

# **GNSS Round Table**

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## **Automated Driving Level 3 - Aiming at a Collision-free Society -**

**Yoichi Sugimoto**

Executive Chief Engineer  
Honda R&D Co., Ltd.

- **Initiatives towards a Collision-free Society**
- **Approaches towards Automated Driving**
- **Challenges to realize Automated Driving Level 3**
- **Closing**

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# **2030 Vision**

**Serve people worldwide with the  
“joy of expanding their life’s potential”**

**Lead the advancement of mobility and enable people everywhere  
in the world to improve their daily lives**

# Safety for Everyone

**Leading the way in realizing a society with zero traffic accidents, where not only people driving cars and motorcycles but also everyone on the road is safe**



# New Safety Target

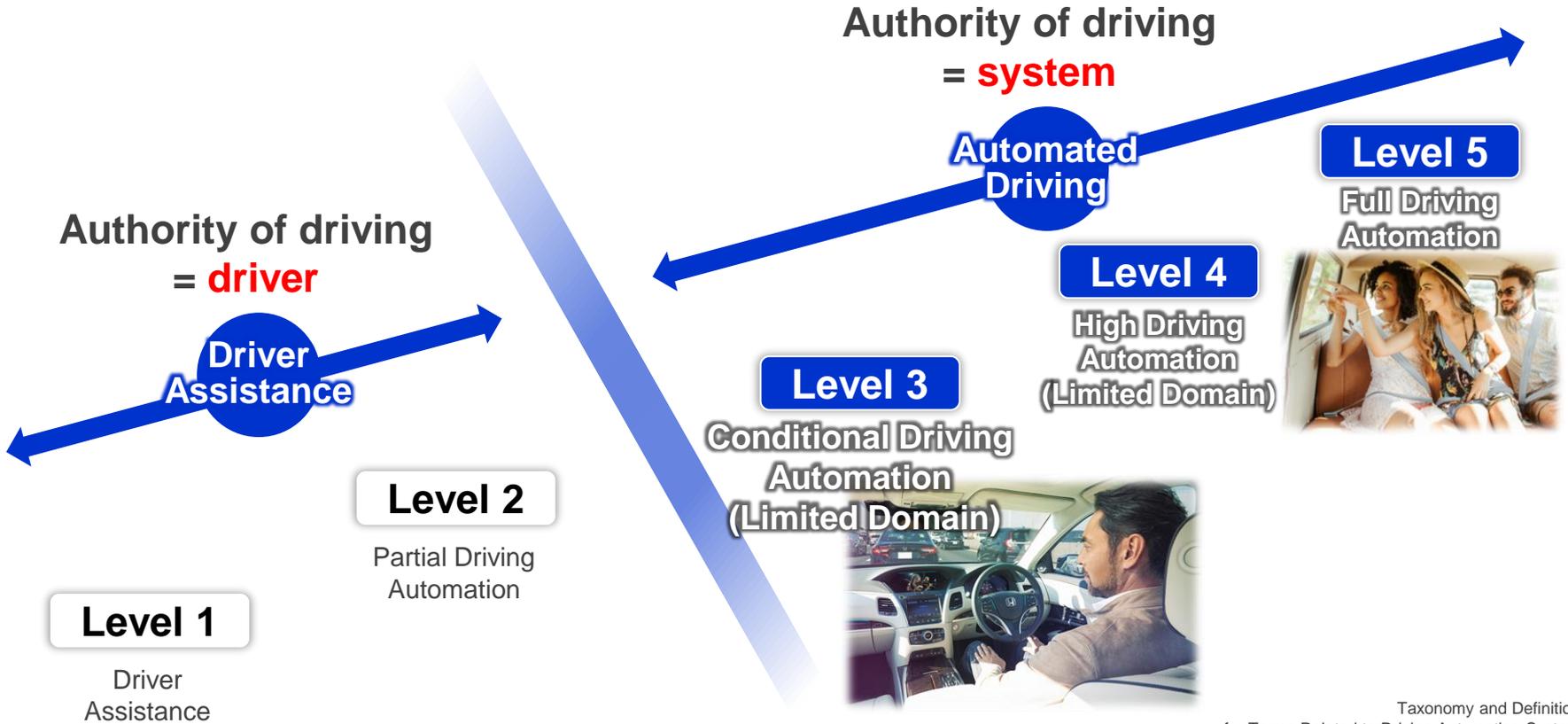
