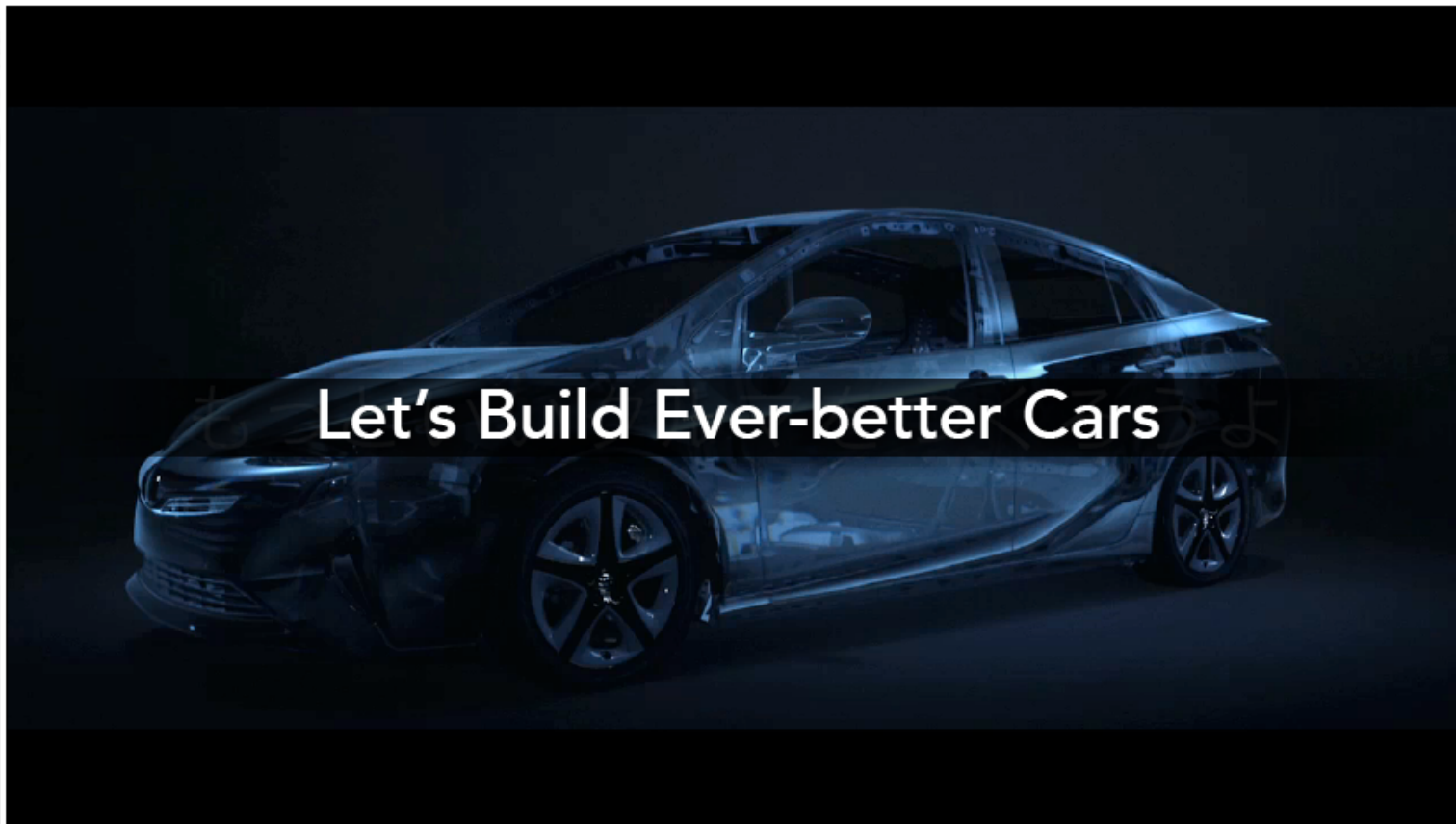
First  
Generation



Second  
Generation



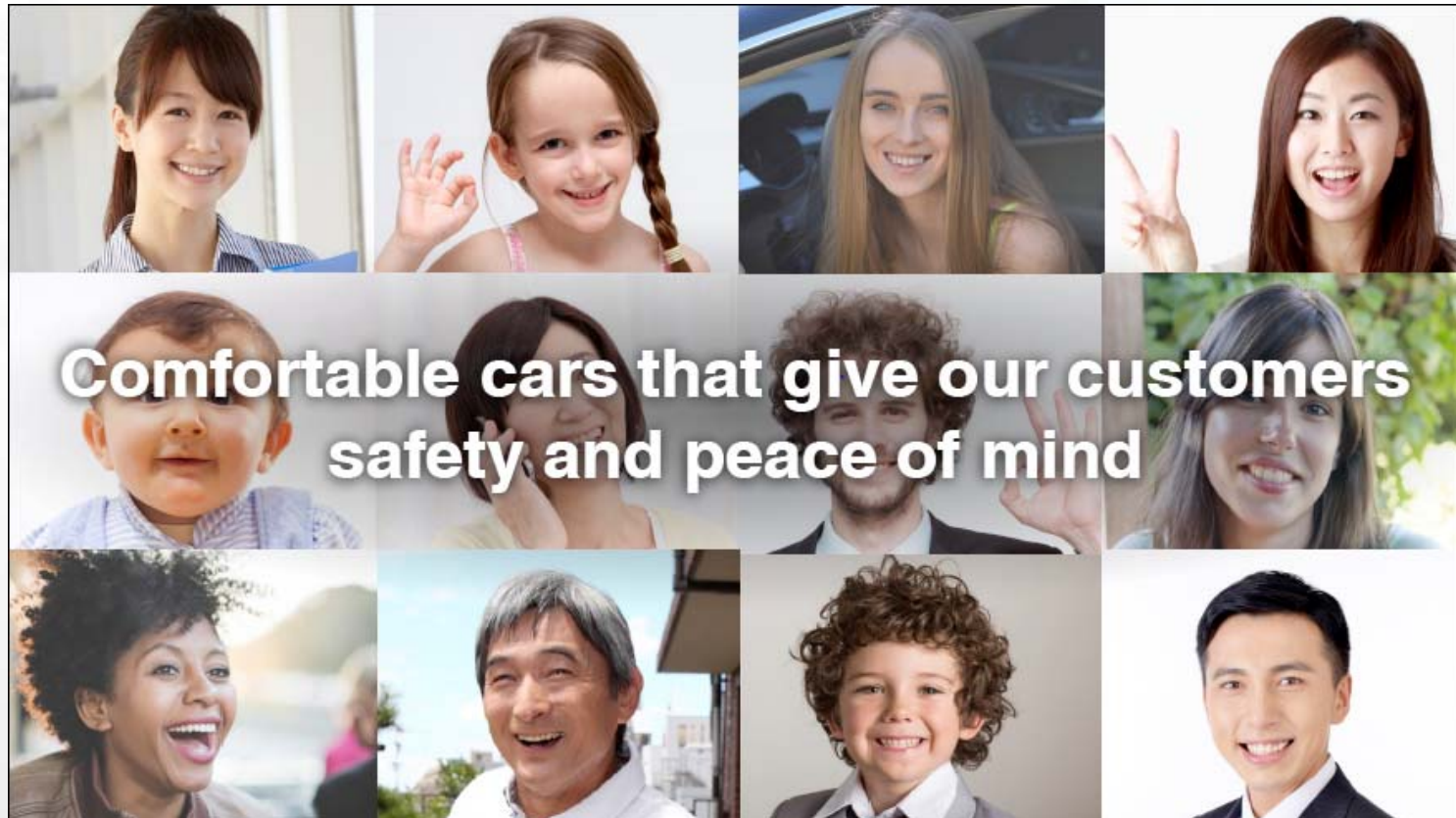
Third  
Generation





# Beautiful Hybrid

A beautiful car for a beautiful Earth





Four great things about  
the new

**PRIUS**

**1. Eye-catching design**

**2. Fun to drive**

**3. Excellent fuel economy**

**4. Well-equipped**

**TNGA**

**Width: 1,760mm (+15mm)**

**Cowl height  
lowered by 62mm**

**Height lowered by  
20mm**

**Rear spoiler  
height  
lowered by 55 mm**

**Hip point height  
lowered by 59mm**

**Luggage  
Space:  
502ℓ (+56)**

**Height:  
1,470mm  
(-20mm)**

**Height of powertrain  
components lowered by 10mm**

**Luggage  
compartment floor  
lowered by 110mm**

**Wheelbase: 2,700mm**

**Length: 4,540mm (+60mm)**

## 1. Design

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TOYOTA



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**TOYOTA**

## 1. Design

Toyota Media Tour 2015 Tokyo Motor Show



TOYOTA

## 1. Design

Toyota Media Tour 2015 Tokyo Motor Show



## 1. Design

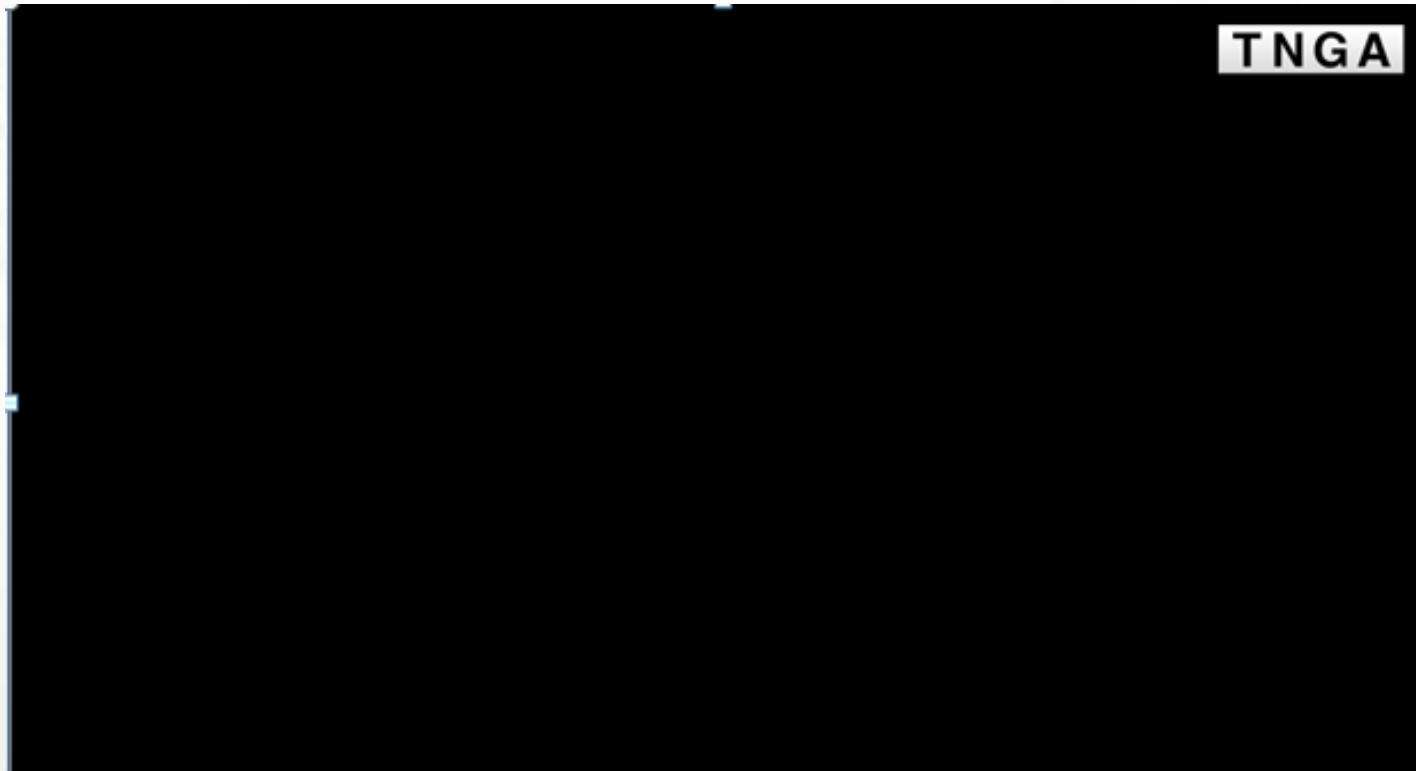
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**TOYOTA**

