Mobility Digital Transformation(DX) Strategy (Summary version)

May 2024

Mobility Digital Transformation Office, Automobile Division, Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry

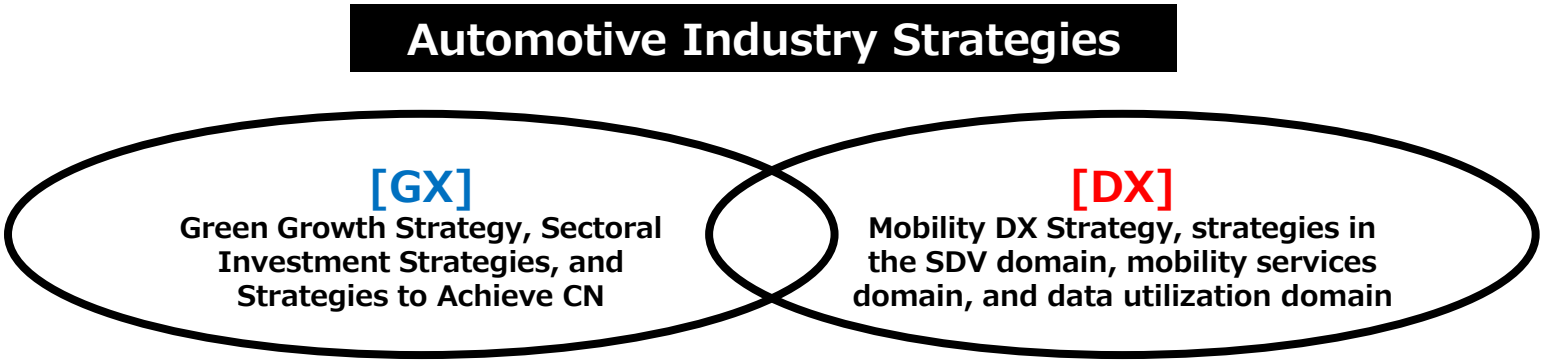
Need to Develop a Mobility DX Strategy

- In automotive and mobility, the **industry structure** is changing on **two axes centering on GX and DX (Green Transformation and Digital Transformation)**.

- The GX strategy for the **automotive industry** was formulated in the **Green Growth Strategy for Carbon Neutrality in 2050** (formulated in June 2021) and the **Sector-specific Investment Strategy (formulated in December 2023).** In line with the three pillars of (1) promoting innovation, (2) securing domestic production bases, and (3) creating GX markets, **a package of measures has been developed,** including R&D support through the Green Innovation Fund and other means, as well as various subsidies.

- DX has so far been working mainly from the perspective of social implementation of automated driving, setting targets such as the realization of around 50 locations nationwide by FY2025, and the formation of individual demonstration projects. On the other hand, with the advancement of digital technology in the automotive industry, **DX will become a major axis of competition alongside GX in the** future.

- To this end, the Mobility DX Study Group will **formulate a strategy to win the race toward 2030-2035,** based on **discussions in the public and private sectors, encompassing the entire DX, including** software-defined vehicles (SDVs), new mobility services such as automated driving and MaaS, and data utilization that transcends corporate boundaries.



Social and Technological Changes and the New Competitive Environment

- **DX technologies such as SDV-ization and automated driving are advancing**, **driven by changes in the demand side**, such as social demands and user needs.
- This has led to **game changers in the automotive industry**: **changes in the value chain**, such as the provision of new experiences and services and the expansion of business areas, and **changes in the industry structure,** such as the entry of new players and changes in the balance of power among the existing players.

Social demand

- Carbon neutral [CN realized (2050)]
- Decrease in population [below 100 million (56 years)
- Economic losses due to accidents and traffic congestion
- Logistics problem [2024 problem]

User needs

- From ownership to use
- Personalization
- Focus on experience over functionality

Advances in GX and DX Technology Responding to Demands

Electrification

100% of new car sales are electric vehicles (35 years) [1]

SDV-ization and automated driving

Connected car ratio: 58% (2010) ⇒ 85% (35 years) [2]
Vehicles with vehicle OS: 1.1 million (2011) ⇒ 40 million (35 years) [3]
Automated driving L3 or higher: 100 units (21 years) ⇒ 7 million units (30 years) [4]

Game Change in the Automotive Industry

◆ **Changes in the Value Chain**
- ✓ **Relative increase in the value of semiconductors and software as a percentage of vehicle value added**
- ✓ **At the same time, the value of new experiences and services provided will increase due to more sophisticated automated driving, OTA updates, data utilization, etc.**
- ✓ **Expanding new mobility service businesses such as robotaxis**

◆ **Changes in industrial structure**
- ✓ **The industry structure is changing and the competitive environment is intensifying due to the entry of new players and changes in the balance of power among existing players.**
- ✓ **Can assume that traditional forms of competition and cooperation will also change**

1. Green Growth Strategy Accompanying Carbon Neutrality in 2050 (formulated in June 2021)
2. Fuji Keizai, *Future Outlook of Connected Car, V2X and Automated Driving Related Markets 2023* (published in March 2011)
3. Fuji Keizai, *Future Outlook of Connected Car, V2X and Automated Driving Related Markets 2023* (published March 2011)
4. Yano Research Institute Ltd., *Research on the Global Market for Automated Driving Systems* (released in August 2010).

