April 18, 2025 Automated Driving Center
Symposium on International Rulemaking for
Automated Connected Vehicles

Japan's Policy to Promote Automated Driving, Including Robotaxis

NAONO Takashi

Director of Safety Office
Logistics and Road Transport Bureau,
Ministry of Land, Infrastructure, Transport and Tourism

Today's Agenda

1. Background

- Situation of Traffic Accidents
- Automotive Industry
- The Importance of Harmonization of International Regulations
- WP.29

2. The Significance of and Promotion Structure for Automated Driving

- The Significance of Automated Driving, Two Approaches
- Government Goals, Promotion Structure

3. Automated Driving Regulations

- History of Domestic and International Regulations

4. Promotion of Automated Driving

- Extend of Spread Domestically
- Overseas Trends

Today's Agenda

1. Background

- Situation of Traffic Accidents
- Automotive Industry
- The Importance of Harmonization of International Regulations
- WP.29

2. The Significance of and Promotion Structure for Automated Driving

- The Significance of Automated Driving, Two Approaches
- Government Goals, Promotion Structure

3. Automated Driving Regulations

- History of Domestic and International Regulations

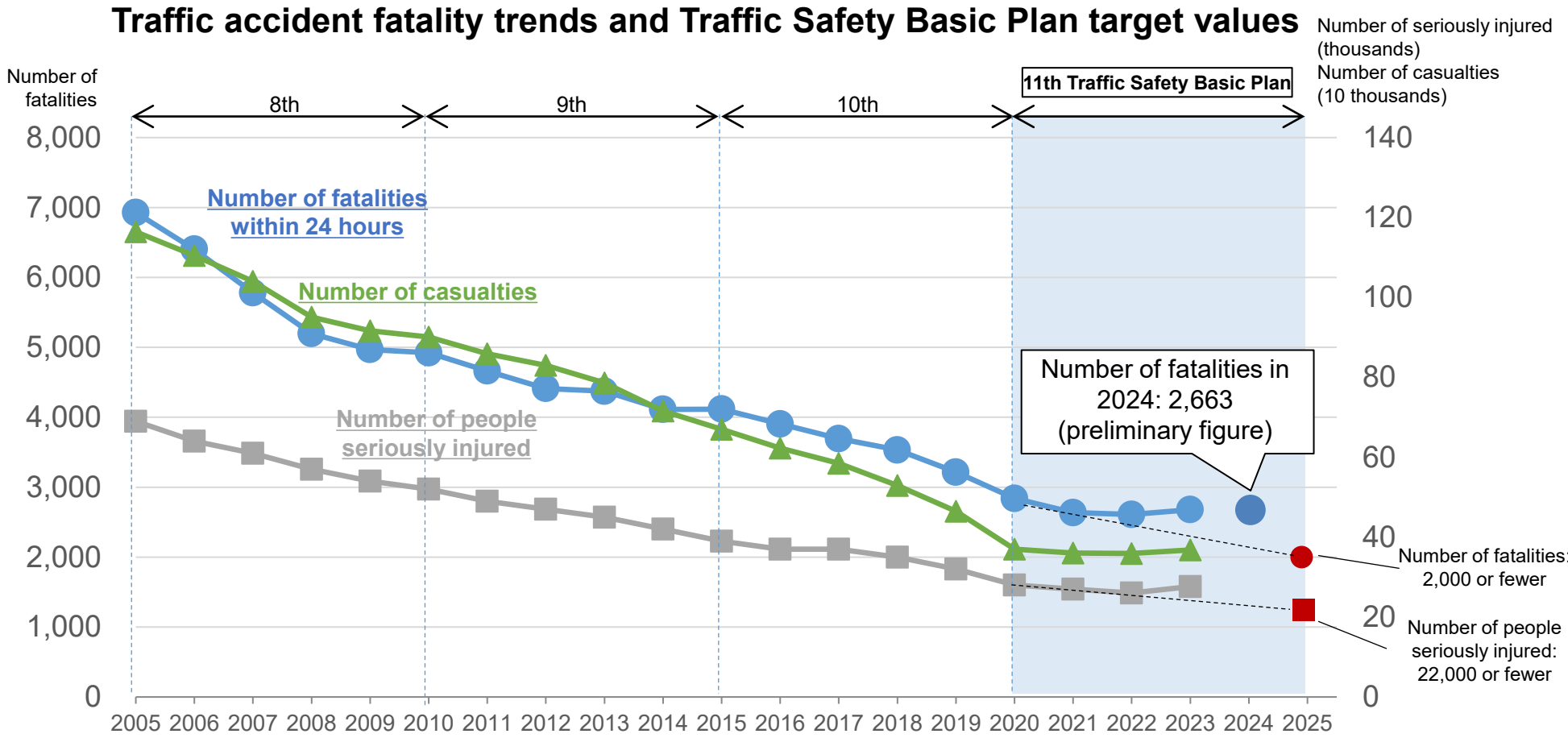
4. Promotion of Automated Driving

- Extend of Spread Domestically
- Overseas Trends

Traffic Accident Fatality Trends and Goals

国土交通省

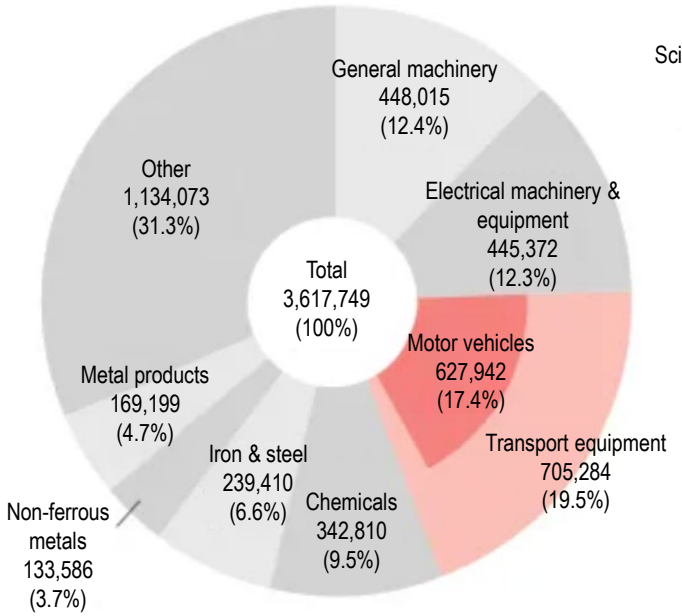
- The number of traffic accident fatalities in Japan has fallen to 2,663 (in 2024), about 1/6 that of the peak of 16,765.
- In the 11th Traffic Safety Basic Plan, the government has set a goal of reducing the number of fatalities to 2,000 or fewer by 2025.



Automotive Manufacturing

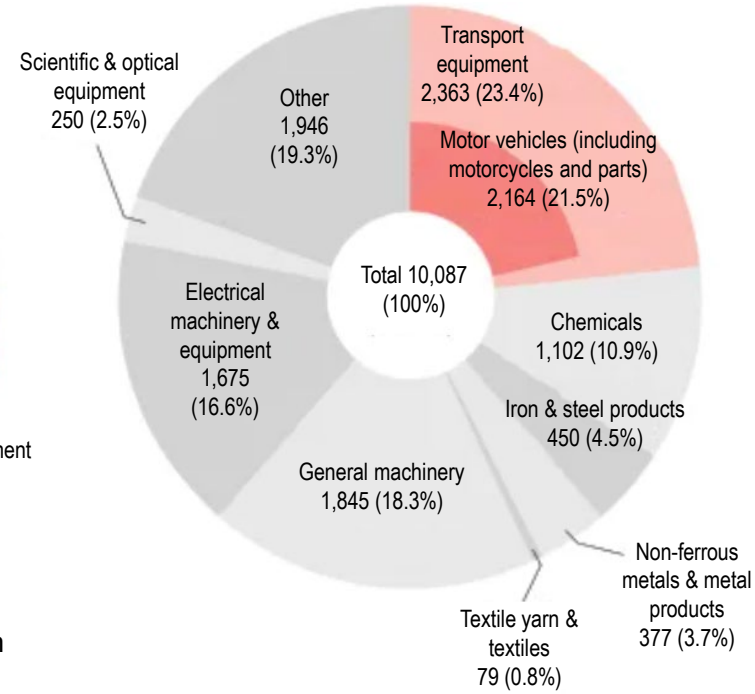
- Of Japan's entire manufacturing industry, automotive manufacturing industry shipments account for about 20%, exports account for about 20%, and the working population accounts for about 10%.
- The automotive industry is **an important foundational industry that supports the Japanese economy.**

Shipments of major manufacturing sectors in terms of value (2023)



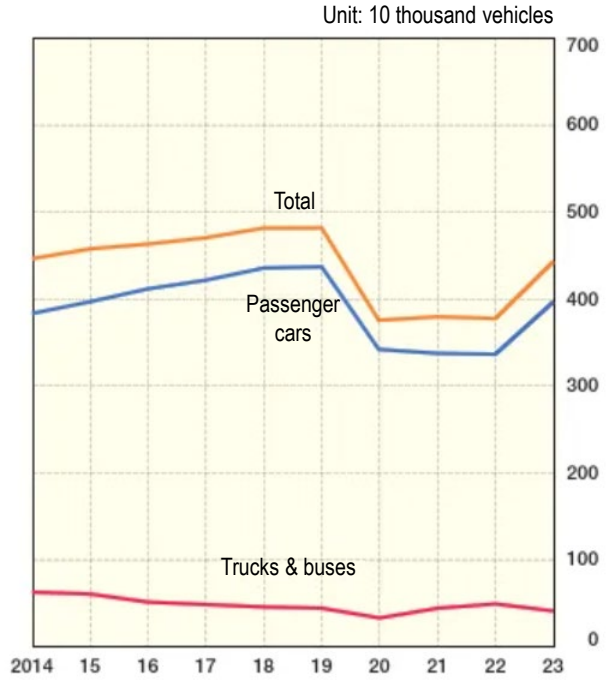
Unit: 10 billion yen

Exports by principal commodity (2023)



