

Mobility Digital Transformation Strategy in Japan

April 18th, 2025

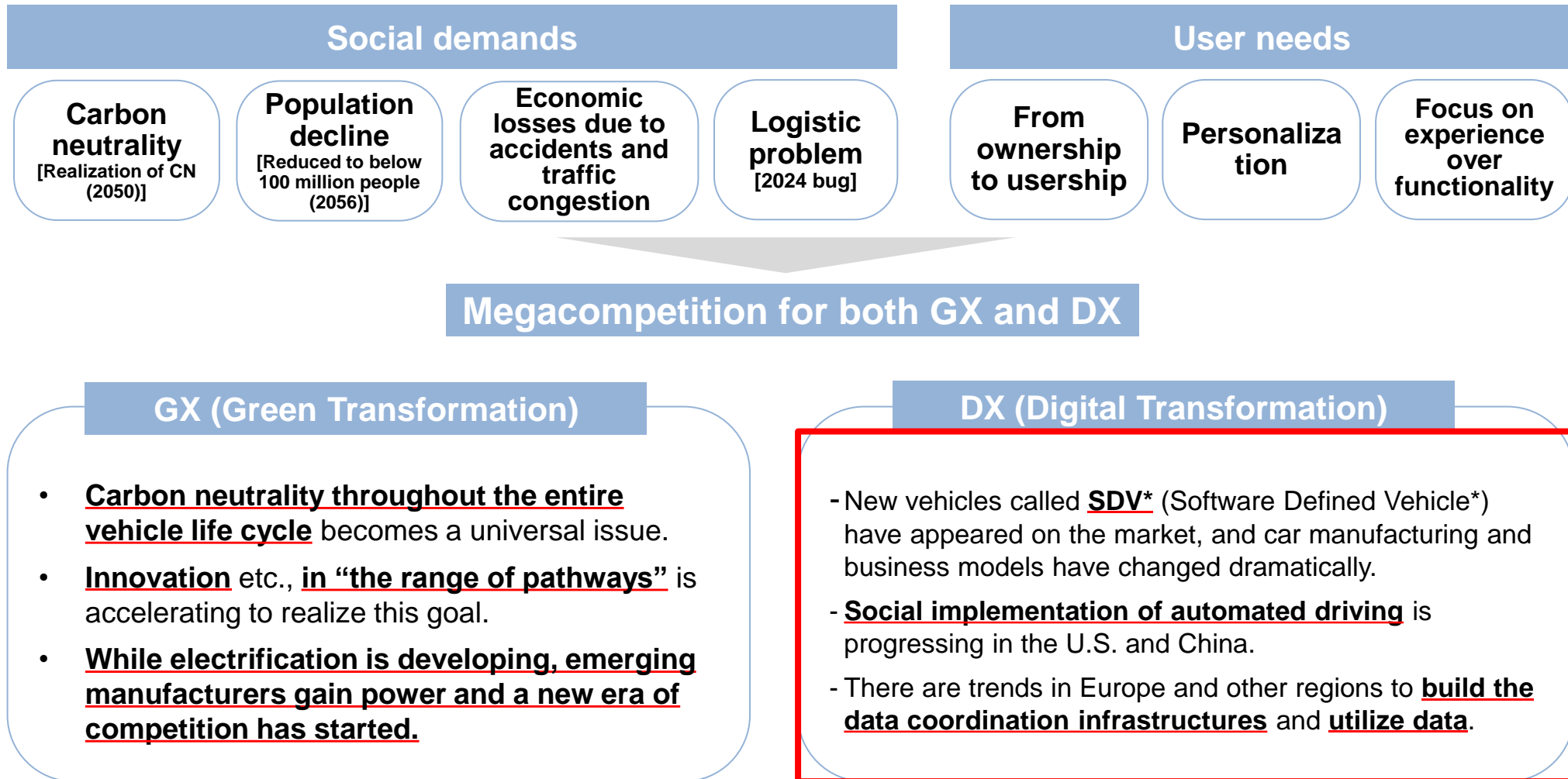
Tomoyuki Someya

**Deputy Director, Mobility DX Office, Automobile Division,
Manufacturing Industries Bureau,**

Ministry of Economy, Trade and Industry

Green and Digital Transformation in the Automobile Industry

- Global megacompetition for both GX and DX is progressing in the automobile industry with a background of deepening social demands and user needs such as carbon neutrality and securement of local transportation, as well as the development of technologies to meet these needs.