Three Main Areas Where Mobility DX Competition Will Arise

- Given the needs of society and users, the progress of digital technology to meet those needs, and trends in other countries, we expect **to see game changers** in the form of **major global competition** and changes in value chains and industrial structures, **mainly in the following three areas.**
- **Overseas, emerging players without legacies have emerged, and investment with a sense of speed has become more active**. Japan, too, is making progress in this area, but while it is important to balance the need to secure profits from existing businesses, **Japan lacks the development resources (funds, human resources, etc.) to do so**. In order for Japan to compete **successfully**, we will formulate goals and **a roadmap to** achieve them, and mobilize **resources from the public and private sectors.**

(1) Fundamental renewal of vehicle development and design (SDV-ization)

- The concept of vehicle development and design has been fundamentally reformed, and software-driven vehicle development (SDV) has been accelerated. Development man-hours have been drastically reduced and speed has been improved.
- Beyond mere changes in vehicle structure, new value can be provided through software updates, integration with automated driving technology, etc.
- In Europe and the U.S., some companies have started the business of providing services through SDV-ization and OTA. International competition to secure competitiveness in the SDV market is accelerating, with semiconductor manufacturers and others entering the market from different industries.

(2) Provide new mobility services utilizing automated driving, MaaS technology, etc.

- Sustainable provision of mobility for people and logistics services is an urgent social issue, and there are strong expectations for social implementation of automated driving and on-demand services.
- Various challenges from slow mobility to robotaxis are being taken up around the world, but no business model has yet been established. In Japan, where the birthrate is declining and the population is aging, establishing a business model at an early stage could contribute to solving various social issues, and at the same time it could become a new business that can be deployed around the world.

(3) Creation of new value through the use of data

- Numerous data exist throughout the automobile lifecycle, from manufacturing to use to disposal. Integrated understanding of this data may lead to the creation of new value, such as the strengthening of supply chains and the use of data in other businesses.
- In Europe and the U.S., efforts to build data collaboration infrastructures that transcend corporate boundaries are already gaining momentum. This could be a source of great value in the future from the two aspects of (1) securing a data collaboration infrastructure and (2) creating new business through effective use of data.

⇒ To **overcome such competition**, we will develop **goals and a roadmap**, and **mobilize public and private resources to** address them.

Setting Goals for the Mobility DX Strategy

- The significance of SDVs is that they will enable the **continuous and speedy realization of** improved vehicle performance, the addition and expansion of functions, and the provision of **new added value**, such as services not confined to conventional vehicles, through **software updates**.
- On the other hand, the trend toward SDV-ization **has multiple phases**, including **communication functions**, **OTA functions**, and **vehicle OS**.* In addition, not only BEVs but also **all powertrains including ICEs** will be converted to **SDVs.**
- Against this backdrop, it is important to **aim for diversified SDV-ization in terms of powertrains, functions, and price**, based on the target market and Japan's strengths (diversity of powertrains, ride comfort, etc.).

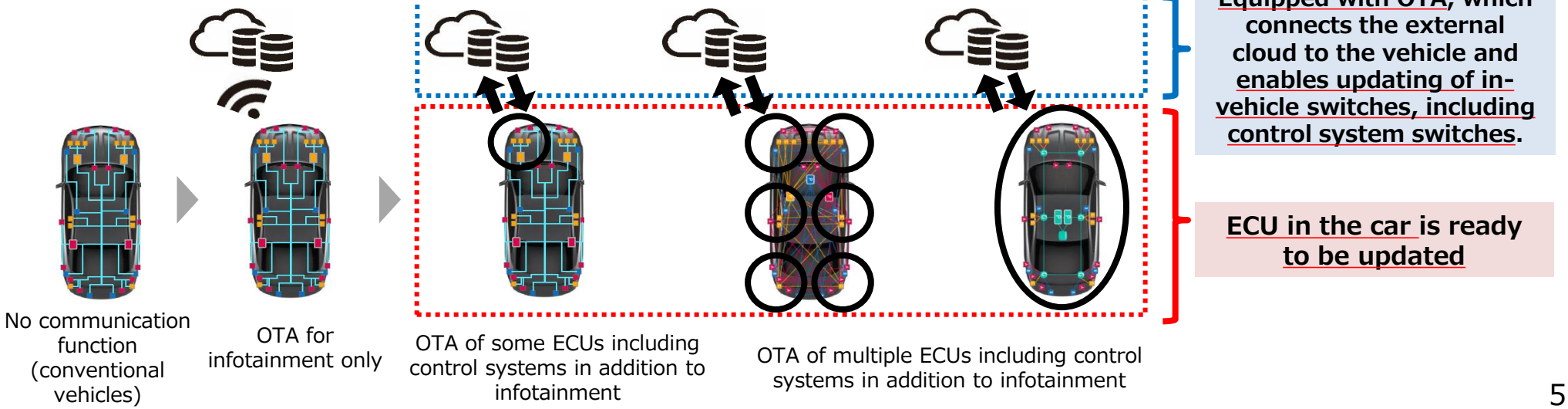
*Role in integrated ECU to separate hardware and software