Unit: 10 billion yen

Trends in motor vehicle production

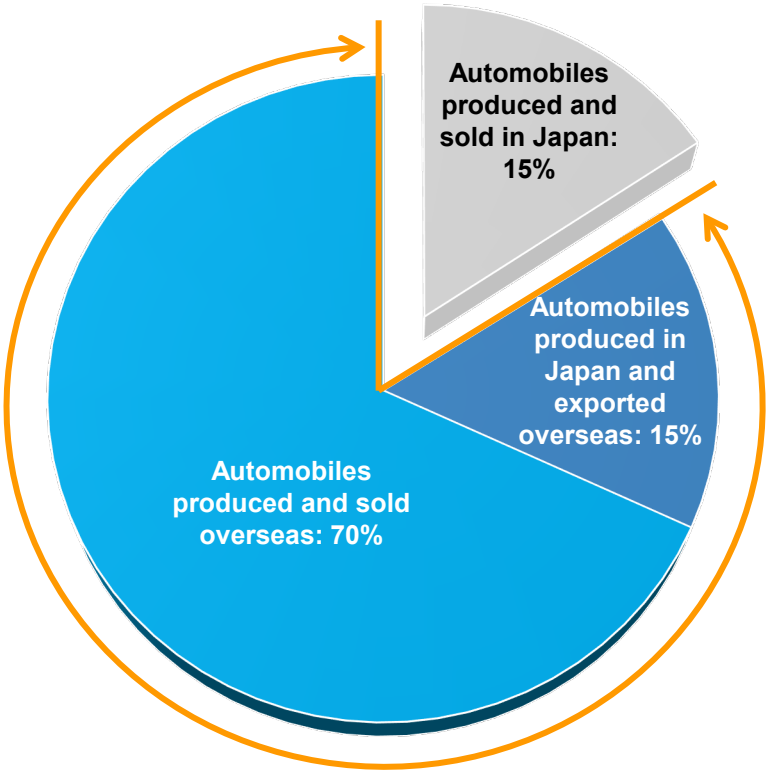


Source: The Motor Industry of Japan 2024

The Importance of Harmonization of International Regulations

- More than 80% of the vehicles produced by Japanese manufacturers are sold overseas.
- **It is extremely important to harmonize international regulations.**

Countries where automobiles of Japanese manufacturers are produced and sold



Over 80% are sold overseas.

Total: approx. 25 million units

Japan Automobile Manufacturers Association material (2022)

UN WP.29 and Two UN Agreements

- International vehicle regulations are discussed at the UN World Forum for Harmonization of Vehicle Regulations (WP.29).
- The international regulations established by WP.29 have been transferred into Japanese regulations.

UN World Forum for Harmonization of Vehicle Regulations (WP.29)

UNECE WP.29

- **Establishes international vehicle regulations.**
- **Establishes international certification rules.**

Two UN agreements

Agreement for harmonization of regulations and mutual recognition (1958 Agreement)

- Japan joined the Agreement in 1998 (the 42nd country to do so).
- This is an agreement for countries with a government-certification system. (Reciprocal recognition of government certification)
- 62 countries and unions, including Japan, the EU, South Korea, Malaysia, and South Africa

Agreement only for harmonization of regulations (1998 Agreement)

- Japan joined the Agreement in 1998 upon its establishment.
- This is an agreement that countries with no government-certification system can also join.
- 39 countries and unions, including Japan, the EU, the US, and China