## 2. Basic Performance

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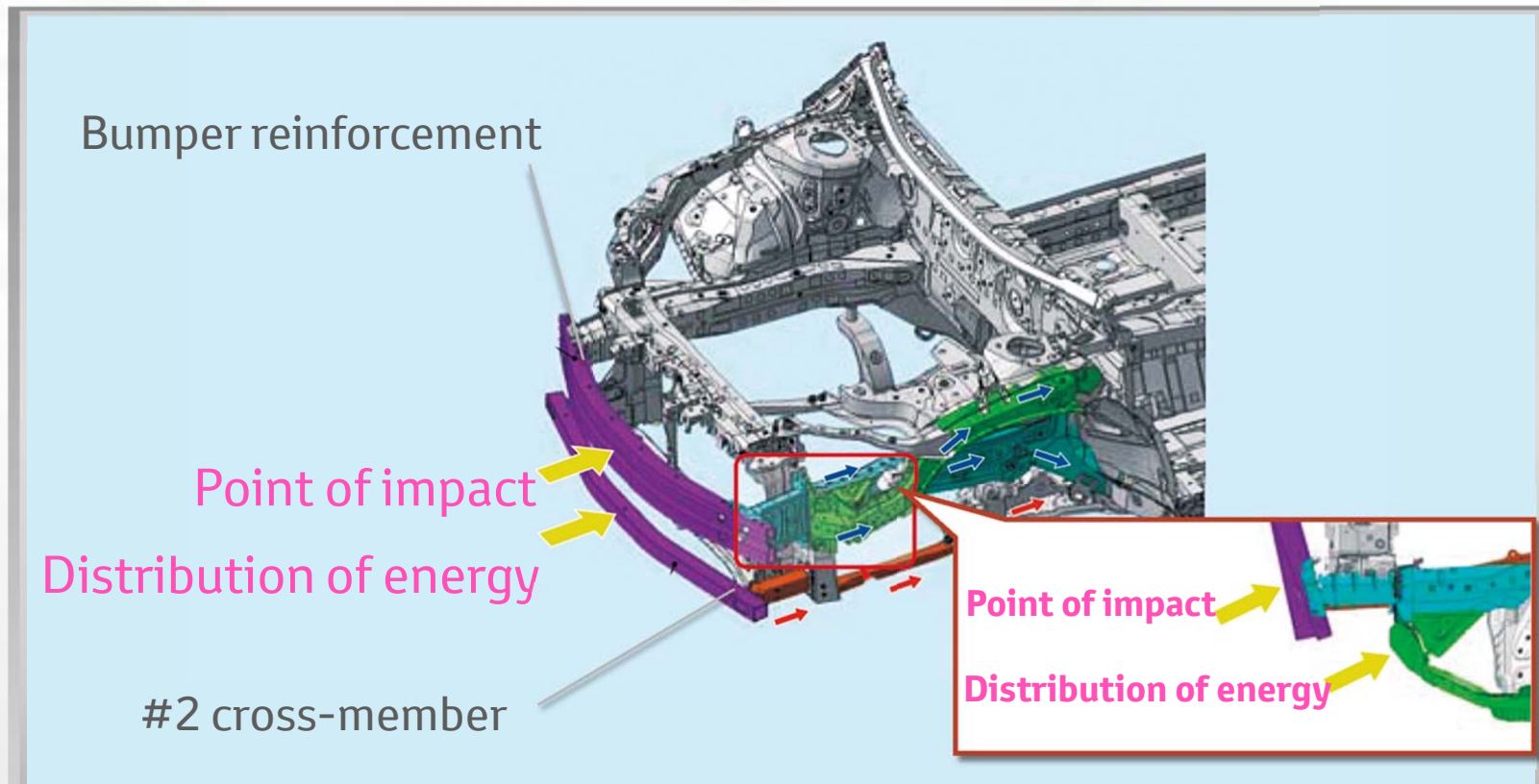


## 2. Basic Performance

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### Distribution of frontal crash energy via multi-load paths

TNGA



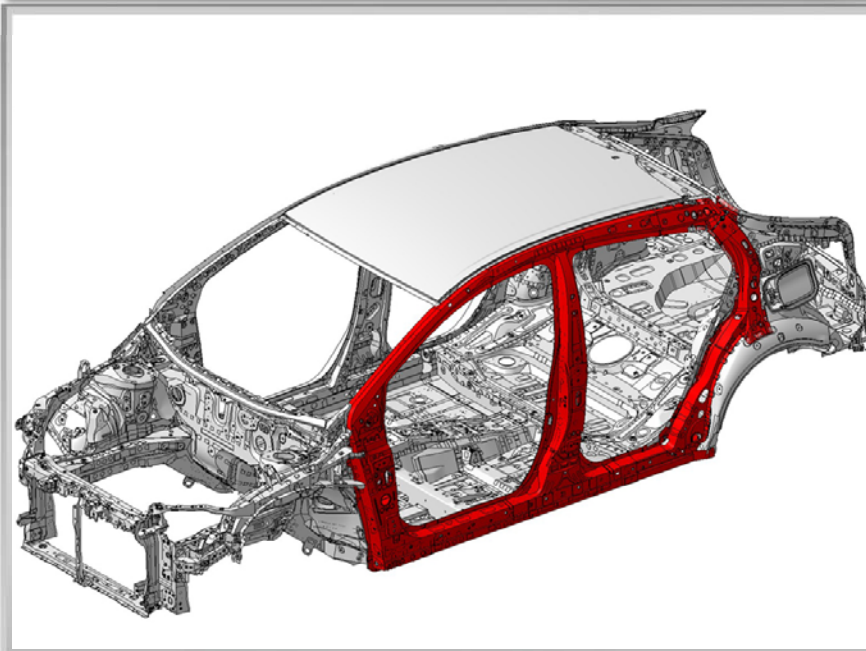
## 2. Basic Performance

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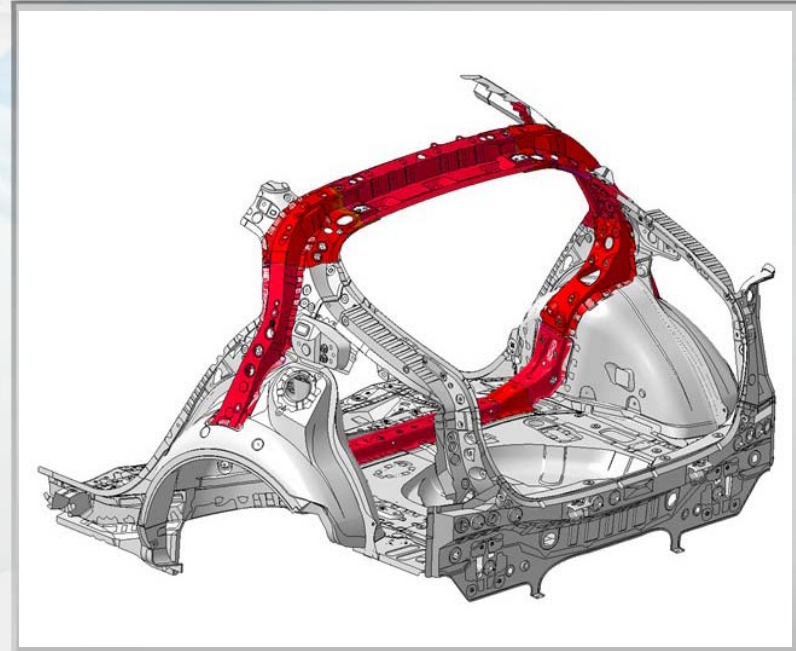
### Completely Redesigned Body Frame Structure

