

# Challenges for Sustainable Mobility

*Toyota Business Strategy Meeting 2007*

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Toyota Motor Corporation

# Challenges to Deliver Mobility for a Sustainable Society



**CO<sub>2</sub> reduction**

**Effective utilization of  
alternative fuels**

**Cleaner emissions**

**Safety**

**Development of  
appealing products**



# Diesel Engine Lineup

CO<sub>2</sub> Reduction

Cleaner Emissions

1.4 litre



1.6 litre class

To be introduced

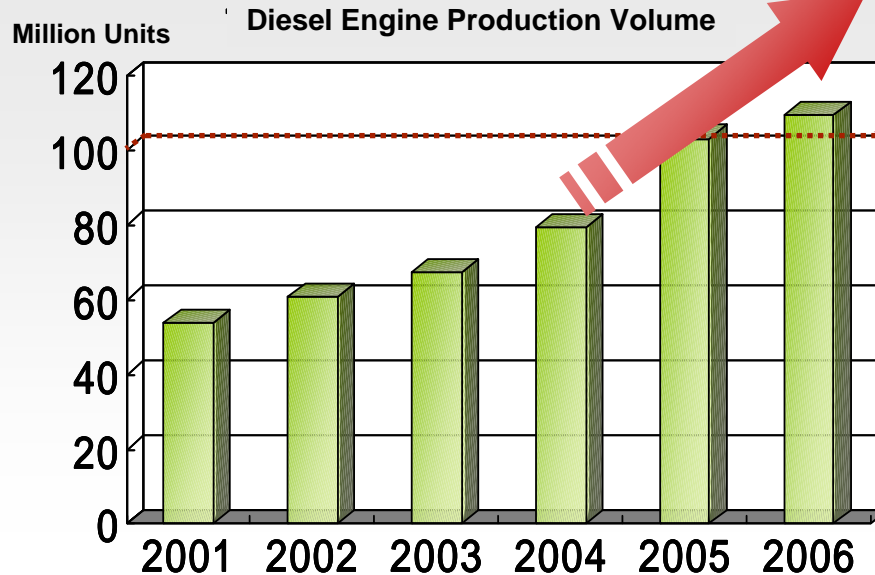
2.0-2.2 litre



2.5-3.0 litre



V8 4.5 litre



Reached 1 million units per year

Wide array of diesel engines and increased production

# Advanced Clean Diesel Technology

## Toyota D-CAT System

### Advantage

Fuel economy improvement

Low emission

High output

Low noise

Low Compression Ratio

-Ceramic Glow Plug

Common Rail System

-Piezo Injector

High Pressure Injection

180MPa~

Variable Nozzle  
Turbo Charger

**DPNR** (Diesel Particulate –  
NOx Reduction System)



Early introduction of advanced diesel engine

# Clean Emission Technology

## History of Toyota's after-treatment technology

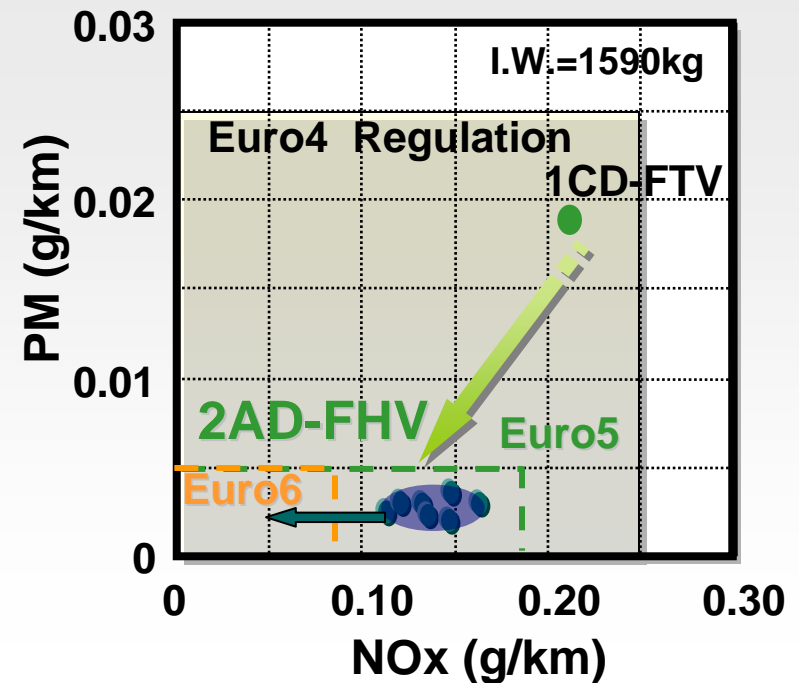
- 1992 NSR: application for patent
- 1994 Start production of NSR catalyst for gasoline engine
- 2003 Start production of DPNR catalyst for diesel engine