**HONDA**



**Zero traffic collision fatalities  
involving Honda motorcycles and automobiles  
globally by 2050**

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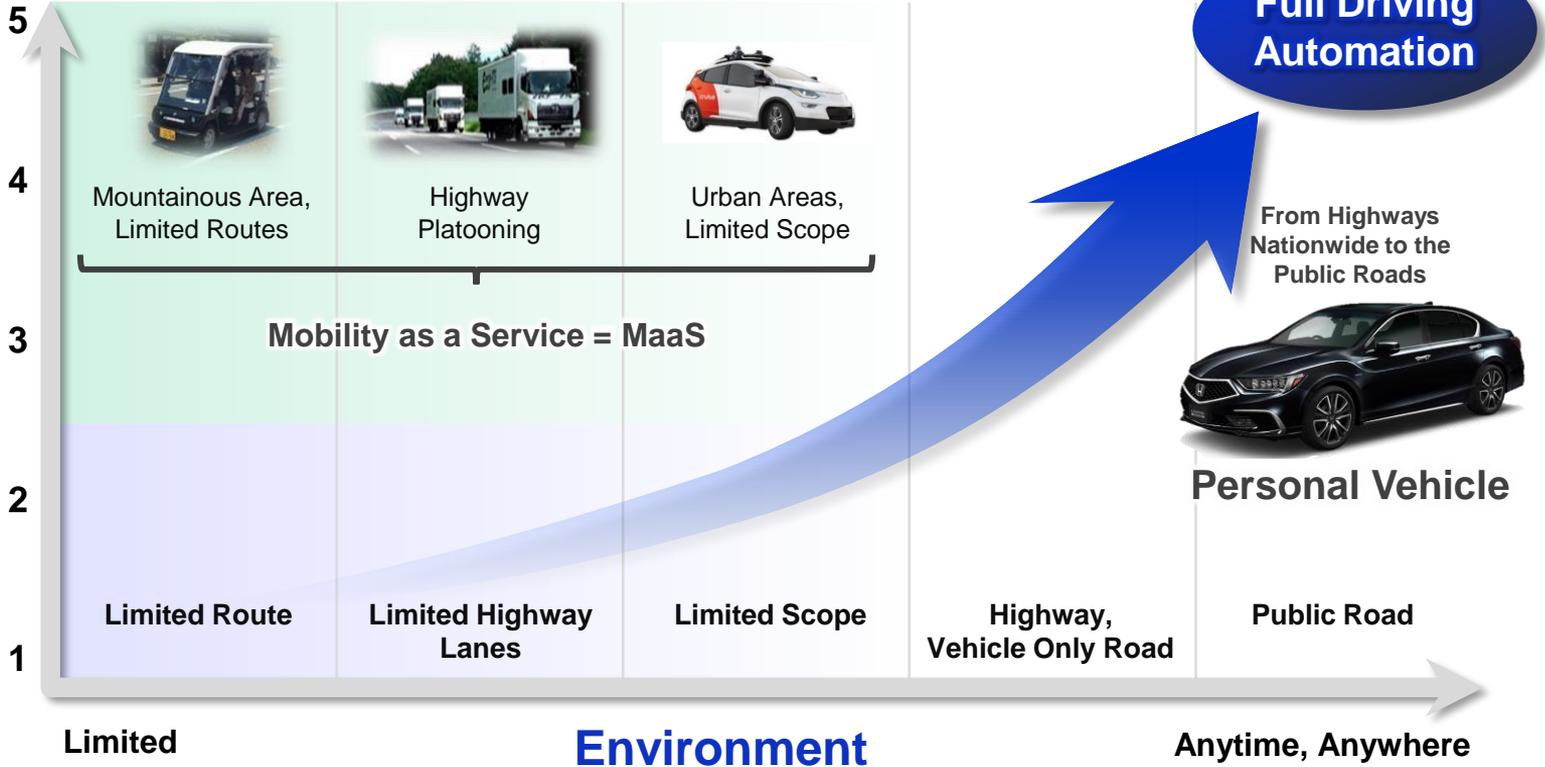
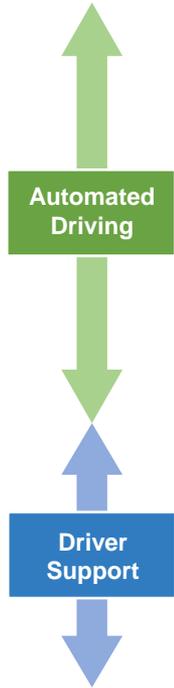
# Definition of Driving Automation Levels



Taxonomy and Definitions  
for Terms Related to Driving Automation Systems  
for On-Road Motor Vehicles  
J3016\_202104

# Two Approaches on Automated Driving

Driving Automation Level



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## Automated Driving System

Camera, radar, LiDAR, 360 degrees situation detections, safety argument, CBU, simulation verification, etc.