TNGA

#### Squared reinforced annular structure



#### Rear annular structure

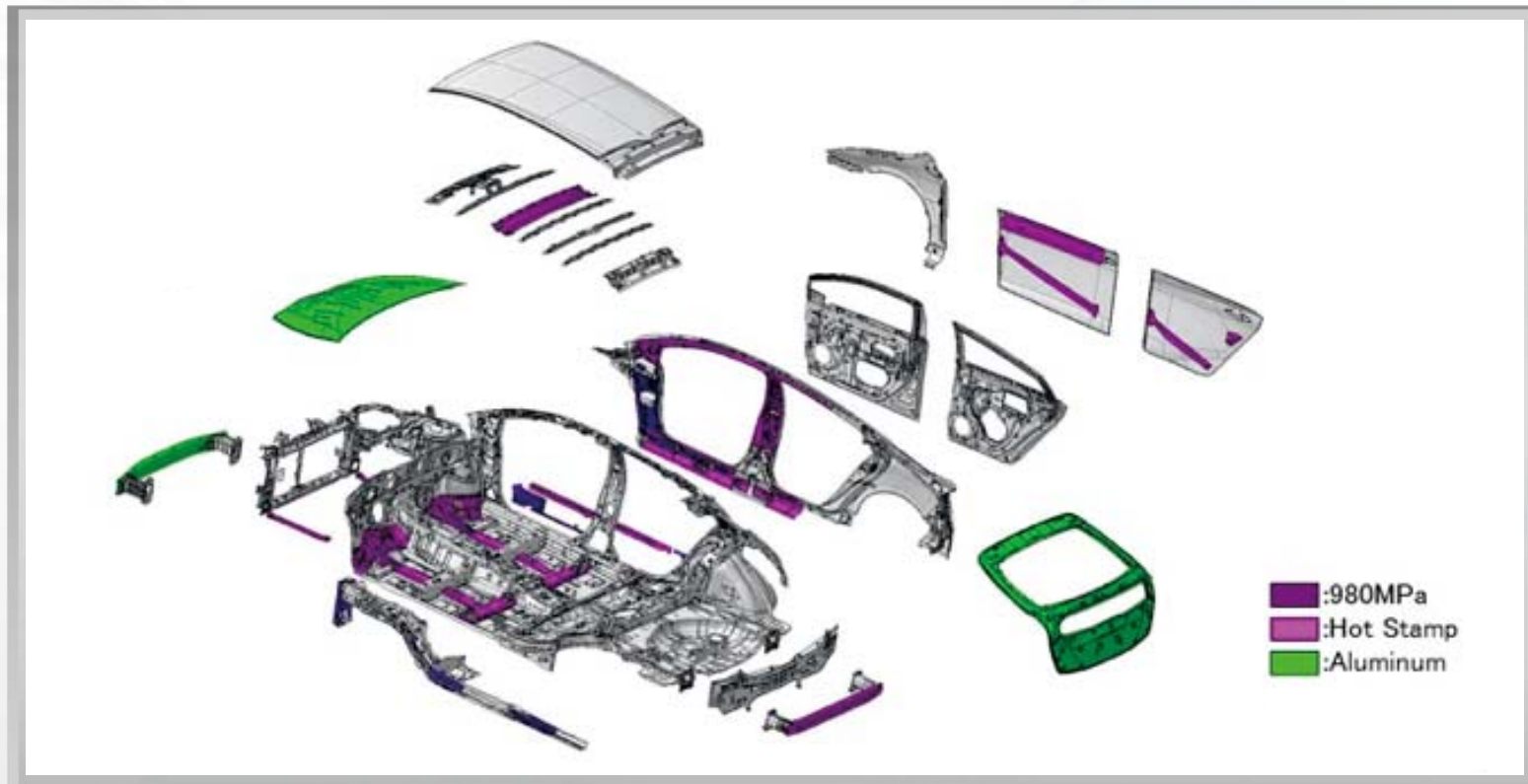


## 2. Basic Performance

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### Increased use of Hot Stamped Parts

TNGA



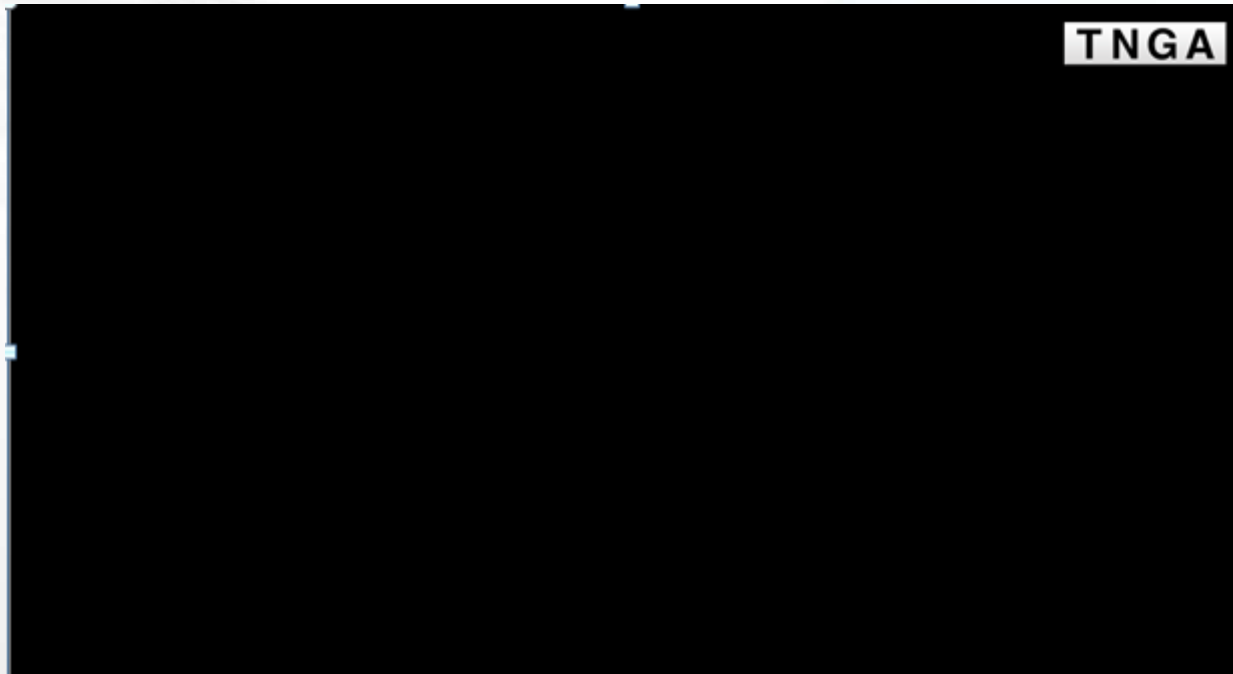
## 2. Basic Performance

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### Increased use of Laser Screw Welding (LSW)

Number of welding points increased by 30%

TNGA

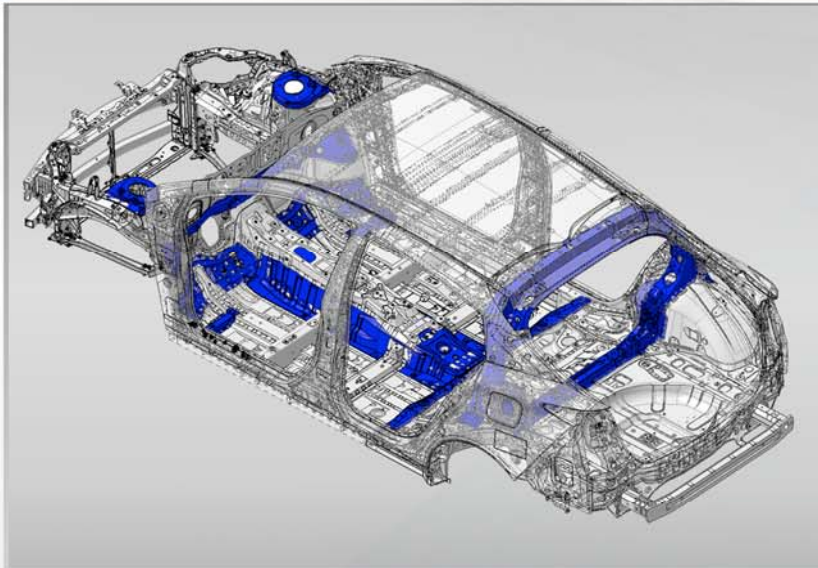


## 2. Basic Performance

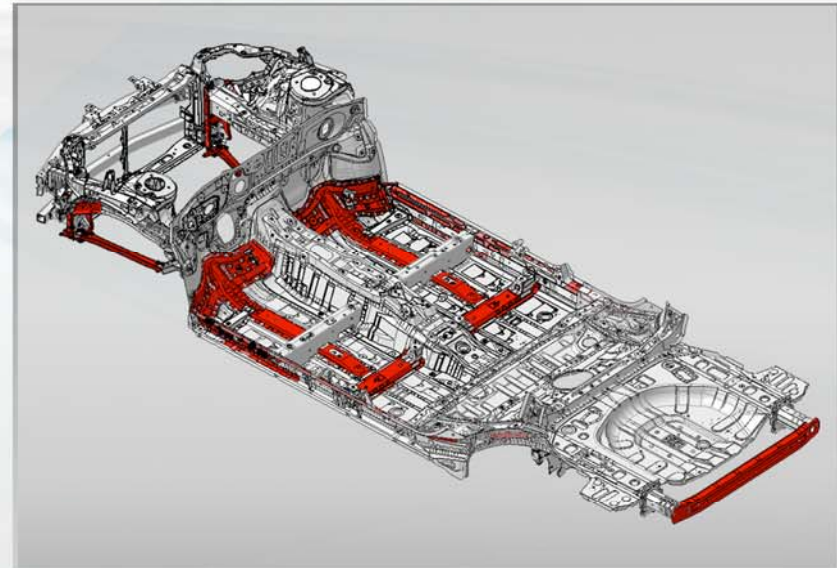
Toyota Media Tour 2015 Tokyo Motor Show

TNGA

### New rigid frame structure



### Expanded use of high tensile strength steel sheets



Body torsional stiffness improved by approximately

60%



## 2. Basic Performance

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**TNGA**

### Double wishbone rear suspension

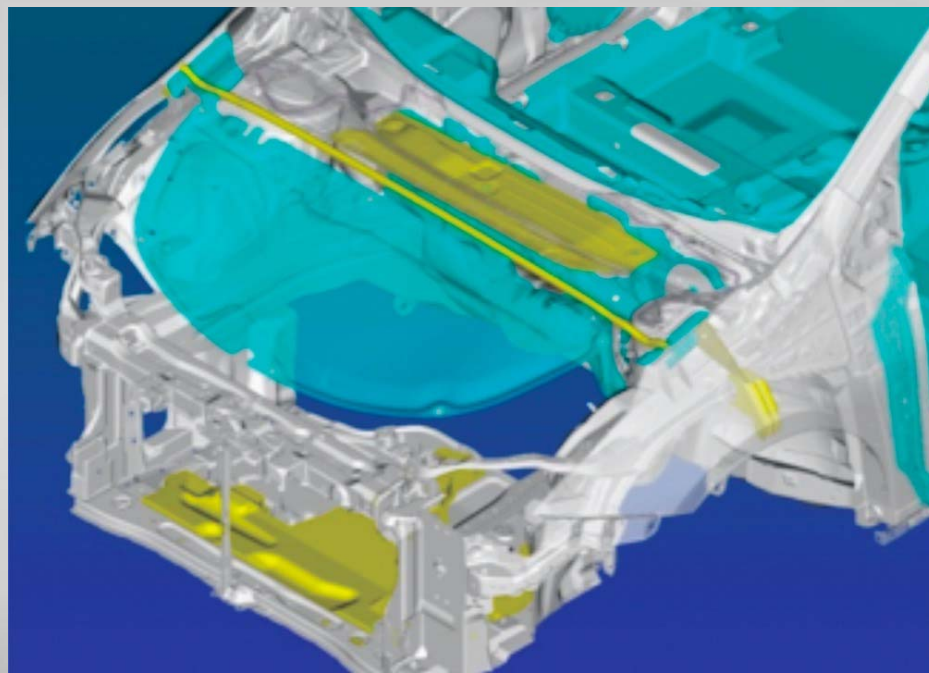


## 2.Basic Performance

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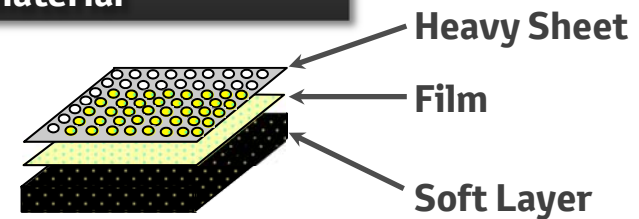
TNGA