* SDV (Software Defined Vehicle): A vehicle capable of rewriting in-vehicle software and updating functions continuously through communication with an external cloud

Global Trends in the Mobility DX Sector

- Efforts are progressing globally in sectors such as the digitalization of vehicles (SDV), provision of new mobility services such as automated driving, and data utilization.

SDV domain

- Emerging players in U.S. and China accelerate development and launch of SDV vehicles.

<Tesla (U.S.) Model 3>



<Xpeng P7 (China)>



- Software is continuously updated after sale to keep you up-to-date with the latest safety features and contents.
- Users are free to customize these features and services.



Automated driving and MaaS domain

- Waymo (U.S.) and Baidu (China) have already realized robot taxi services.

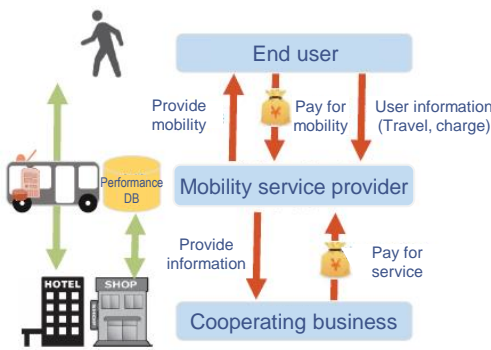
<Waymo (U.S.)>
250-unit scale
(As of Sep. 2023)



<Baidu (China)>
1,000-unit scale
(As of Aug. 2023)



- Boarding and payment can be done smoothly through the application, which also opens up the possibility of linking with services other than transportation.



Data utilization domain

- Catena-X, an alliance of companies mainly in Europe, has established and begun operating a data coordination infrastructure for the automobile industry.



- The value created by data coordination includes the following, and efforts to address it will become even more important in the future.

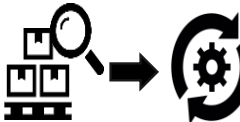
Visualization and reduction of GHG emissions



Faster and more efficient design development



Inventory visualization and optimization on the supply chain



* **SDV (Software Defined Vehicle):** A vehicle capable of rewriting in-vehicle software and updating functions continuously through communication with an external cloud

Japan's Mobility DX Strategy

◆ **Focused Area:** ①SDV

②**Mobility Services** (e.g. Automated Driving)

③**Data utilization**

◆ **Target:** Achieving 30% Japanese share of global SDV sales in 2030 and 2035

SDV

- ✓ R&D of high-performance semi-conductors
- ✓ Building a simulation model
- ✓ API Standardization etc...

Mobility Services
(e.g. Automated Driving)