Application

Level 4/5

Level 3

Safety technical guidelines required by the government

Request

Does not cause preventable personal injury that is reasonably foreseen \* 1

Level 2

Level 1

\* 1: MLIT Automated driving vehicle safety technical guidelines

# Type Approval on Automated Driving Vehicle (Level 3)

HONDA

国土交通省

Ministry of Land, Infrastructure, Transport and Tourism

令和 2 年 11 月 11 日

自動車局審査・リコール課

## 世界初！ 自動運転車(レベル3)の型式指定を行いました

国土交通省は、本田技研工業株式会社から申請のあった車両(通称名:レジェンド)に対し、自動運行装置を備えた車両としては世界初の型式指定を行いました。

### 1. 概要

本田技研工業(株)から申請のあった自動運行装置を搭載した自動運転車(レベル3)について、(独)自動車技術総合機構交通安全環境研究所における保安基準適合性の審査を踏まえ、本日、世界で初めて型式指定を行いました。

自動運転車については、交通事故の削減、高齢者等の移動手段の確保、物流分野における生産性向上等、我が国が抱える様々な社会課題の解決に大きな役割を果たすことが期待されています。そのため、自動運転に係る政府全体の戦略である「官民ITS構想・ロードマップ」(ITS総合戦略本部決定)において、市場化・サービス化に係るシナリオと目標を掲げ、国土交通省を含め官民一体となって早期実現に向け取り組んでおります。(別紙1)

同ロードマップにおいて、高速道路の自動運転車(レベル3)の市場化目標時期が2020年目途とされていることを踏まえ、国土交通省では、昨年5月の道路運送車両法の一部改正に基づき、本年3月、世界に先駆けて自動運転車の保安基準を策定するなど、早期導入に向け制度整備を進めてきました。(別紙2)

国土交通省としては、引き続き、自動走行分野において世界をリードし、様々な車社会の課題解決に大きく寄与する自動運転の一層の実用化、普及に取り組んでまいります。



Ref: Press release  
by MLIT

## 自動運行装置の構成

### 外界認識(車両周辺)

- カメラ
- レーダー
- ライター

### 自車位置認識

- 高精度地図
- 全球測位衛星システム(GNSS)

### 自動運行装置に必要な対応・装備

- サイバーセキュリティ
- ソフトウェアアップデート
- 作動状態記録装置
- 外向け表示(ステッカー)