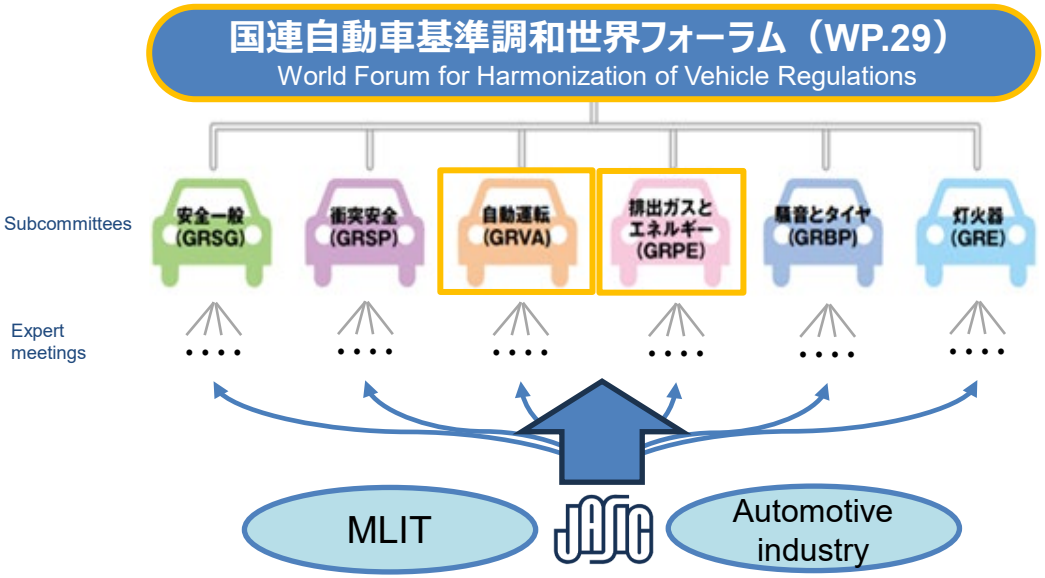
Promotion of the Internationalization of Vehicle Regulations

国土交通省

- Japan has been contributing the development of international regulations through collaboration between the public and private sectors (e.g., MLIT, automakers, and research institutes).
- In March 2023, an MLIT official became the first non-European vice chair of WP.29.

Promotion Structure

- Under WP.29, there are 6 subcommittees and 25 expert meetings.
- **Japan's opinions are advocated** at approx. 100 **international meetings** per year; these opinions are based on technical discussions in **the domestic organization established by the public and private sectors (JASIC*).**
- In addition to **the vice chair of WP.29**, Japan serves as **leaders of important subcommittees and expert meetings such as those on automated driving**.



(*) JASIC: Japan Automobile Standards Internationalization Center

Today's Agenda

1. Background
   - Situation of Traffic Accidents
   - Automotive Industry
   - The Importance of Harmonization of International Regulations
   - WP.29

2. The Significance of and Promotion Structure for Automated Driving
   - The Significance of Automated Driving, Two Approaches
   - Government Goals, Promotion Structure

3. Automated Driving Regulations
   - History of Domestic and International Regulations

4. Promotion of Automated Driving
   - Extend of Spread Domestically
   - Overseas Trends

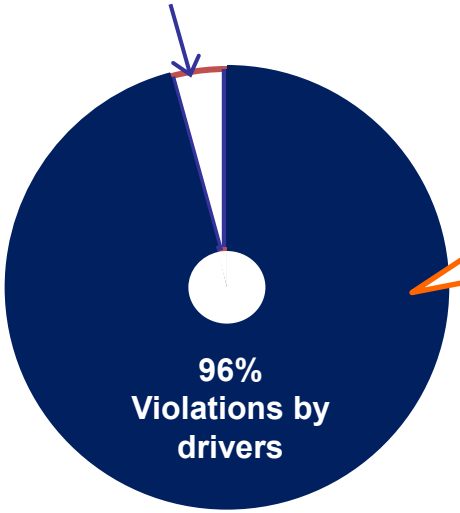
The Significance of Automated Driving

国土交通省

- Automated driving is expected to have various positive effects, such as reduction of traffic accidents as well as maintenance and improvement of local public transportation.

Number of fatal accidents due to legal violations (2023)

4%: Caused by pedestrians and others



Number of traffic accident fatalities and injuries in 2024

Fatalities	2,663
Injuries	343,756

* From a National Police Agency material

Examples of the benefits of automated driving

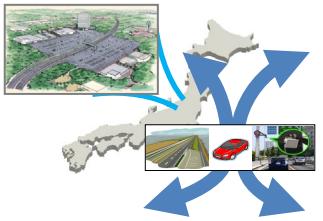
Reduction of traffic accidents

Maintenance and improvement of local public transportation

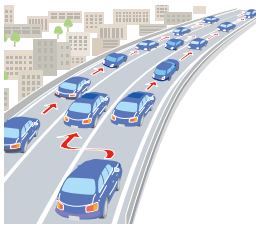
More efficient operation

Solution to the shortage of drivers

Strengthening of international competitiveness



Ease and elimination of traffic congestion



Source of pictures: Companies' websites

Two Types of Automated Driving

Commercial vehicles (Service cars)