The value realized by SDVs

- **Enhanced development efficiency by** separating hardware and software, **flexible software design** changes and **functional updates** after launch, **various monetization points in** collaboration with different industries (entertainment, interiors, charging, energy management, etc.)

- **Continuously updated with the latest** vehicle **safety and operability features**, and **customizable with** additional features, services, etc.

Various forms of SDVs



Setting Goals for the Mobility DX Strategy

- **Through the implementation of the Mobility DX strategy**, we aim to **realize a safe and convenient transportation society** and acquire **added value in new global markets. In order to** realize such a picture, it is important to **widely deploy and promote Japan's diverse SDVs** with **a range of functions and prices that** can accommodate multiple markets and users.
- From this perspective, the Mobility DX Strategy will **set a target share of Japanese-affiliated companies in global sales of SDVs** as a goal of its initiatives.

■ **Target: Achieve 30% Japanese share of global SDV sales (by 2030 and 2035)**

2030: Establish a new business model by integrating and implementing the infrastructure.

<Target Approach

- Gradual expansion of SDV-ization from BEVs and luxury segments, where platform renewal is underway.
- By 2027, we will create a foundation to compete with the world through the development and demonstration environment and the establishment of elemental technologies, and establish a new business model through the integration and implementation of the results.
- Assuming global sales of SDVs in 2030 to be approximately 35 million to 41 million units, a 30% Japanese-affiliated share of global SDV sales corresponds to approximately 11 million to 12 million units.