### Noise absorption and insulation material in the engine compartment

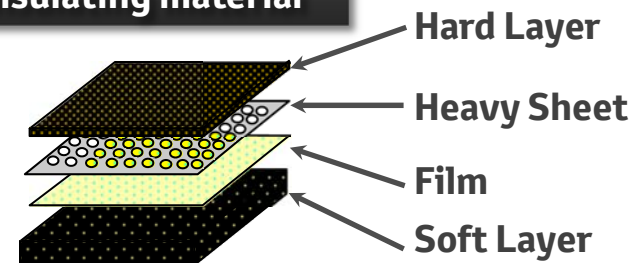


### Noise absorption and insulation material

#### Sound insulating material



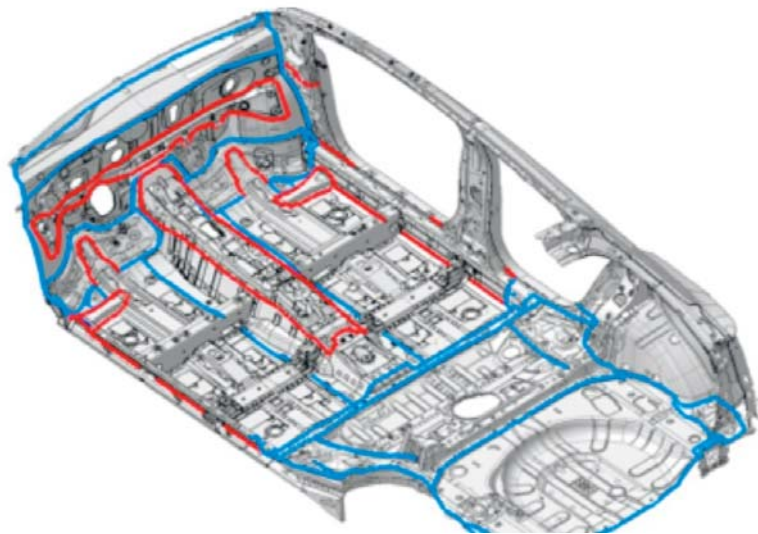
#### Sound absorbing and insulating material



## 2. Basic Performance

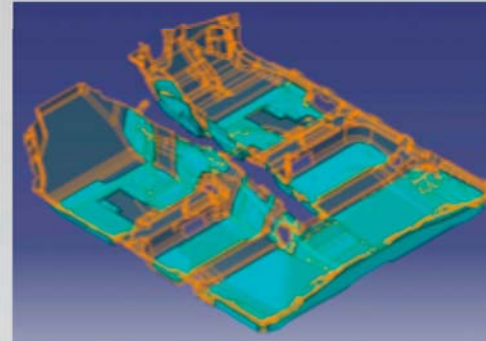
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### Body sealer

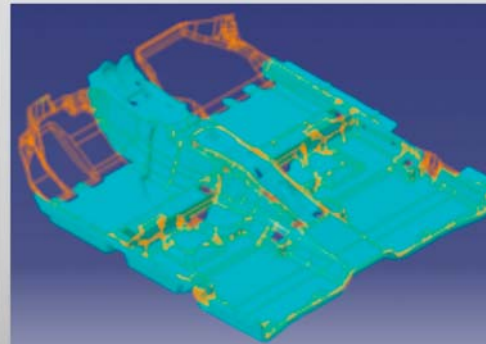


- Current Prius
- Sections where sealer is now used

### Floor silencer



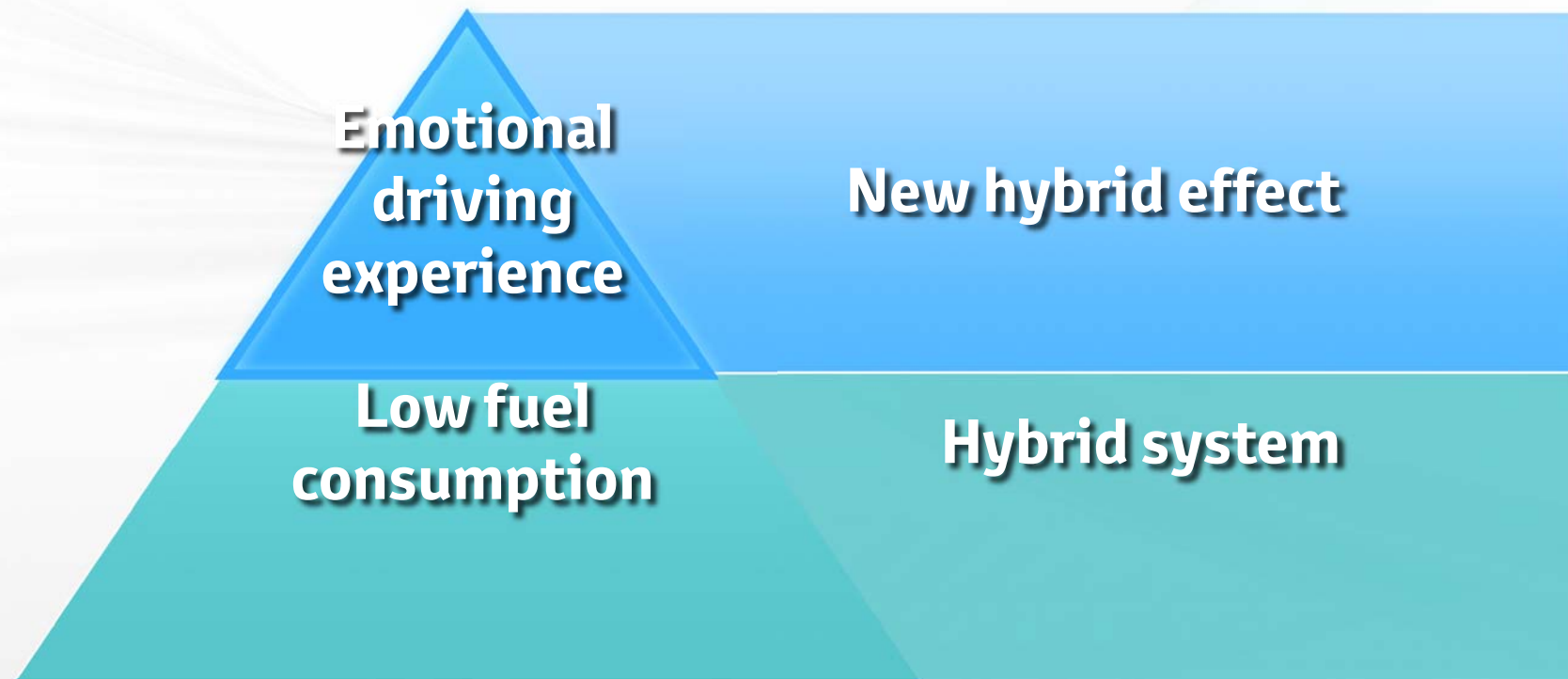
Current  
Prius



New  
Prius

### 3. Hybrid System

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### 3. Hybrid System

Toyota Media Tour 2015 Tokyo Motor Show

**High efficiency**

**Compact and  
lightweight system**



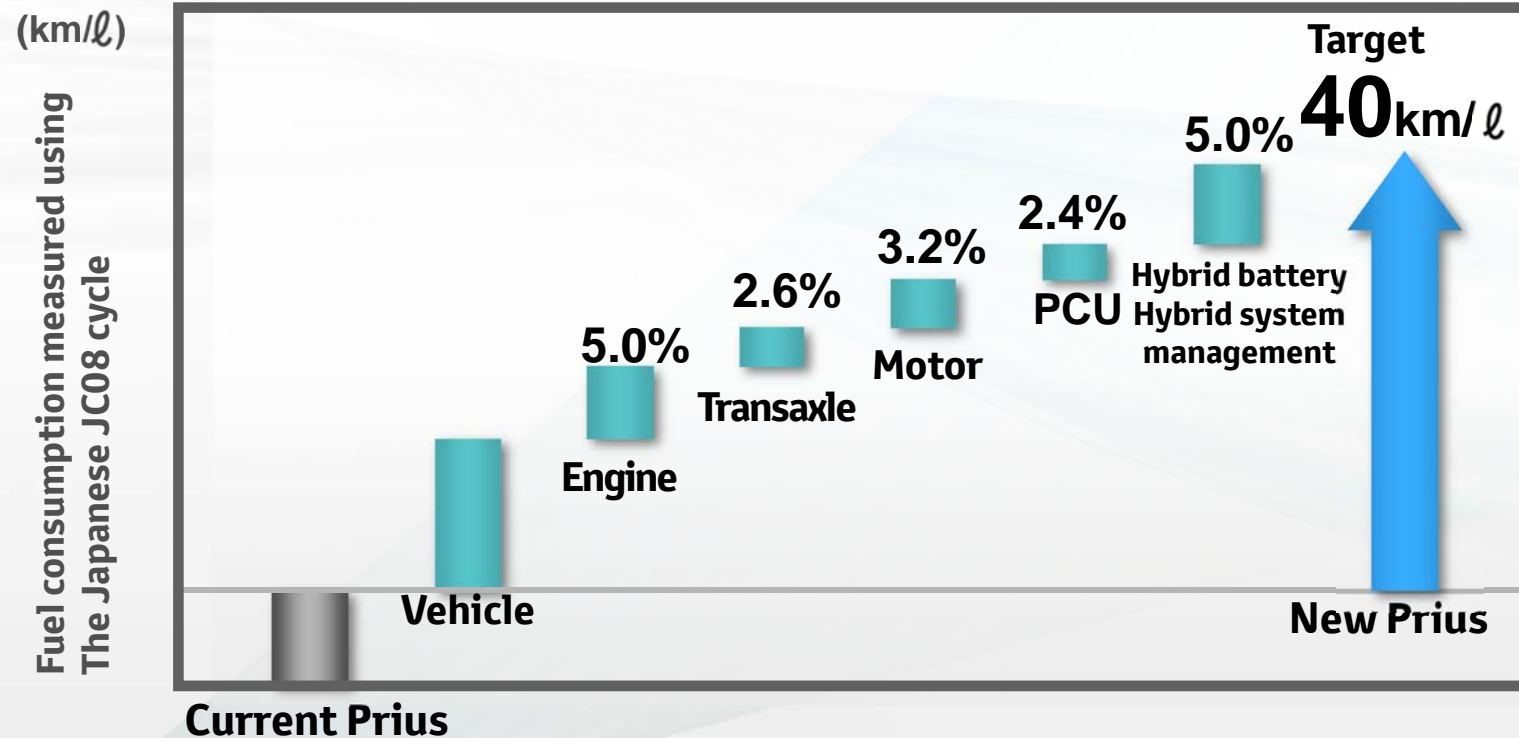
**Excellent environmental  
performance**