We have been offering licensing of NSR to multiple car manufacturers, and this seems likely to continue.

**NSR** : NOx Storage Reduction Catalyst

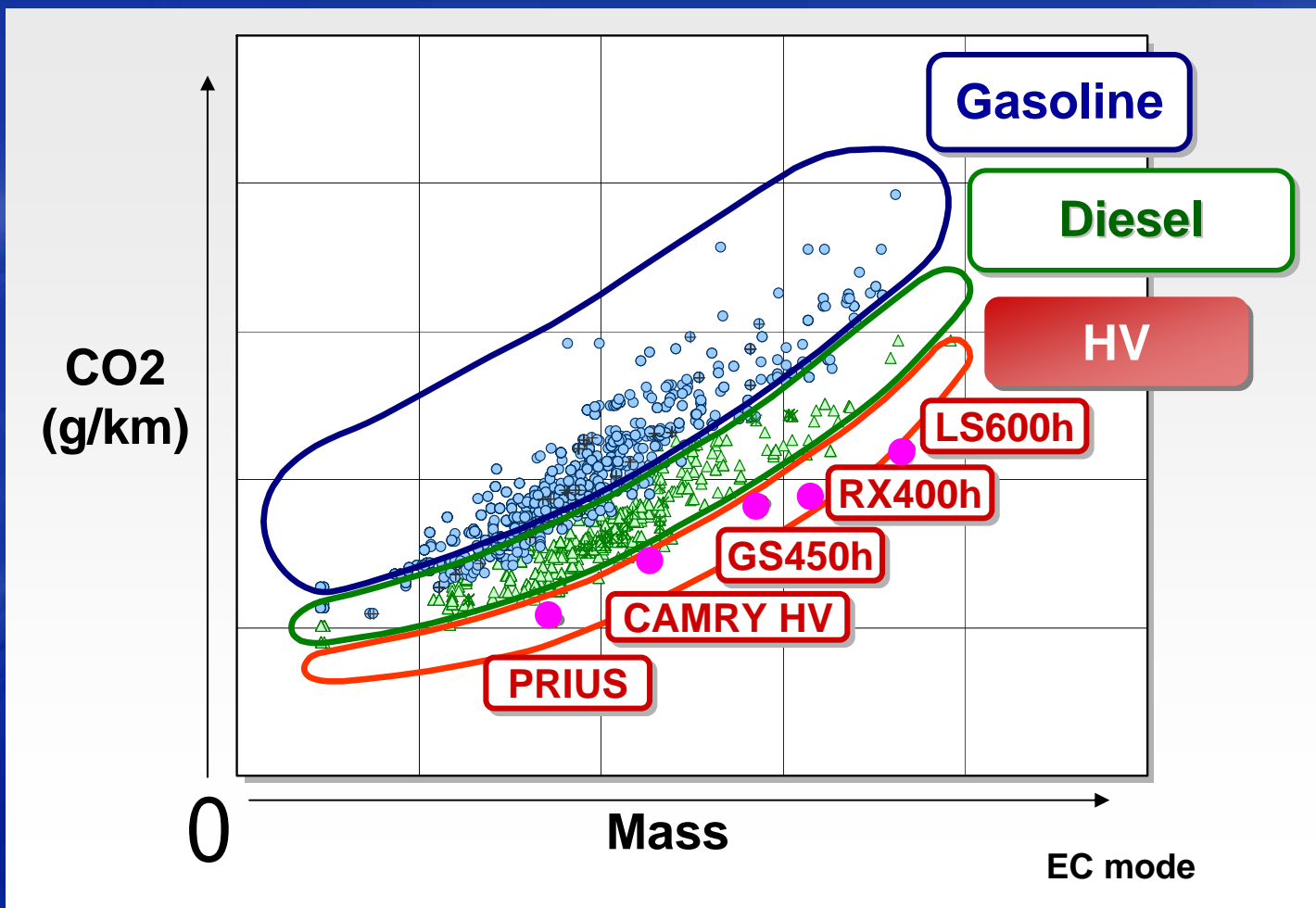
**DPNR** : Diesel Particulate – NOx Reduction System