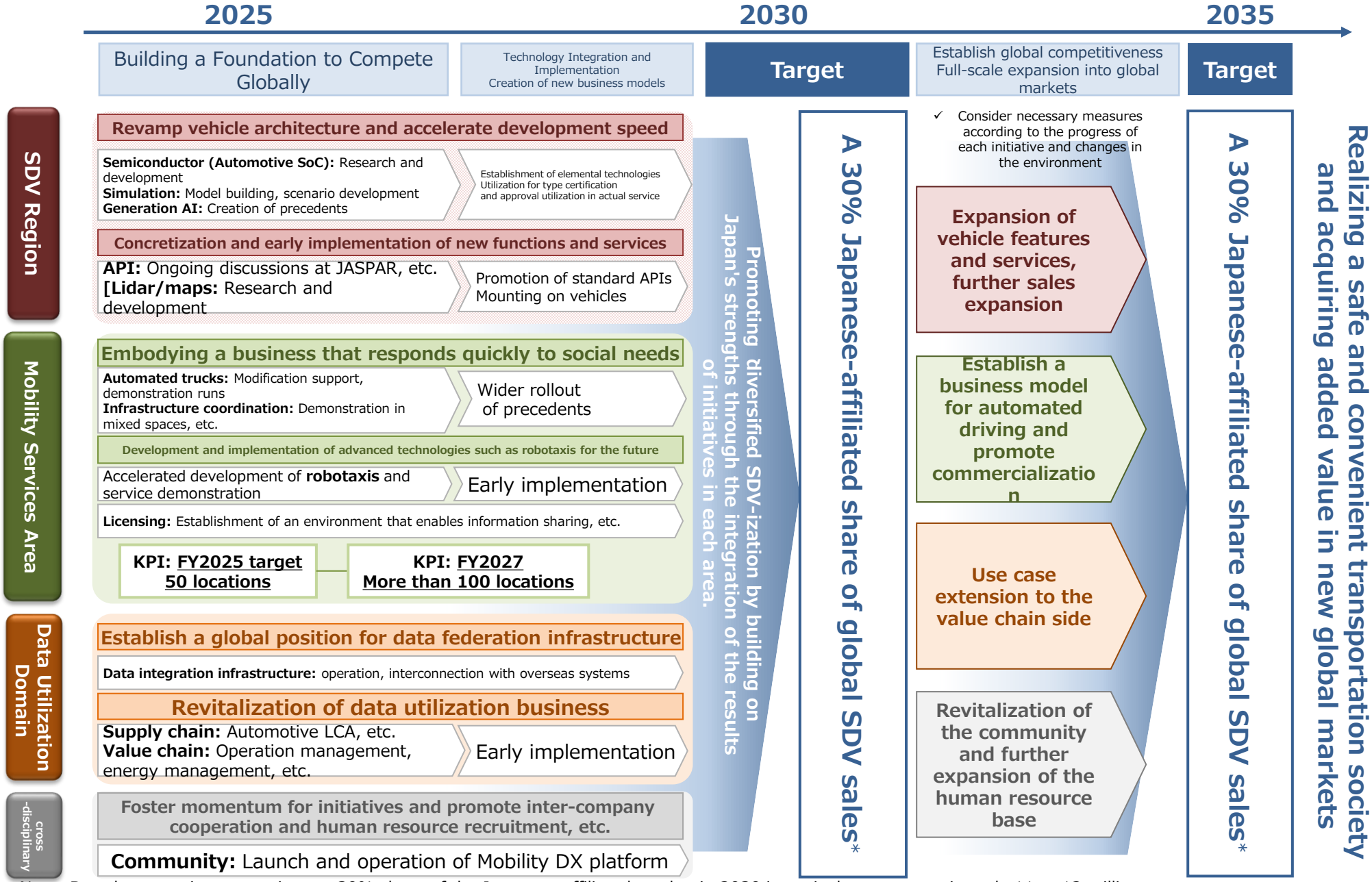
2035: Full-scale global expansion

<Target Approach

- The SDV market expands further due to the spread of powertrains to PHEVs, HEVs, etc. and the broadening of segments.
- Further refine the established business model through standardization and scaling and expand it globally.
- Assuming global sales of SDVs to be approximately 57 to 64 million units in 2035, a 30% Japanese-affiliated share of global SDV sales corresponds to approximately 17 to 19 million units.

Note: The global sales volume of SDVs is assumed based on interviews and estimates by several experts.

Roadmap for Mobility DX Strategy



Note: Based on certain assumptions, a 30% share of the Japanese-affiliated market in 2030 is equivalent to approximately 11 to 12 million units, and a 30% share of the Japanese-affiliated market in 2035 is equivalent to approximately 17 to 19 million units.

SDV Areas: Direction of Efforts to Realize Goals

Basic policy: In all powertrain products, including internal combustion engines, we will promote diversified SDV-ization with a wide range of functions and prices to meet the needs of multiple markets and users.

- In the SDV area, the key to competition is **(1) renewal of vehicle architecture and faster development speed** and **(2) early implementation of new functions and services as specific services**.
- To realize this goal, we **will** quickly develop **elemental technologies and cooperative infrastructure on the ground**, while **completing the provision and business implementation of vehicles integrating these technologies by around 2030**, which **will lead to the acquisition of future global markets**.

✓ It is essential for the development of competitive SDVs that the **technologies directly related to driving performance (automatic driving performance), such as semiconductors, lidar and high-precision 3D maps**, **reach the necessary and sufficient level**, and the development of such technologies should be promoted as soon as possible. For semiconductors in particular, it is important to develop specialized semiconductors for applications such as automated driving, in order to achieve both high performance and low power consumption.

✓ In addition, **speedy vehicle development and continuous updates by OTA are** important for SDVs in **terms of competition,** and it is necessary to **improve development efficiency by standardizing APIs and utilizing simulations,** and to **ensure ease of software development and updating**. **Data security and cyber security are also important to ensure reliability, safety and quality**, **so initiatives will be promoted through the use of the Ouranos Ecosystem, a secure and safe data utilization platform**. Through these measures, **users will be able to constantly update the safety, operability and other functions of their vehicles and utilize them with peace of mind.**

✓ **There is also a need for the implementation of services to improve the value of the experience of the user,** such as the effective use of leisure time during a ride in an automated vehicle, and a diversity of options for such services. To realize this, **there are limits to the services that can be provided by each OEM alone, and services should be provided in collaboration with third parties from different industries**, and **API standardization** is also important here.

✓ Furthermore, advances in **generative AI technology** will enable the generation and design of vehicle and component designs **that have never been seen before and the streamlining of development through these**, as well as the **implementation of new infotainment functions such as voice recognition**. In addition, the use of **AI technology** is also **advancing in the construction of a simulation environment for the enhancement of recognition and judgement** in driver assistance and automated driving, and for training them, and it is necessary **to create examples of the use of generative AI in the automobile industry and to work on the assistance of computational resources**.