### 3. Hybrid System

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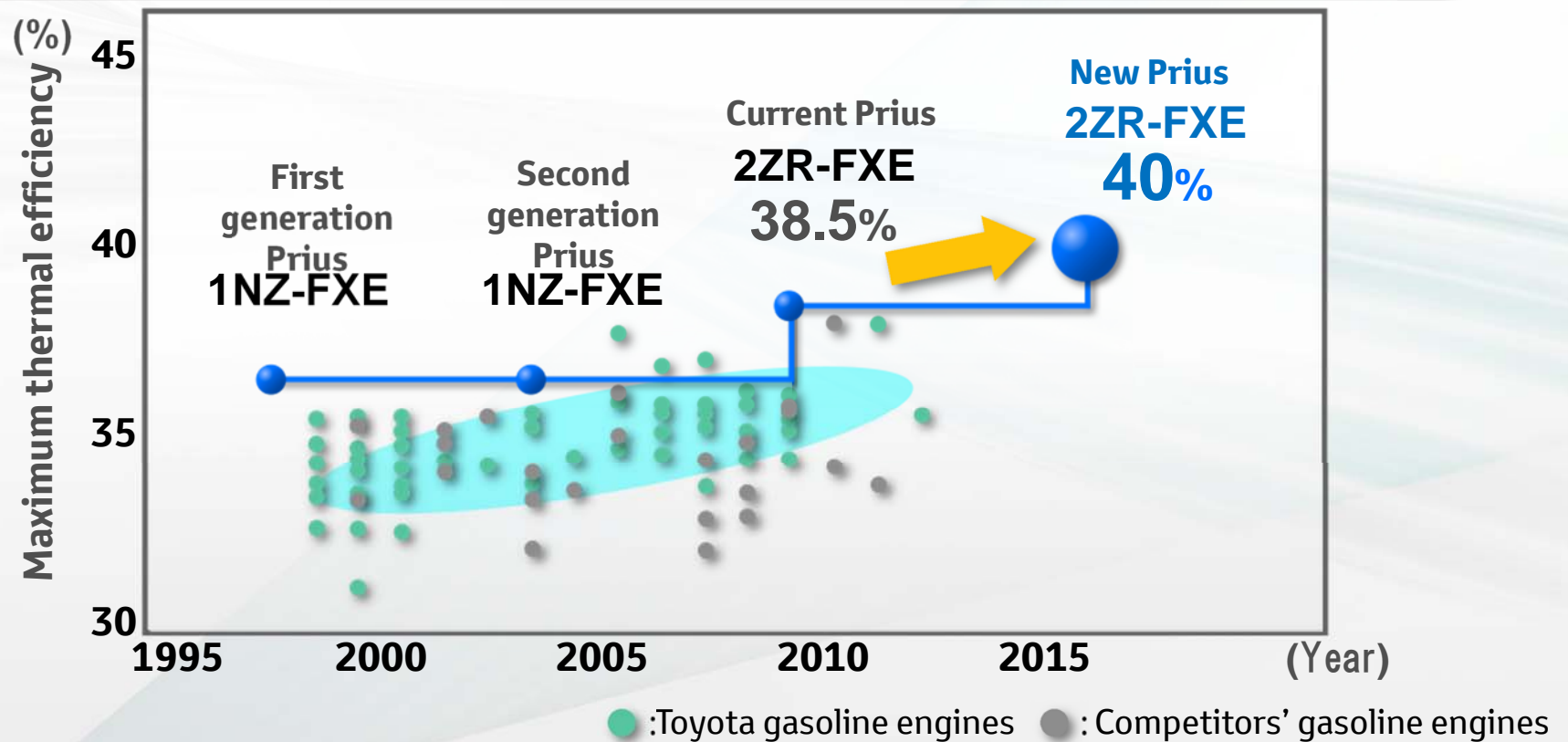
## Fuel Efficiency Gains Achieved with the New Hybrid System



### 3. Hybrid System

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#### Improvements to maximum thermal efficiency of engines over time



### 3. Hybrid System

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#### Maximum Thermal Efficiency of 2ZR-FXE Engine: 40%

- Improved combustion and knock control
- Toyota-first dual cooling system
- Reduced friction

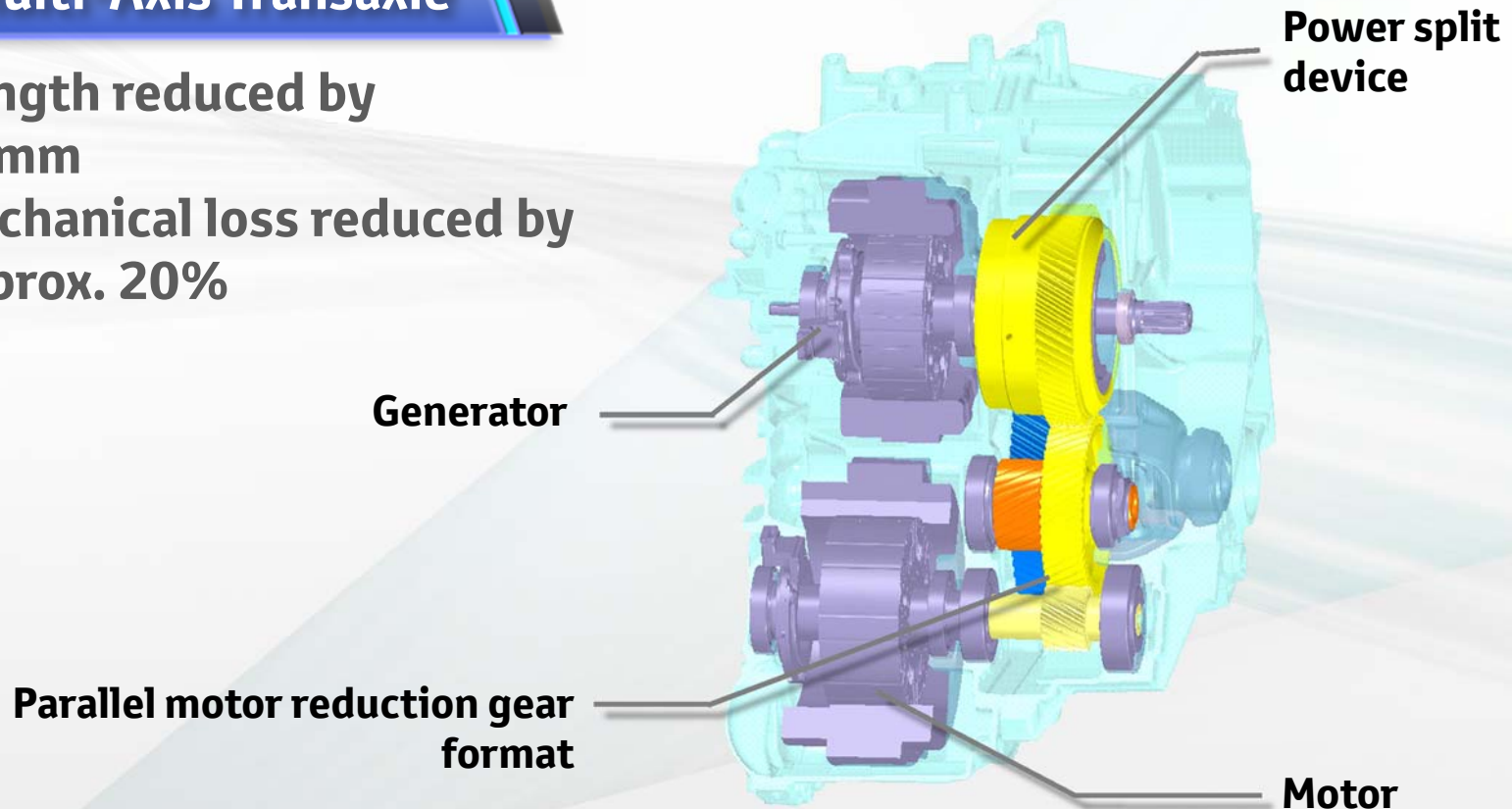


### 3. Hybrid System

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#### New Multi-Axis Transaxle

- Length reduced by 47mm
- Mechanical loss reduced by approx. 20%

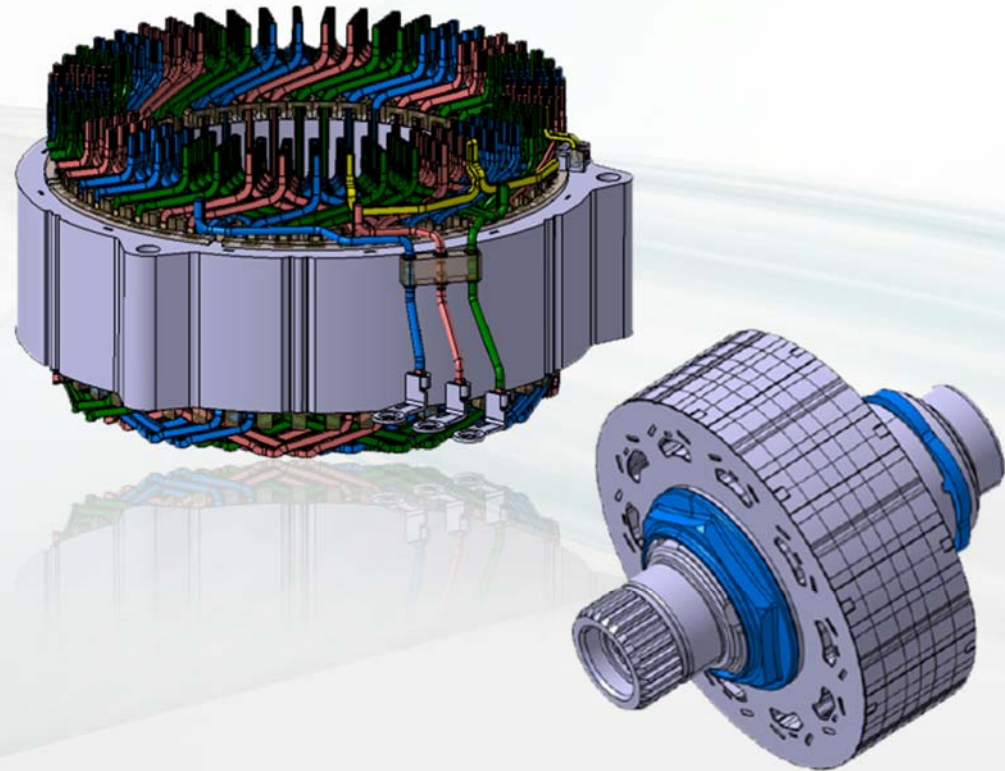


### 3. Hybrid System

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#### Compact and Lightweight High-Output Motor