## Cleaner emissions by introduction of new engine



Promotion of emission treatment (original technology and production)

## Environmental Superiority of Hybrid Vehicles

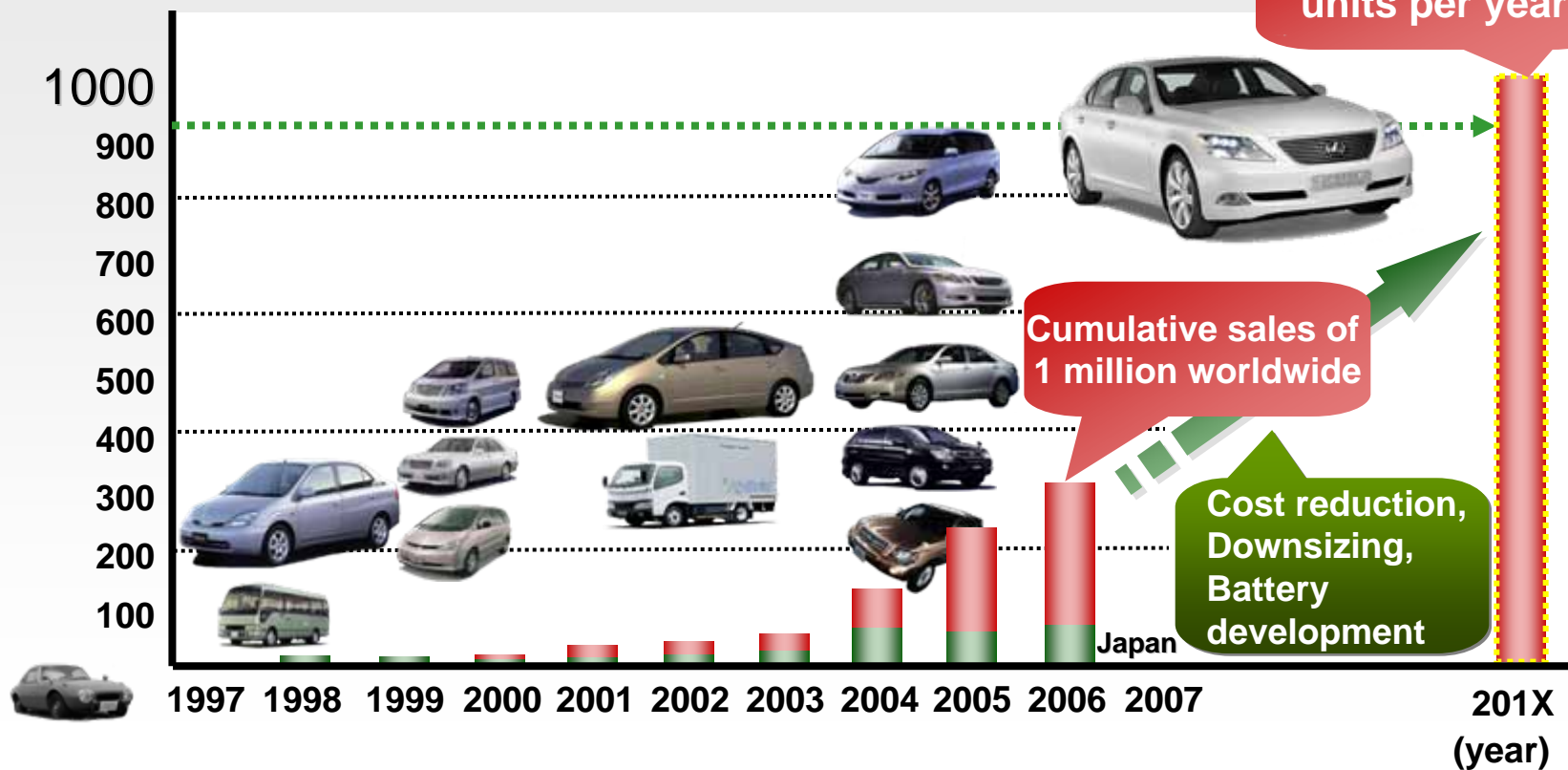


HV contributes to CO2 reduction



# Annual Sales Volume of Hybrid Vehicles

(1000 units/year)