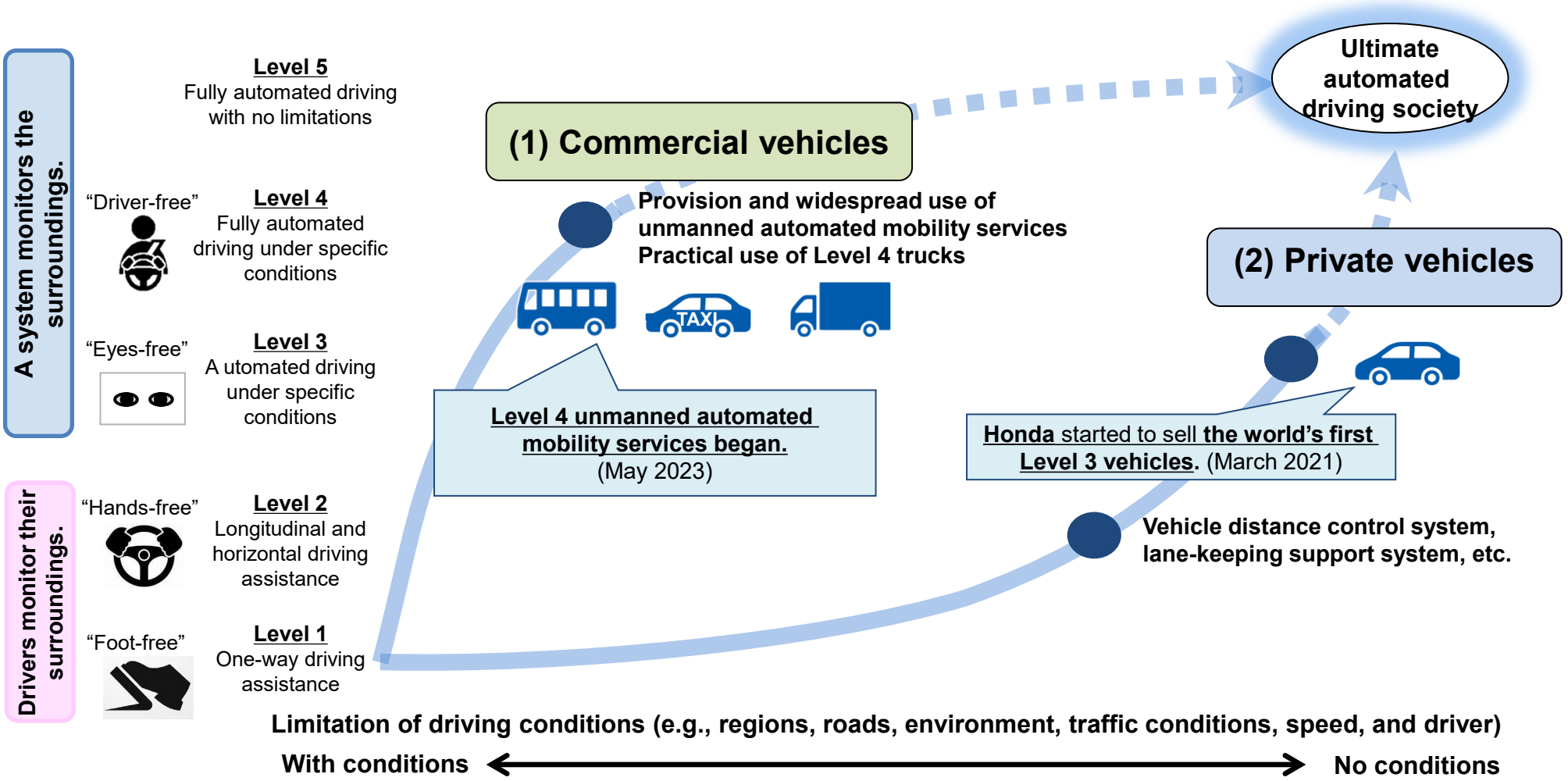
Private vehicles (Owner cars)

Source of photos: Companies' websites

Two Approaches to Realize Automated Driving

国土交通省

- There are two approaches depending on the vehicle type: (1) commercial vehicles and (2) private vehicles.
- Adopting appropriate approaches will lead to early social implementation.



Government Goals for Automated Driving

- The entire government is promoting automated driving.
- The government's goals include providing unmanned automated mobility services at 100 or more locations by fiscal 2027.

○ Prime Minister Kishida's policy speech (January 2024)

Source: Prime Minister's Office website

With regard to automated driving as well, within fiscal 2024, we will double to more than 20 the number of projects with year-round operations conducted on general roads leading to social implementation, and we will aim to have plans and actual operations underway in every prefecture.

- Comprehensive Strategy for the Vision for a Digital Garden City Nation (2023 Revised Edition) (approved by the Cabinet on December 26, 2023)

  - We will **provide** regional unmanned automated mobility services **at around 50 locations in fiscal 2025 and 100 or more locations by fiscal 2027 to expand and implement the services nationwide**. To this end, we will take various measures so that all regions that are willing to adopt the services can introduce them.