- Development of rolling-coil structure
- Loss reduced by over 20%
- Weight reduced by over 20%





### 3. Hybrid System

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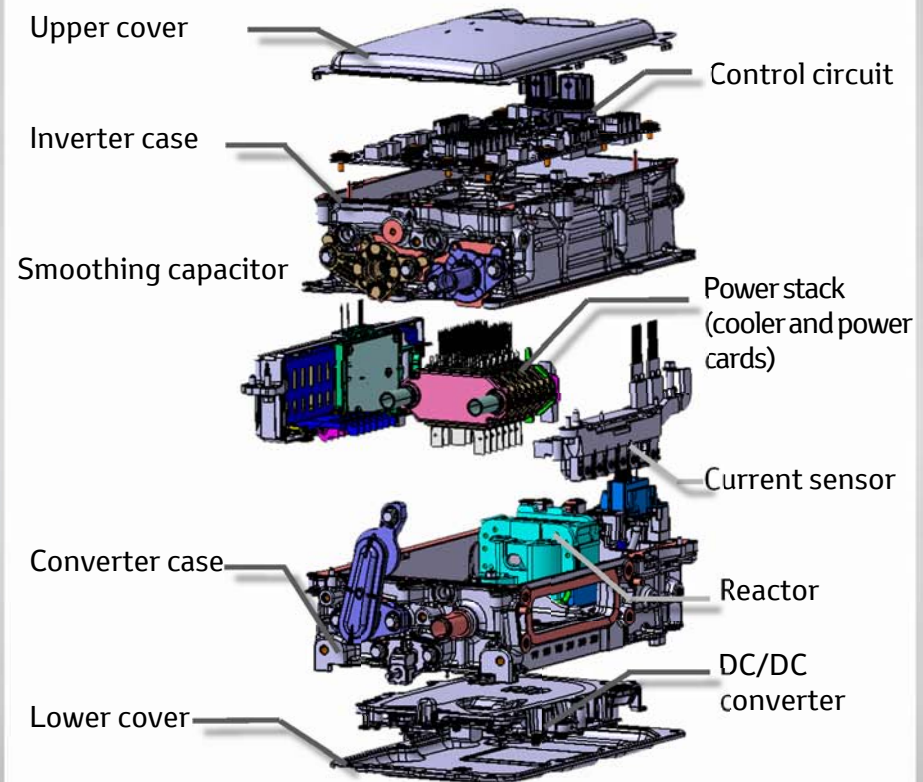
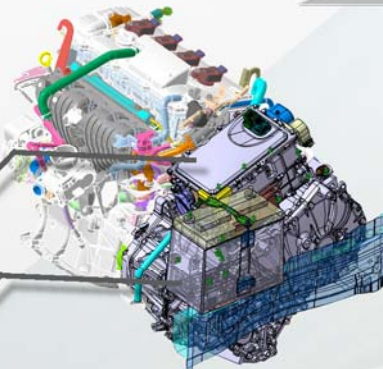
#### Newly Developed PCU

- Loss reduced by approx. 20%
- Size reduced by 33%
- Auxiliary battery moved to engine compartment

Engine

PCU

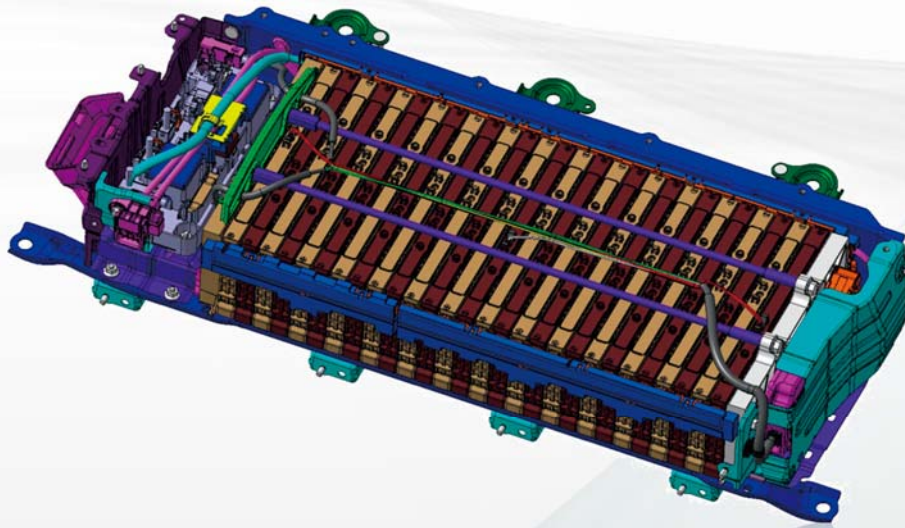
Auxiliary battery



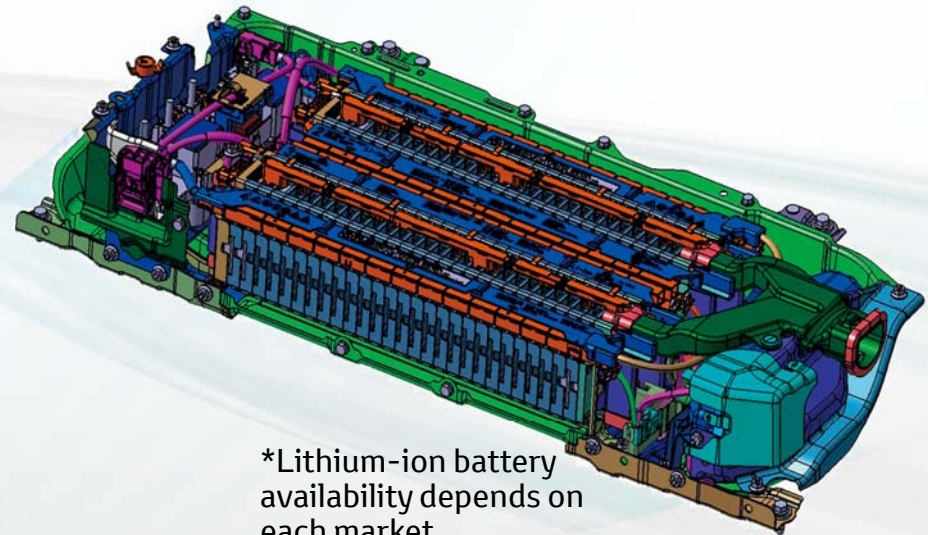
### 3. Hybrid System

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## Newly Developed Nickel-Metal Hydride and Lithium-Ion Battery



Nickel-Metal Hydride



\*Lithium-ion battery  
availability depends on  
each market

Lithium-Ion

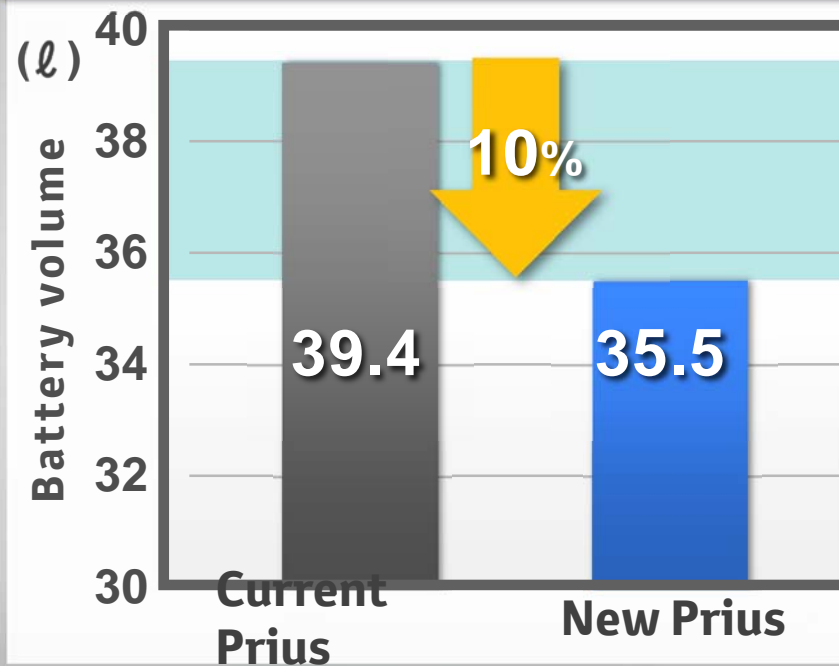
 Improved output

### 3. Hybrid System

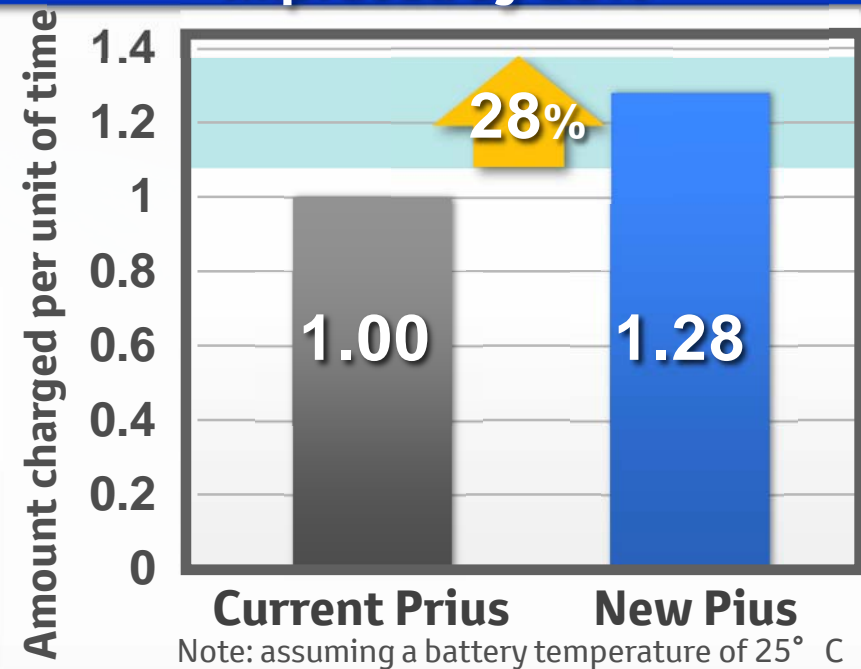
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#### Newly Developed Nickel-Metal Hydride Battery