SDV Areas: Specific Measures

Legend: ◆New ●Continuation **Project Name (Amount)/Entity**

<Renovation of vehicle architecture and acceleration of development speed

- ◆ **Post 5G Fund (out of 485 billion yen)/ASRA**
  Advance research and development of SoC for automobiles using chiplet technology, aiming to establish elemental technology by 2016 and to apply it to mass production from 2018 onward.
- ● **Green Innovation Fund⑬ (5 billion yen) / JARI**
  Develop highly accurate (>90% accuracy) vehicle and component simulation models for AD/ADAS and electric vehicles by FY2028 to realize a rework-free design and development process.
- ● **SAKURA and DIVP projects (out of 4.9 billion yen) / JARI, Kanagawa Institute of Technology, etc.**
  Develop a simulation environment and safety evaluation scenarios that can be used flexibly by each company by FY2025 to promote safety evaluation on a simulation environment rather than on actual equipment and real environments.
- ◆ **Post 5G Fund (out of 485 billion yen) / to be publicly solicited in** the **future**
  To create specific advanced cases through demonstration projects to promote the use of generative AI

<Implementation of new functions and services and early implementation of new functions and services

- ◆ **JASPAR, etc.**
  Identify issues and reach a conclusion by summer 2012 for standardization of APIs that will contribute to the expansion of services using vehicles.
- ● **Green Innovation Fund⑬ (37.5 billion yen) / TIER IV, Sony Semiconductor Solutions Inc.**
  Establish energy-saving technologies for automated driving software and sensors that are 70% or more energy efficient compared to the current level by FY2030.
- ● **SIP (55.5 billion yen incl./Kyoto Univ.) [K Program (200 million yen)/Kyoto Univ.**
  For lidar, which is important for the advancement of recognition performance, promote research and development for higher brightness and smaller size of the light source, and commercialize semiconductor lasers such as PCSEL by 2030.
- ● **SBIR (1.6 billion yen)/DMP**
  Establish change detection and automatic updating technology using probe car data by FY2025 to reduce the cost of generating and updating high-precision three-dimensional maps, etc. required for automated driving.

Mobility Services Area: Direction of Efforts to Achieve Goals

Basic Policy: We will promote the early actualization of businesses that respond to the demands of society and the development of advanced technologies with an eye to the future, with a dual focus.

- New mobility services include **various technological tiers**, from **slow mobility to robotaxis**, and the **optimal service varies according to local needs, demand, and characteristics, as** well as **cost and revenue structures**.
- In this environment, we will (1) **actualize businesses that quickly respond to social needs in terms of human flow and logistics**, and (2) develop **advanced technologies such as robotaxis with an eye to the future.** By around 2030, these results will be integrated to establish business models on various layers and contribute to solving global issues.

✓ Through automated driving and MaaS, in Japan, the project aims **to solve mobility issues and traffic accidents that have emerged in the region, to improve the value of the region and to realize a new transport society**. Globally, the aim is **to create attractive mobility and services and lead the world**.

✓ As all players are currently working on the development of automated driving, it is important to first **promote social implementation projects. In** addition, we will continue to **improve social acceptance and the environment** by continuously **disseminating information** and **fostering software-related human resources.**

✓ In addition, while more advanced technology is required, the **realization of robotaxis, which may be** commercially viable when combined with other services, will be **strongly promoted to encourage the advancement of technology and the creation of services in Japan. In addition, the** development of **elemental technologies (high-precision 3D maps and sensors) that** will lead to lower costs and higher performance in automated driving will also be promoted.

Mobility Services Area: Specific Measures

Legend: ◆New ●Continuation **Project Name (Amount)/Entity**

<Implementation of businesses that respond quickly to social needs in terms of human flow and logistics

- ◆ **Unmanned Automated Driving Development and Demonstration Support Project for the Promotion of Mobility DX (out of 2.7 billion yen)/to be open to applications in the future**
  In parallel with the mass production vehicle development project, support the installation of automated driving functions by modifying commercial heavy-duty trucks to cope with the serious labor shortage, and start demonstration runs in FY2024.
- ● **RoAD to the L4 project (out of 4.9 billion yen) / Industry-academia-government consortium**
  Creating leading examples for early social implementation of automated driving, including data collection through infrastructure-coordinated system demonstrations in mixed spaces and demonstration runs on highways, and promoting their wider rollout.
- ● **Regional New MaaS Creation Promotion Project (out of 4.9 billion yen)/Open Call for Proposals**
  To analyze the necessary data and study system architecture such as application and data linkage infrastructure through the demonstration project in order to improve the efficiency of mobility services and diversify earnings, and to summarize them by the end of FY2024.