The Government's Promotion Structure

国土交通省

- Ministries are working together under the Digital Agency to establish a government-wide structure.
- MLIT is responsible for **the development of vehicle regulations**, road maintenance, and other tasks.

Digital Agency
(Council for the Promotion of a Digital Society)
Compilation of the government's strategy (*)
*** Creation of the Mobility Roadmap**

Cabinet Office
(Council for Science, Technology and Innovation)
Compilation of a cross-ministerial technical development program, the "SIP Smart Mobility Platform"

National Police Agency
Traffic safety
Examination of traffic rules

Ministry of Justice
Liability in case of accidents
Examination of the nature of criminal liability

Ministry of Internal Affairs and Communications
Information and communications
Technical and system development for inter-vehicle communication

Ministry of Economy, Trade and Industry
Promotion of the automotive industry
Vehicle research and development

Ministry of Land, Infrastructure, Transport and Tourism
Road and automobile technology, systems, etc.
Development of vehicle safety regulations, road width regulations, etc.

Today's Agenda

1. Background
   - Situation of Traffic Accidents
   - Automotive Industry
   - The Importance of Harmonization of International Regulations
   - WP.29
2. The Significance of and Promotion Structure for Automated Driving
   - The Significance of Automated Driving, Two Approaches
   - Government Goals, Promotion Structure
3. **Automated Driving Regulations**
   - History of Domestic and International Regulations
4. Promotion of Automated Driving
   - Extend of Spread Domestically
   - Overseas Trends

Development of Regulations and Systems in Japan

国土交通省

- In line with the advancement of automated driving technology, Japan has developed a series of necessary regulations and systems, such as the revisions of the Road Transport Vehicle Act and the Road Traffic Act.
- The legal systems for Level 3 and 4 have been completed.

2018	**Establishment of the "Outline of System Development for Automated Driving"**	The government established its policy related to the review of relevant legal systems that are necessary to realize advanced automated driving.
2020	**Revision of the Road Transport Vehicle Act** (enacted in April 2020) **Revision of the Road Traffic Act** (enacted in April 2020)	• "Automated operation systems" were defined and added to the systems covered by the safety standards. • The Road Traffic Act was revised to establish rules related to the obligations of drivers using automated operation systems. → **Level 3 automated driving became possible under the system.**
2023	**Revision of the safety standards based on the Road Transport Vehicle Act** (enacted in January 2023) **Revision of the Road Traffic Act** (enacted in April 2023)	• Safety standards related to Level 4 automated driving were established. • The Road Traffic Act was revised to establish a permission system for specific automated operation (driverless automated driving). → **Level 4 automated driving became possible under the system.**

History of Development of International Regulations

国土交通省

	Level 2 (Driving assistance)	Level 3 (Automated driving under specific conditions)	Level 4 (Fully Automated driving under specific conditions)	Level 5 Fully autonomous driving

2015
- The UN established an expert meeting.
  - ○ Japan served as **co-chair** of an expert meeting to establish drafts of these regulations.
  - ○ Japan made an international proposal on safety standards for lane changes (such as the range of vehicle detection in adjacent lanes).
  - ○ The proposal was reflected in these international regulations.

2017
- International regulations on **the lane-keeping support function** were established.

2019
- International regulations on **the lane change support function** were established.

Level 3 international regulations for expressways

2020
- International regulations were established (only for Level 3, expressways, low speeds, and passenger cars).
  - ○ Japan served as **vice chair** of a specialized subcommittee to discuss these regulations.
  - ○ Japan made **an international proposal** of "equal to or better than the driver's driving ability" as the concept of the safety standard for autonomous driving.
  - ○ This concept was reflected in these international regulations.

2021
- International regulations were revised (to include large vehicles in the scope).

2022
- International regulations were revised (to increase the upper speed limit and add the lane change function).

2024
- International regulations on **the driving support function (hands-on)** were established.
- Guidelines on requirements and evaluation methods for automated driving systems' safety performance were established.

Around 2026
- International regulations on **the driving support function (hands-off)** were discussed.

The UN's goal
- ● Legally binding international regulations on Level 3 and above autonomous driving are to be established by June 2026.

Current Efforts for the Development of International Regulations

- In WP.29, **Japan has been contributing discussions related to international regulations on automated driving as the co-chair, vice chair, etc.**
- Countries are discussing international regulations to be established in June 2026. **An expert meeting was held in Japan this week.**

UN World Forum for Harmonization of Vehicle Regulations (WP.29)

Japan serves as co-chair, vice chair, etc. at working groups and expert meetings to establish regulations on automated driving.