##### Size reduced by 10%



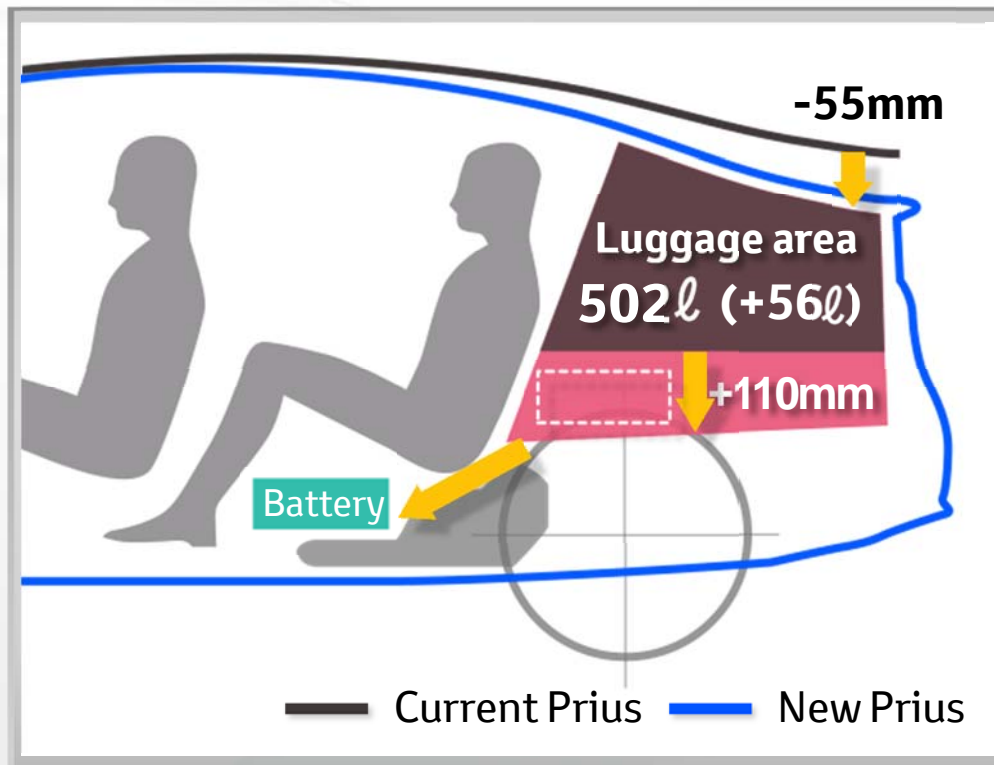
##### Charging performance improved by 28%



### 3. Hybrid System

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#### Relocated Battery



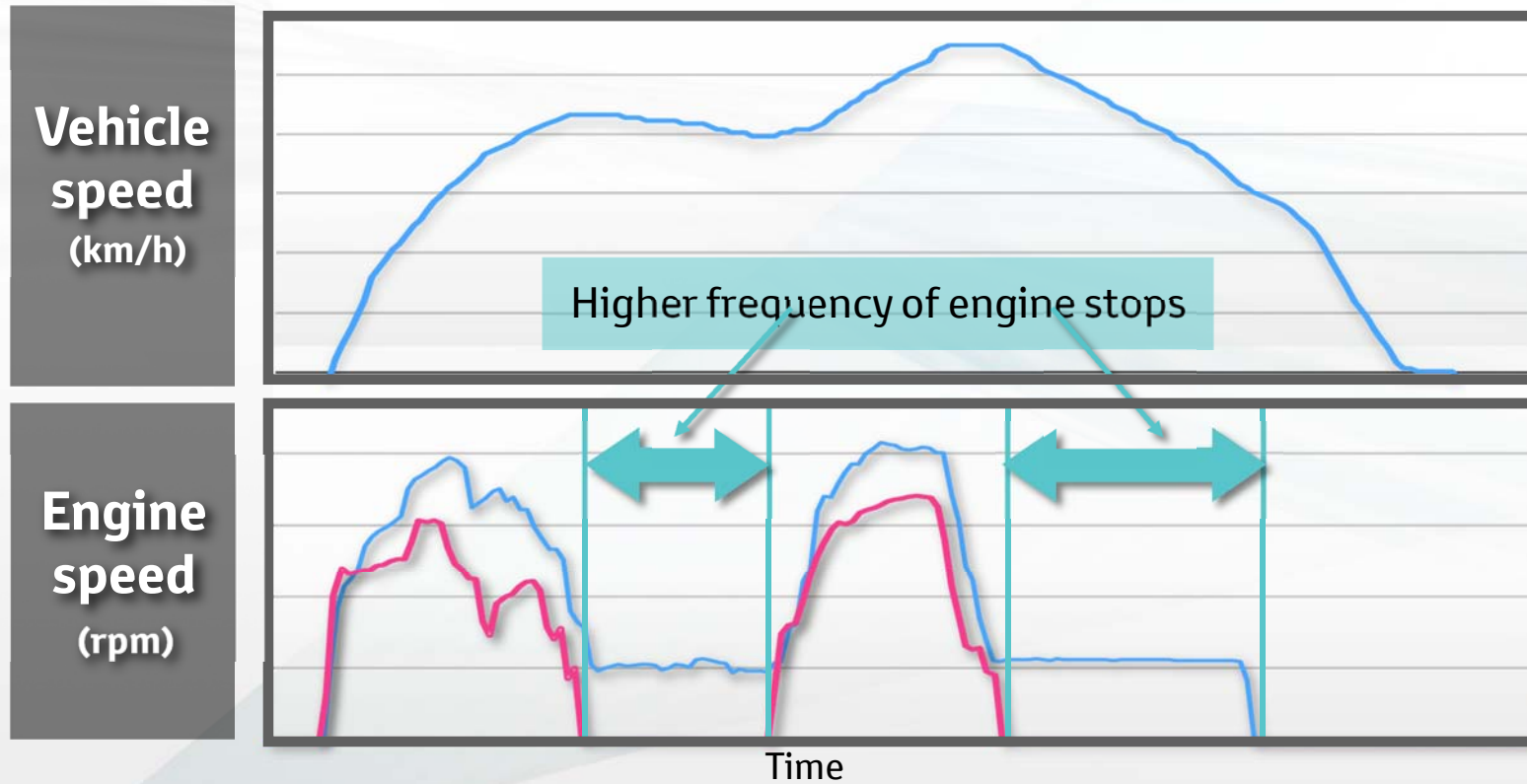
**NiMH & Li-ion**  
Luggage area capacity  
increased by **56ℓ**



### 3. Hybrid System

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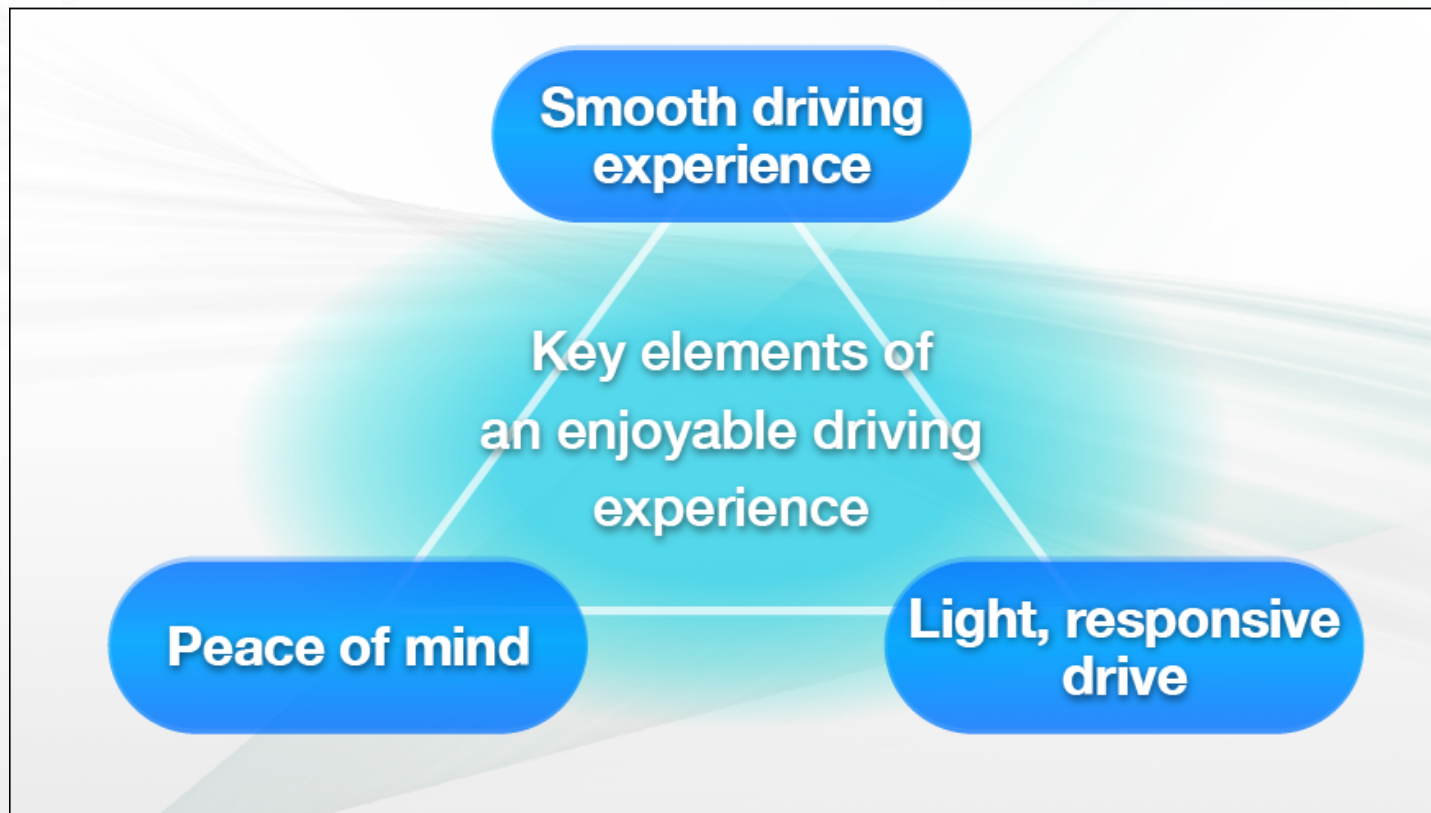
#### Higher Engine Stop Speed