### ドライバー状態検知

- ドライバーモニタリングカメラ

### 機能冗長化

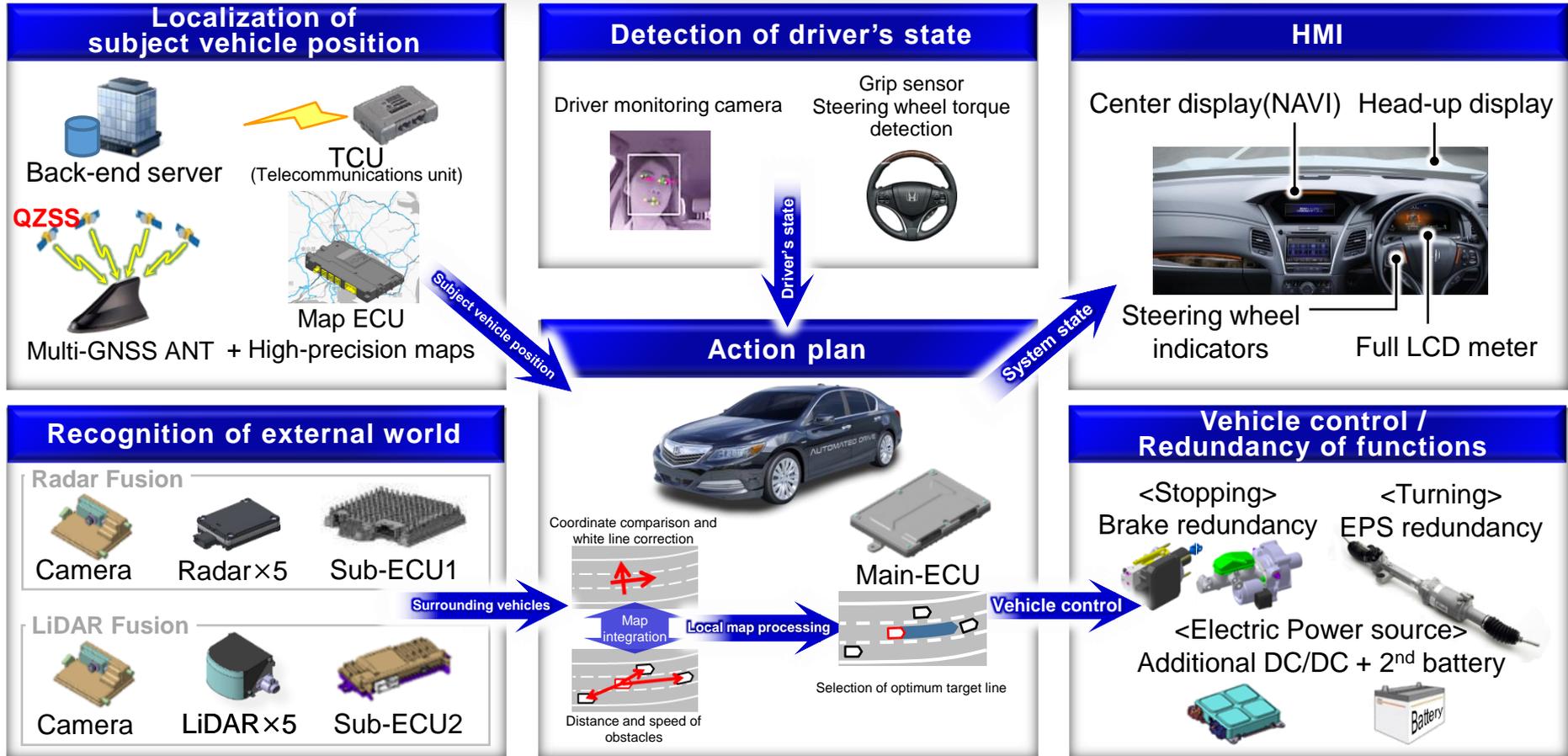
- 電源系統
- ステアリング機能
- ブレーキ機能



※本田技研工業(株)提供

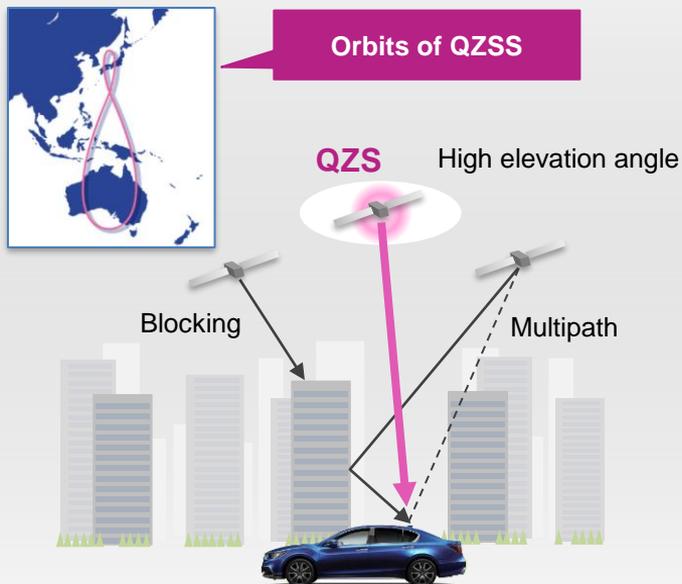
Got the World's 1<sup>st</sup> Type Approval on Automated Driving Vehicle (Level 3) on Nov 11<sup>th</sup>, 2020