UN World Forum for Harmonization of Vehicle Regulations (WP.29) (Vice chair)

- Automated and Connected Vehicles (Vice chair)
- General Safety Provisions
- Passive Safety
- Lighting and Light-Signalling
- Noise and Tyres
- Pollution and Energy

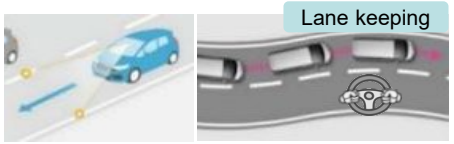
- Automated driving systems (Co-chair)
- Cyber security (Co-chair)
- EDR/Data recorder (Co-chair)
- Acceleration pedal misapplication prevention system (Co-chair)

* The discussions included Japan, the EU, the US, China, and other countries.

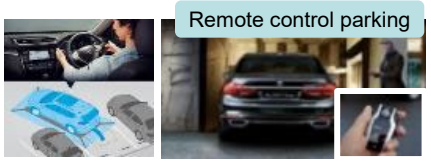
International regulations on automated driving

Levels 0, 1, and 2

- Collision damage mitigation brake
- Automatic parking (remote control parking)
- Hands-on automatic steering (such as lane keeping/changes)
- Hands-off automatic steering (under discussion)



* Honda Motor Co., Ltd. website * LEXUS website



* Nissan Motor Co., Ltd. website * BMW website

Levels 3 and 4

- Level 3 automated driving on expressways
- Guidelines on requirements and evaluation methods for automated driving systems' safety performance

→ Legally binding international regulations on automated driving are under discussion.

Source of images: Companies' websites

Today's Agenda

1. Background
   - Situation of Traffic Accidents
   - Automotive Industry
   - The Importance of Harmonization of International Regulations
   - WP.29
2. The Significance of and Promotion Structure for Automated Driving
   - The Significance of Automated Driving, Two Approaches
   - Government Goals, Promotion Structure
3. Automated Driving Regulations
   - History of Domestic and International Regulations
4. **Promotion of Automated Driving**
   - Extend of Spread Domestically
   - Overseas Trends

Status of the Realization and Spread of Automated Driving

- Automated driving for commercial and private vehicles has started through efforts to establish systems and promote its widespread use.
- Japan **aims to enhance and expand the use of Level 4**.

(1) Commercial vehicles (mainly for Level 4)

- May 2023: Eiheiji-cho in Fukui prefecture started to provide Japan's first Level 4 mobility services.

Yamaha electric cart (driverless vehicle)

Remote monitoring room (One supervisor monitors three vehicles.)

- July 2024: Haneda Innovation City complex in Ota-ku, Tokyo became the second area in Japan to provide Level 4 mobility services.

NAVYA ARMA (small bus)

Operating route

(2) Private vehicles (Levels 2 and 3)

- March 2021: Honda started to sell Level 3 vehicles, a world first.

Structure of an automated operation system

Outside world recognition (around the vehicle)
- Camera
- Radar
- Rider

Vehicle location recognition
- High-precision map
- Global Navigation Satellite System (GNSS)

Driver state recognition
- Driver monitoring camera

Measures and equipment required for the automated operation system
- Cybersecurity
- Software updates
- Operational status recorder
- Outward-facing display (sticker)

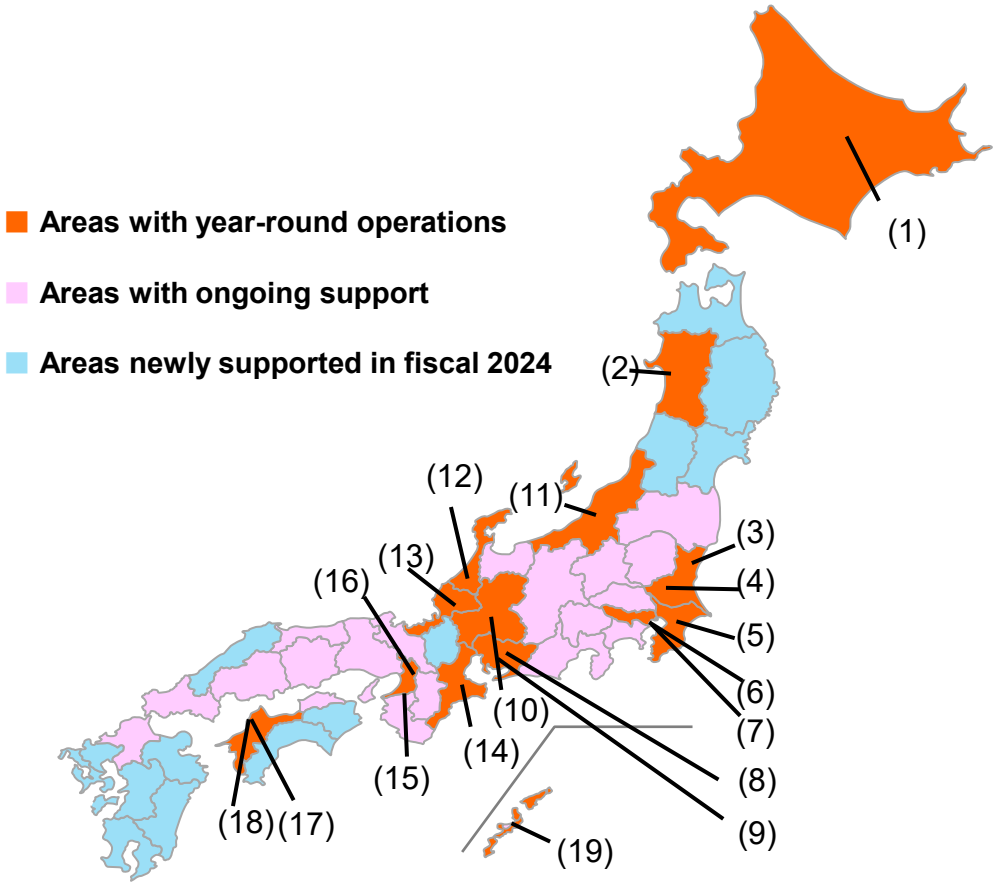
Functional redundancy
- Power system
- Steering function
- Brake function