<Development and implementation of advanced technologies such as robotaxis with an eye to the future

- ◆ **Unmanned Automated Driving Development and Demonstration Support Project for the Promotion of Mobility DX (out of 2.7 billion yen)/to be open to applications in the future**
  Accelerate the development of robotaxis in Japan to establish automated driving services that can compete with the rest of the world, and begin service demonstrations in FY2024.
- ● **L4 Committee (out of 4.9 billion yen) / METI, MLIT, police, general affairs, municipalities, businesses**
  To promote an environment that enables information sharing among operators and related ministries and agencies for the early realization of robotaxi services.
- ● **Reiterated from the SDV area**
  Developing software, sensors, high-precision 3D maps, and other technologies essential for realizing services in more complex traffic environments, and constructing a safety evaluation environment in a simulation environment.

Data Utilization Domain: Direction of Efforts to Achieve Goals

Basic policy: Establish a global position for Japan's data collaboration infrastructure and create new businesses that utilize data in ways that individual companies could not achieve on their own.

- In order to create new businesses and services through the **use of data, it is** necessary to promote efforts on two fronts: (1) the **construction of the data linkage infrastructure itself**, and (2) the **revitalization of businesses that utilize data.**
- With regard to the data linkage infrastructure in (1) above, we will work to establish a global position through the expansion of use cases in **the URANOS ecosystem** and **linkage with overseas systems. In terms of** data utilization in (2), we **will** first work to **expand use cases on the supply chain side, where needs are high**, and then **link them to initiatives on the value chain side, such as the utilization of driving data**.

✓ It is necessary to increase the competitiveness of the Japanese automobile industry by **integrally understanding, sharing, and utilizing countless data throughout the** automobile **lifecycle from manufacturing to use** to **disposal in order to strengthen the supply chain and create new services. To** this end, we will promote the establishment of a **data linkage infrastructure** within the URANOS ecosystem and **establish a mechanism for data utilization.**

✓ **A current automotive industry need is to calculate storage battery CFP for compliance with the European Battery Regulation**, and this is **already being addressed as a leading use case**. We will use this knowledge to **expand use cases in the supply chain, such** as the **calculation of LCA for automobiles, inventory management and production adjustment based on an understanding of the contingency situation, and early detection of defective products.**

✓ As the next step, we will extend our efforts to **expand use cases on the value chain side**, which **will lead to the provision of high value-added services to users**, and **create and activate new data utilization businesses**.

Mobility Services Area: Specific Measures

Legend: ◆New ●Continuation **Project Name (Amount)/Entity**

<Establishment of a global position for data collaboration infrastructure

◆ **Automobile and Battery Traceability Promotion Center (ABtC)**
Automotive supply chain data collaboration infrastructure with storage battery carbon footprint as a leading use case will be operational from May 2024.

◆ **IPA, DADC**
Proceed with demonstration for interoperability with Catena-X to achieve interoperability

<Stimulating the business of data utilization

(Supply Chain)

◆ **Demonstration Project for Establishment of Supply Chain Data Linkage Infrastructure (out of 4.9 billion yen)/to be open to applications in the future**

- Concerning automotive LCA, which is in high demand in the industry, to realize accurate and efficient calculation, a demonstration project for defining application requirements will be conducted in FY2024, with the aim of implementation from FY2025 onward.
- To identify issues and to flesh out initiatives for use cases, such as the linkage of operational information and cargo information for the understanding of contingency situations, inventory management and production adjustment, and logistics efficiency, in preparation for the start of the demonstration project in the second half of FY2024.

(Value Chain)

● **Regional New MaaS Creation Promotion Project (out of 4.9 billion yen)/Open call for proposals**
To analyze the necessary data and study system architecture such as application and data linkage infrastructure through the demonstration project in order to improve the efficiency of mobility services and diversify earnings, and to summarize them by the end of FY2024.

● **Green Innovation Fund (113 billion yen) / AIST, etc.**
To optimize the operation of commercial electric vehicles, a simulation system that optimizes operation management and energy management by utilizing vehicle and driving data, etc., will be developed by FY2030.

Cross-Disciplinary: Direction of Efforts to Realize Goals

- In order to accelerate and continue efforts in these key areas, it is **also** important to provide a **foundation for society as a whole to compete in the Mobility DX race**.
- Specifically, the project will promote the formation of a **community** to **visualize and disseminate various public and private sector initiatives**, raise **awareness and increase momentum**, and within that community, promote the **acquisition and development of software human resources**, **promote information sharing and collaboration among companies**, and **study new initiatives.**

✓ **The formation of a community is also important for fostering momentum and enhancing the sustainability of initiatives** in which **various companies, personnel and information** such as OEMs, suppliers, start-ups, universities, research institutions, different industries, students and individuals can gather and exchange information, promote initiatives **to acquire and develop software personnel**, **promote information sharing and cooperation between companies**, and **consider new initiatives** in line with changes in the competitive and cooperative areas. It is important to promote information sharing and cooperation between companies, and to consider new initiatives in line with changes in competitive and cooperative areas. In particular, **in examining new initiatives, discussions will be held to generate cooperation** from new perspectives, such as **hardware and software, cyber and physical**.