# Configuration of Automated Driving System



## ① Stable positioning with more satellites

Receive **more stably** from **QZSS's** orbits even in urban canyons

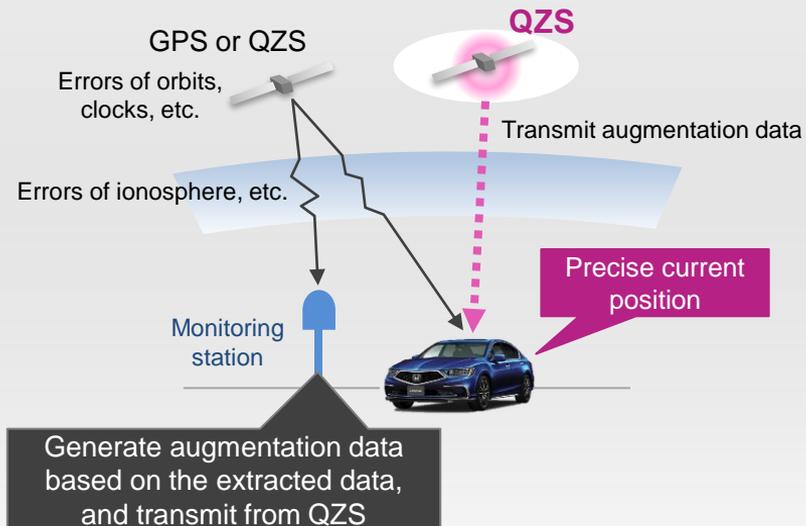


Cabinet office: QZSS Web site  
[https://qzss.go.jp/overview/services/sv02\\_why.htm](https://qzss.go.jp/overview/services/sv02_why.htm)

## ② Higher positioning accuracy by augmentation data from QZSS

**SLAS** (Sub-meter Level Augmentation Service)

SLAS configuration

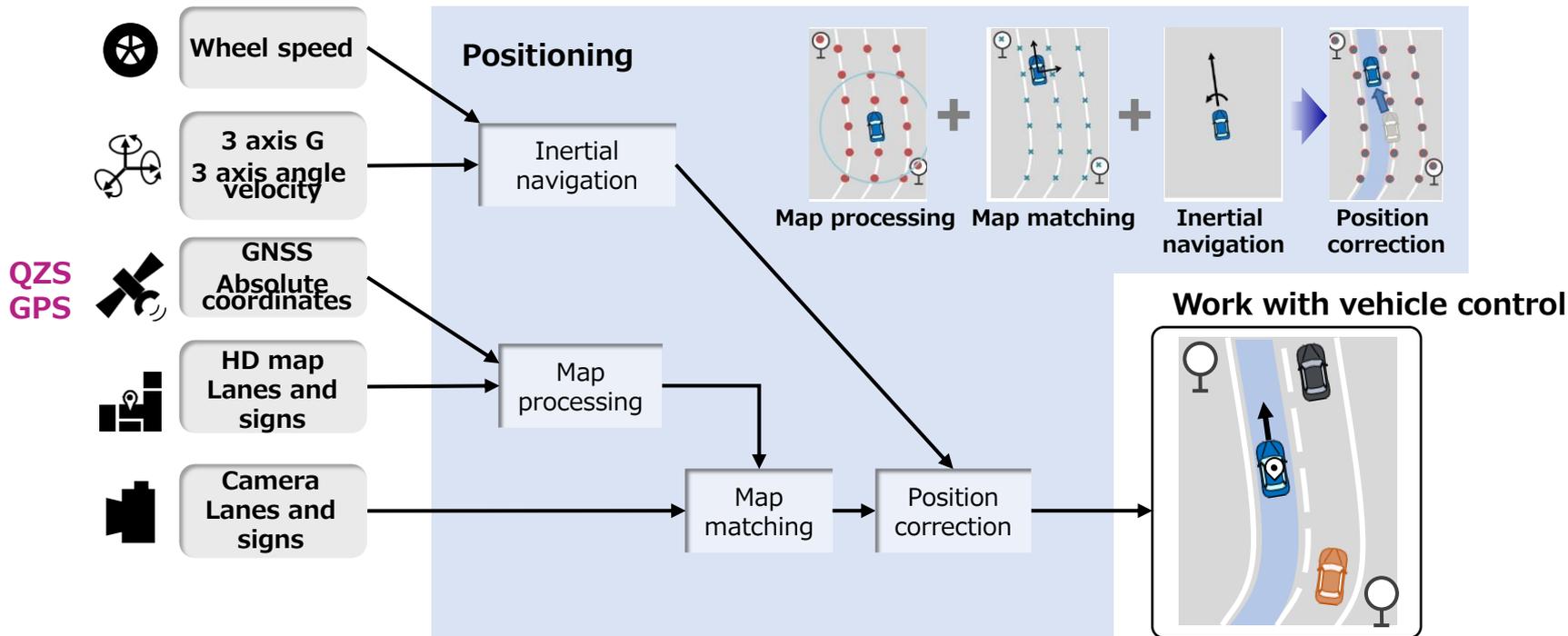


From Cabinet office: QZSS Web site  
[https://qzss.go.jp/overview/services/sv05\\_slas.html](https://qzss.go.jp/overview/services/sv05_slas.html)  
※Images are modified by Honda