### 3. Hybrid System

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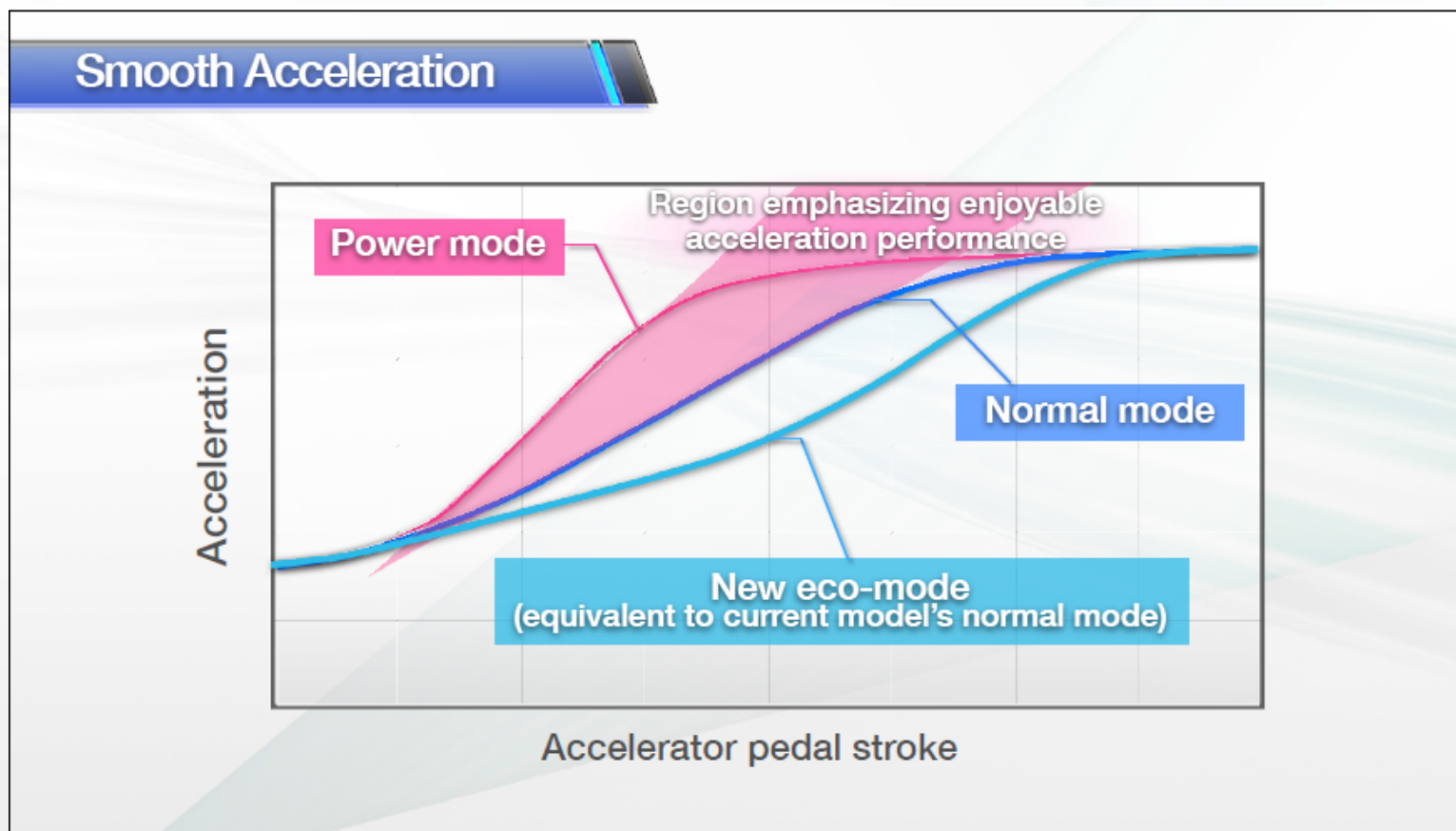
### 3. Hybrid System

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### 3. Hybrid System

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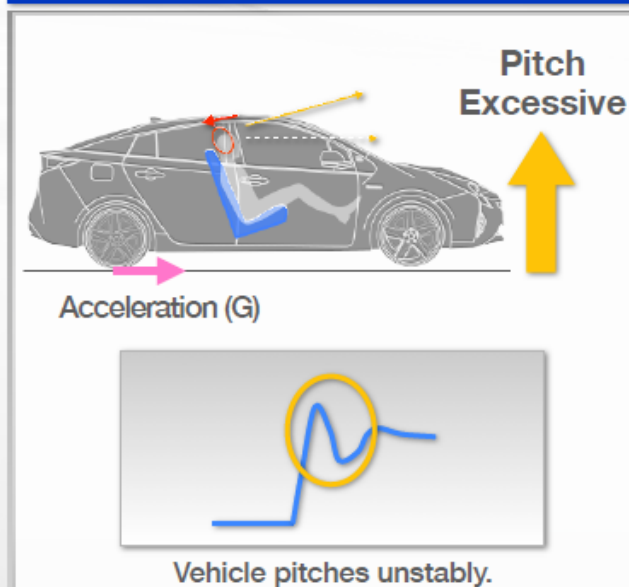


### 3. Hybrid System

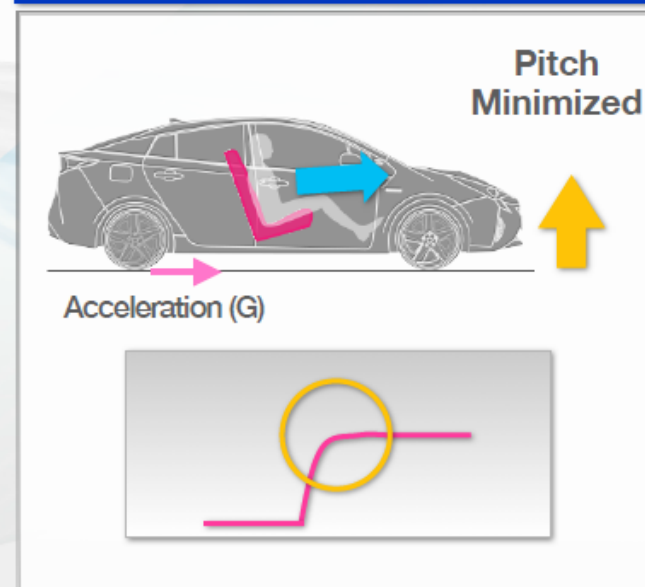
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#### Minimizing Pitch when Accelerating from Start

Current Prius



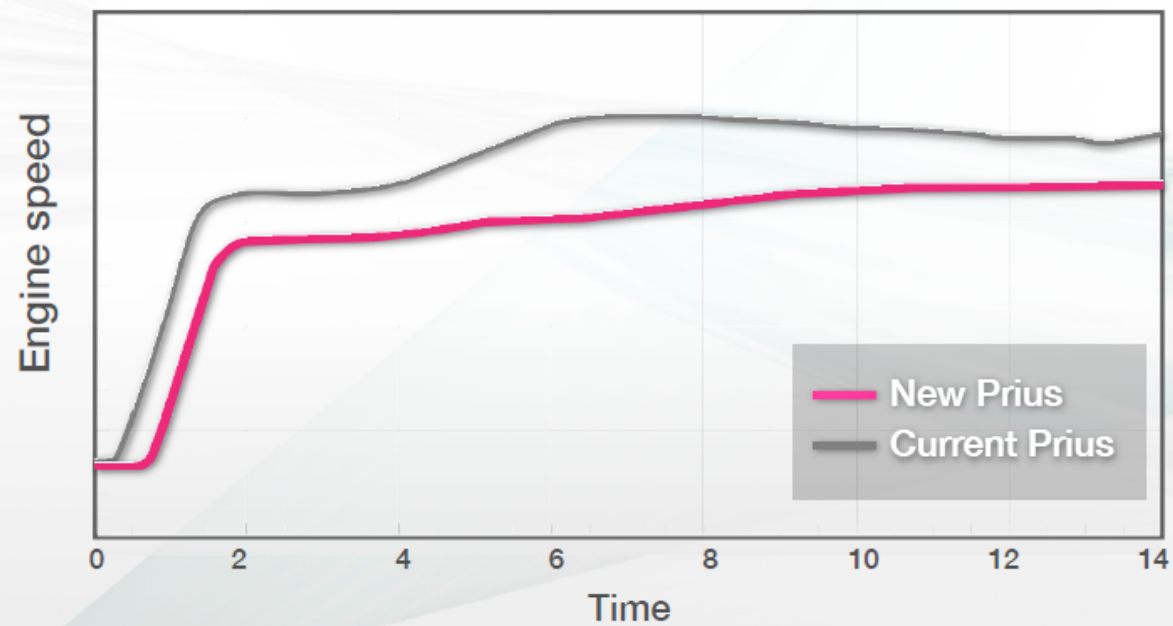
New Prius



### 3. Hybrid System

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#### Responsive and Linear Acceleration





## 4. Advanced Equipment

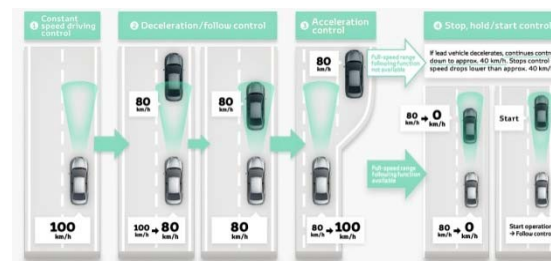
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# Toyota Safety Sense P (on Japan models)

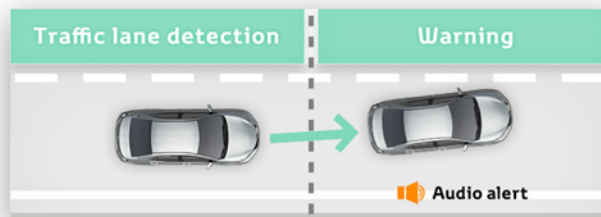
### Pre-collision system with pedestrian detection



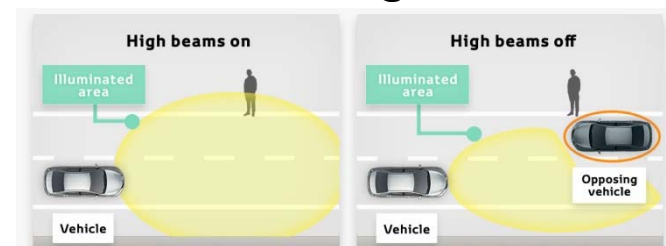
### Radar cruise control



### Lane departure alert



### Automatic high beams



# PRIUS