* Provided by Honda Motor Co., Ltd.

Introduction of Automated Mobility Services

国土交通省

- Japan is promoting the social implementation of automated driving nationwide through subsidized projects.
- In fiscal 2024, across all prefectures, **a total of 99 projects were adopted**, including ongoing ones.
- As of the end of 2024, **19 areas are conducting a project of year-round operations on general roads**.



Automated driving using small EV buses

- Features: Mixed spaces, 40 km/h or less
- Municipalities with year-round operations
  - (5) Yokoshibahikari-machi, Chiba
  - (12) Komatsu-shi, Ishikawa
  - (17) Matsuyama-shi, Ehime
- Number of cases adopted in fiscal 2024: 33

Automated driving using small carts

- Features: Driving in low-traffic/limited spaces, 12 km/h or less
- Municipalities with year-round operations
  - (2) Kamikoani-mura, Akita
  - (8) Kasugai-shi, Aichi
  - (13) Eiheiji-cho, Fukui
  - (15) Kawachinagano-shi, Osaka
  - (16) Shijonawate-shi, Osaka
  - (19) Chatan-cho, Okinawa
- Number of cases adopted in fiscal 2024: 7

Automated driving using vehicles with no steering wheel

- Features: Mixed spaces, 20 km/h or less
- Municipalities with year-round operations
  - (1) Kamishihoro-cho, Hokkaido
  - (3) Hitachiota-shi, Ibaraki
  - (4) Sakai-machi, Ibaraki
  - (6) Ota-ku, Tokyo
  - (9) Nisshin-shi, Aichi
  - (10) Gifu-shi, Gifu
  - (11) Yahiko-mura, Niigata
  - (14) Taki-cho, Mie
  - (18) Iyo-chi, Ehime
- Number of cases adopted in fiscal 2024: 28

Automated driving using passenger cars

- Features: Mixed spaces, around 40 km/h
- Municipalities with year-round operations
  - (7) Tokyo (Ariake)
- Number of cases adopted in fiscal 2024: 3

* (1), (6), (13), (14), (17): Level 4; others: planned to transition from Level 2 to Level 4

Overseas Trends in Robotaxis

- Robotaxis are being implemented in the US, China, and other countries.
- Robotaxi services are expected to be provided in Japan in the future, as robotaxis can operate in Japan under the legal system.

Waymo

- Waymo started driverless service for general users in 2020.
- The service is currently provided in four areas of the US.
- Nihon Kotsu and Go announced the start of a test run in central Tokyo with Waymo in 2025.

Tesla

- A major EV manufacturer
- Tesla started to sell vehicles with Level 2 driving assistance in 2014.
- It announced the Robotaxi with no steering wheel or pedals in October 2024, aiming to start production in 2026.

Pony.ai

- An automated driving system developer
- Toyota invested in Poni.ai in 2020.
- Poni.ai started to provide unmanned automated taxi service in China in 2023.
- The service is currently provided in four areas of China.

These vehicles can run in Japan, including those with no steering wheel or pedals.

Source of pictures: Companies' websites

Conclusion

- There are high expectations for automated driving with respect to further traffic safety measures.
- For this reason, it is important to develop international regulations.
- Japan's entire government is making efforts to realize and promote automated driving.
- MLIT, which is responsible for vehicle regulations, has contributed to the development of international regulations on automated driving at WP.29.
- Robotaxi services are being introduced nationwide in line with the government's goals.
- Overseas robotaxis are expected to be imported into Japan.
- Japan will continue to work together with the international community to realize and promote automated driving.

Thank you.