Apply HD map to Highway Automated Driving to **realize foreseeable behaviors**

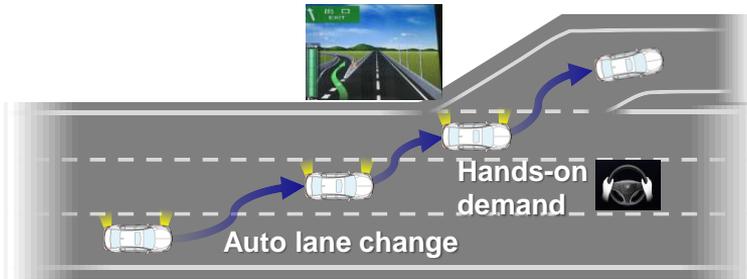
## ◆ Utilization of HD map

Identify its own position on highways and work with vehicle control, understanding scenes with lanes and other vehicles

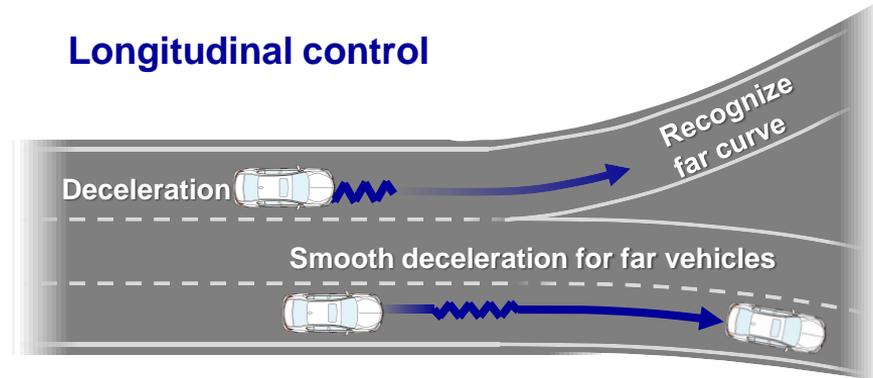


Realize foreseeable behaviors, utilizing information on its own lane, lane-level routes, and road geometries ahead

## Route guidance



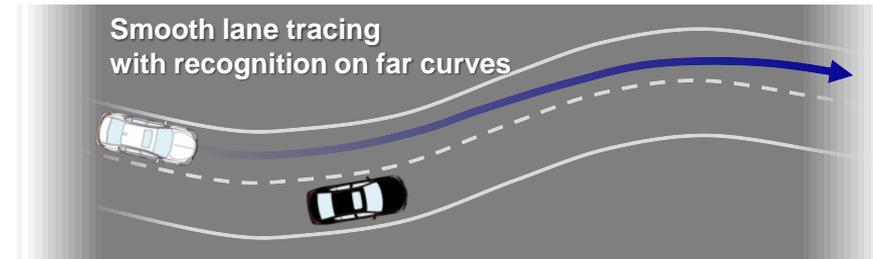
## Longitudinal control



## Highway exit



## Lateral control



# Driver Benefits of Honda Sensing Elite

**HONDA**

## Driving Scenarios

In-Lane Driving

Lane Changing

Congested Traffic

L2 Adaptive In-Lane Driving

L2 Adaptive Lane Change Assist  
With Hands-Off Function

L3 Traffic Jam Pilot



Reduced stress  
Ability to release hands

Reduced stress  
Ability to release hands

Reduced stress  
Ability to watch / operate infotainment

**Driver Benefit**

# Safety for Everyone

- Initiatives towards a Collision-free Society
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- **Closing**

**Serve people worldwide with the “joy of expanding their life’s potential”**

- Lead the advancement of mobility and enable people everywhere in the world to improve their daily lives -

## **Lead realization of Collision-free Society**

### **Safety for Everyone**

Freed from anxiety about driving, everyone can enjoy mobility at any time



**Freedom of mobility**



**The new joy of mobility**

Fit closely with people's individual life circumstances  
Urge to get out and around, prompting curiosity

**Collision-free Society with the Joy & Freedom of Mobility for Everyone**

**HONDA**

The Power of Dreams