Further evolution of HV and plan of expansion to more models

# Efforts to Utilize Alternative Fuel

CO<sub>2</sub> Reduction

Promotion of alternative fuels

## Bio-fuel

- Flex Fuel Vehicle
- Advanced bio research
- Quality improvement of conventional bio-fuel

## Hydrogen

- Fuel Cell Hybrid Vehicle

## Electric

- Plug-in Hybrid Vehicle

FFV



FCHV



Plug in HV





# Plug-in Hybrid Vehicle

CO<sub>2</sub> Reduction

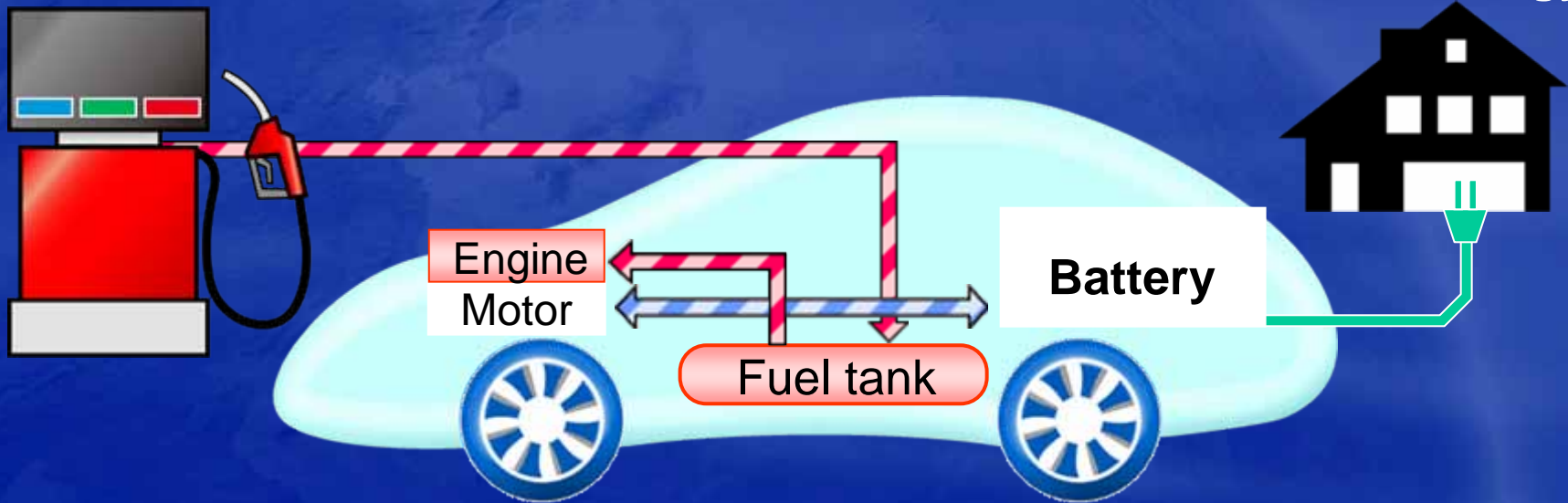
Promotion of alternative fuels

Charge battery from external charging, and expand EV driving range by motor

- PHV runs by motor charged by electricity for short range
- PHV runs by engine and motor for longer distances, high speed, and hill-climbing