✓ A **new community** will be established to provide such a venue.

✓ In particular, **software development is an important element in the** competition in new fields, and the **development and securing of human resources for software development is a common global issue**. However, **Japan has not made sufficient efforts in this area so far, and there is a notable shortage of software-related human resources**. Therefore, we will **categorize and** identify **important human resources**, and promote initiatives **such as the Risk Skill Certification System for the purpose of** human resource development and the **Automated Driving AI Challenge for the** purpose of finding and acquiring human resources.

Cross-Disciplinary: Specific Measures

Legend: ◆New ●Continuation **Project Name (Amount)/Entity**

<Launch of the Mobility DX Platform>

◆ **Mobility DX platform construction and operation project (out of 4.9 billion yen)**

The Mobility DX Platform will be launched this fall as a platform to gather and allow interaction among various companies, human resources, and information to (1) acquire and train human resources, (2) share information and promote collaboration among companies, and (3) discuss new initiatives.

<Platform activities>

● **Mobility DX platform construction and operation project (out of 4.9 billion yen)**

- Hold competitions to secure software human resources in the fields of automated driving and cyber security to find and attract external human resources, and to promote the development of internal human resources, expand reskill courses to share examples of initiatives among companies and promote collaboration between existing OEMs and suppliers and start-ups and other industries. Hold regular information dissemination, events, workshops, etc. **to** promote collaboration between existing OEMs and suppliers and startups and other industries.
- **To** promote R&D, demonstration, and standardization, including consideration of new initiatives for which no existing projects exist, and sharing of trends in existing projects

<Reference> Launch of the Mobility DX Platform

- **The formation of a community is** also important for **fostering momentum and enhancing the sustainability of initiatives,** and the **Mobility DX Platform** will be launched **this fall** as a **community to gather and allow interaction among various companies, human resources, and information** related to SDV and automated driving to **(1) acquire and train human resources**, **(2) share information and promote collaboration among companies**, and **(3) study new initiatives. The Mobility DX Platform** will be launched this fall.

METI

Management → **Mobility DX Study Group**

Mobility DX Platform (new community)

Main Activities: (Start with SDV and automated driving initiatives, and gradually expand to data utilization, etc.)

① **Organize competitions** and **provide learning courses to** attract and develop human resources
② **Regular information dissemination**, **events and workshops to** promote information sharing and collaboration among companies
③ **Discussion of new initiatives** and **sharing of trends in existing projects to** promote R&D, demonstration, and standardization

<Legend> New initiatives / Existing initiatives

～Specific examples of ～activities～.

(1) Human resource acquisition and development	(2) Promote information sharing and collaboration	(3) Consideration of new initiatives, etc.
Organizing competitions (Automated Driving AI Challenge, Cyber Security Competition, etc.)	**Regular information dissemination** (e-newsletters, talk sessions, etc.)	**Considering initiatives in new areas where existing projects do not exist** (API standardization, data utilization, etc.)
Provision of study courses (Risk skill course certification system, etc.)	**Organizing events and workshops** (Networking events, etc.)	**Sharing trends of existing projects** (RoAD to the L4, etc.)

Existing Communities (examples)

Continue activities of existing communities in each community, while promoting information collaboration.

- **RoAD to the L4** (R&D and social implementation of automated driving)
- **Smart Mobility Challenge** (MaaS demonstration project)
- **Digital Agency Mobility Roadmap**
- **Digital Lifeline Comprehensive National Development Plan (1962-)** Note: Cooperation in the future
- **SIP** Note: Cooperation in the future

Etc.

Various players will have centralized access to the above activities (1) to (3) through participation in this platform.

Different type of businesses | **Startups** | **OEMs/ suppliers** | **University research institutions** | **Students and individuals**

<Reference> Demonstration of Infrastructure-Coordinated System in Mixed Space
Efforts for Early Social Implementation through Demonstration Runs on Expressways

- To **achieve automated driving in mixed spaces is necessary for the wider rollout of precedents** created by public-private projects. One of the options is to strengthen the **demonstration of infrastructure-coordinated systems to set basic goals and requirements for cooperative systems** and solidify the foundation for nationwide implementation.
- **From the viewpoint of early social implementation, it is** necessary to promote implementation on **expressways, which** have characteristics intermediate between closed spaces and mixed spaces. **Development and** improvement **of infrastructure and data infrastructure, and the actualization of use cases**, etc., should be promoted, and not only mobility of people but also logistics should be handled.