Gas Station

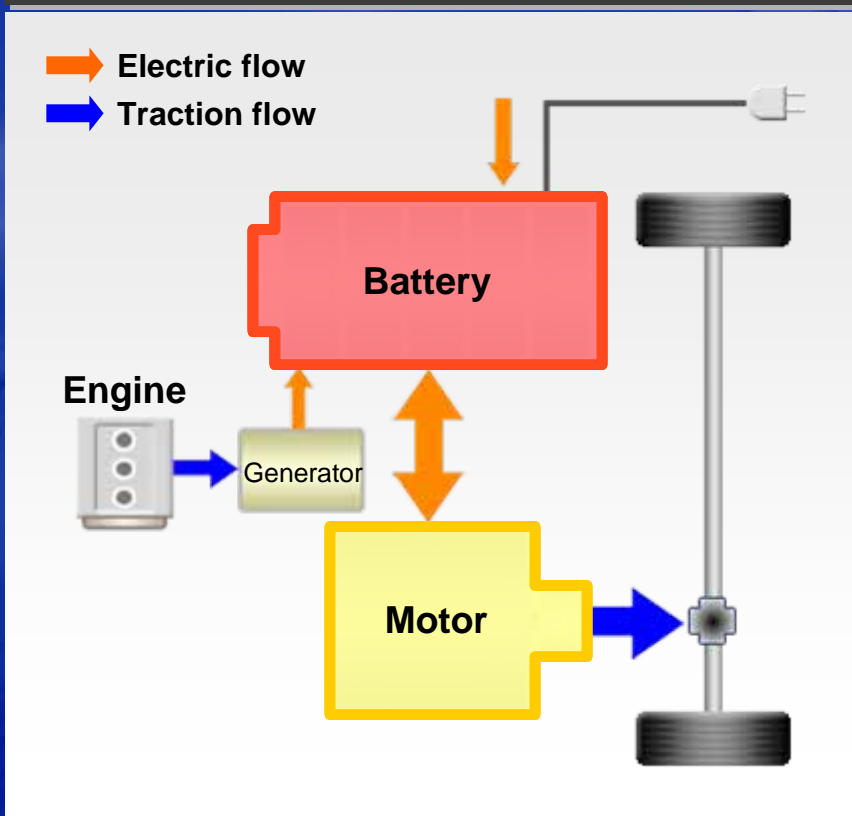
Household Electrical Energy



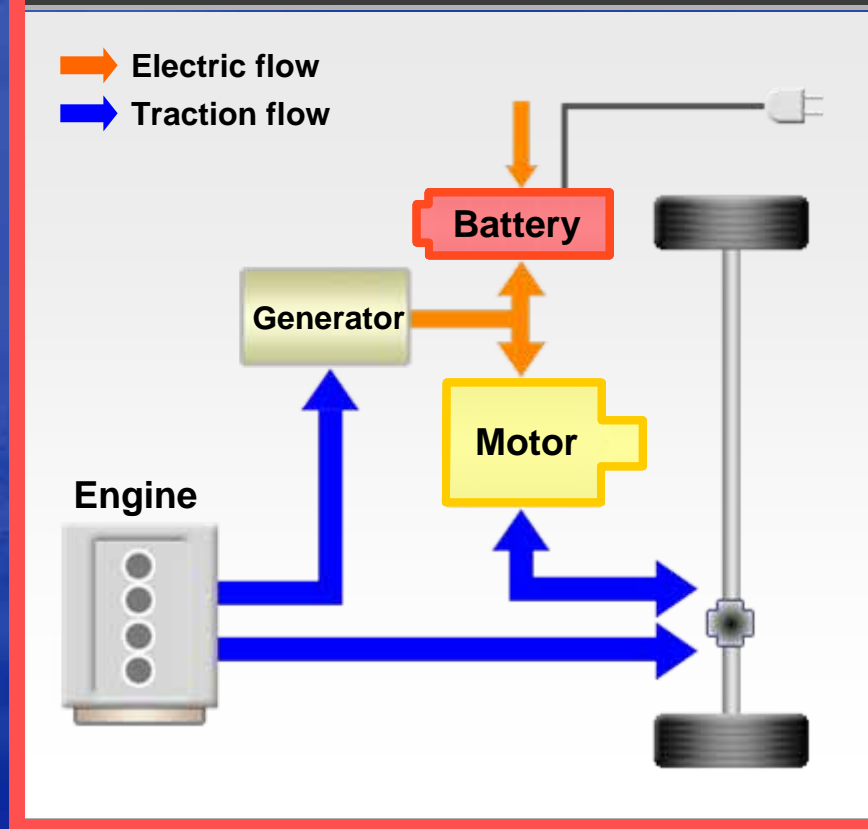
A practical way to use electricity

# Superiority of Toyota PHV

## EV-based PHV



## HV-based PHV (Toyota PHV)



Toyota selected HV-based PHV considering driving range, battery size, charge time, etc.

# Toward Development of Appealing Products

Development of  
Appealing Products

Package  
Revolution

Provide with  
Low Cost

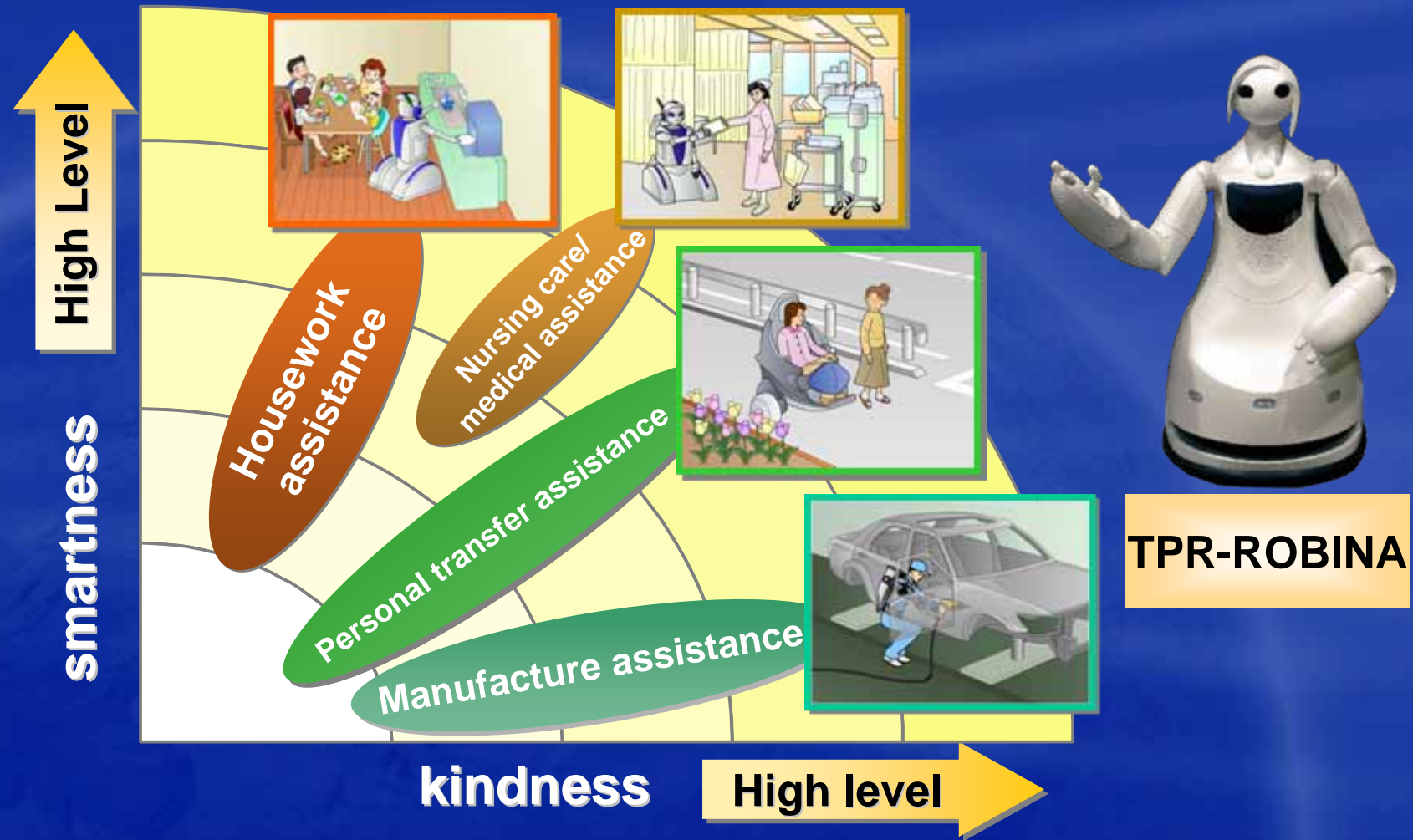
Fun to Drive



Improve product competitiveness by development of  
appealing products and cost reduction technology

**TOYOTA**

# Partner Robot Development



Promote robot development in four areas that assist people

# R&D Global Offices

North America



Southeast Asia



Japan



Europe



Australia



**TOYOTA**



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