Enhanced demonstration of infrastructure-coordinated systems

Accelerate efforts through further utilization of expertise of private organizations and collaboration with relevant ministries and agencies

NGOs

Examine use cases for utilizing the various information that can be obtained from the infrastructure

ITS Japan

Smart Mobility Infrastructure Technology Research Association

Transportation Infrastructure DX Promotion Consortium

Cooperation

The ministries and agencies that are relevant to the matter at hand

The state of infrastructure coordination
The state of roadside-to-vehicle communication
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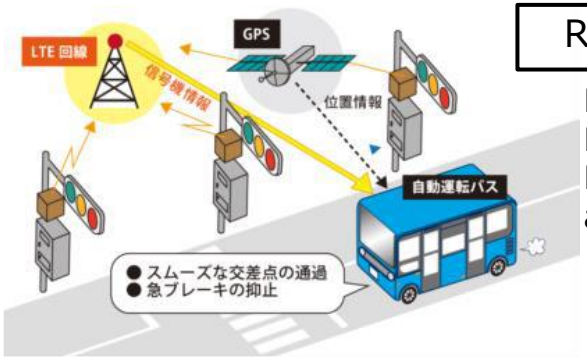
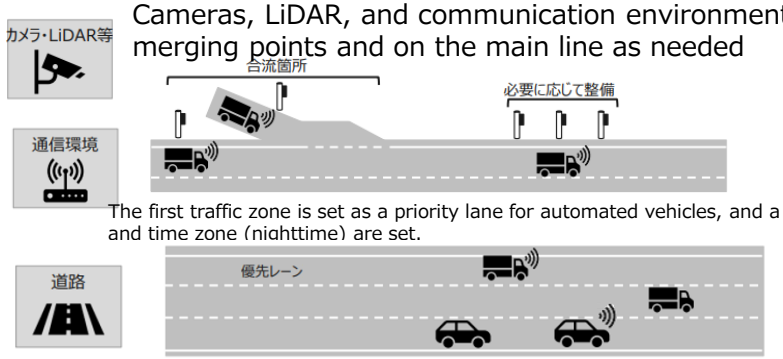


RoAD to the L4 Project

Focusing on utilization for Level 4 automated driving. Public road demonstrations are underway.

Digital Lifeline Initiatives linked to Early Harvest Project

Maximize the effect of various demonstration projects in the priority lanes for automated vehicles by linking the public and private sectors.

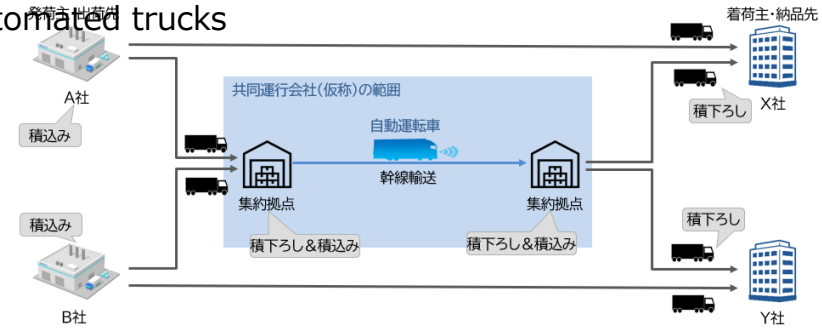


Cameras, LiDAR, and communication environments at merging points and on the main line as needed

The first traffic zone is set as a priority lane for automated vehicles, and a section and time zone (nighttime) are set.

Consideration of a joint operation company (tentative name) for automated trucks

Creating a framework to demonstrate economies of scale for automated trucks



<Reference> Extended Use Cases for Supply Chain Data Linkage

- **Automobile LCA was started** as **the second use case of the Automobile Supply Chain Data Linkage Platform (operated by the Automobile and Storage Battery Traceability Promotion Center) in the Uranos Ecosystem**, with the aiming of implementing it by FY 2025.
- At the same time, as **candidates for the third phase,** we will proceed with studies to actualize initiatives for **streamlining and standardizing logistics and operation systems**, **understanding the contingency situation and inventory management and production coordination,** and **understanding the supply chain of semiconductors and other critical components.**

Second Use Case (Automotive LCA)

- There are plans for demonstrations for defining application requirements in FY2024 and application development and service implementation by each vendor in FY2025.

<Outline of the Demonstration Project

① Through trial calculation work using Excel, etc., organize the workflow at the time of LCA calculation and identify the functions required for the application.
② Prototyping and functional verification of applications based on (1)
③ Formulate definitions of requirements* based on (2)

* Automotive LCA calculation methods are currently under discussion in Japan and abroad; we designed a generic tool that can handle multiple calculation methods.

Candidate use cases for Phase 3 (logistics, BCP support, supply chain understanding)

- In FY2024, we will work to actualize our initiatives through hearings, issue identification, hypothesis testing, etc., and plan to launch a verification experiment in FY2025.