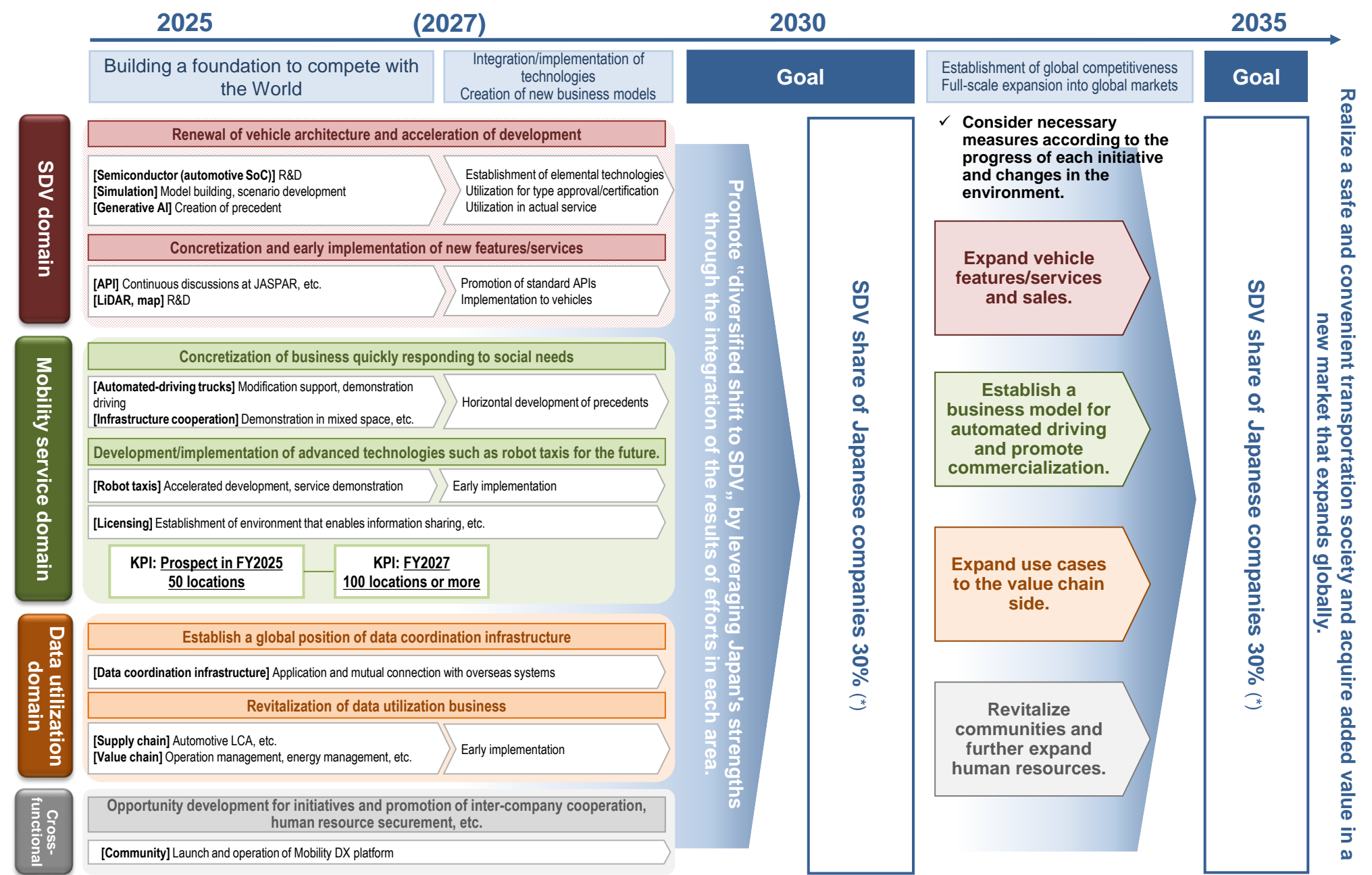
- ✓ Demonstration of automated driving truck
- ✓ Support for development of robot taxis
- ✓ Facilitating the implementation of relevant laws and regulations etc...

Data
utilization

- ✓ Operation of the Ouranus Ecosystem and interconnection with overseas platform
- ✓ Expansion of use cases (e.g. Calculation of emissions in LCA) etc...

30% of SDV's
global market
share
(2030 and 2035)

Roadmap for “Mobility DX Strategy”



*Based on certain assumptions, a 30% share of Japanese companies in 2030 is equivalent to approximately 11 million to 12 million units, and that in 2035 is equivalent to approximately 17 million to 19 million units.

Goal Setting of “Mobility DX Strategy”

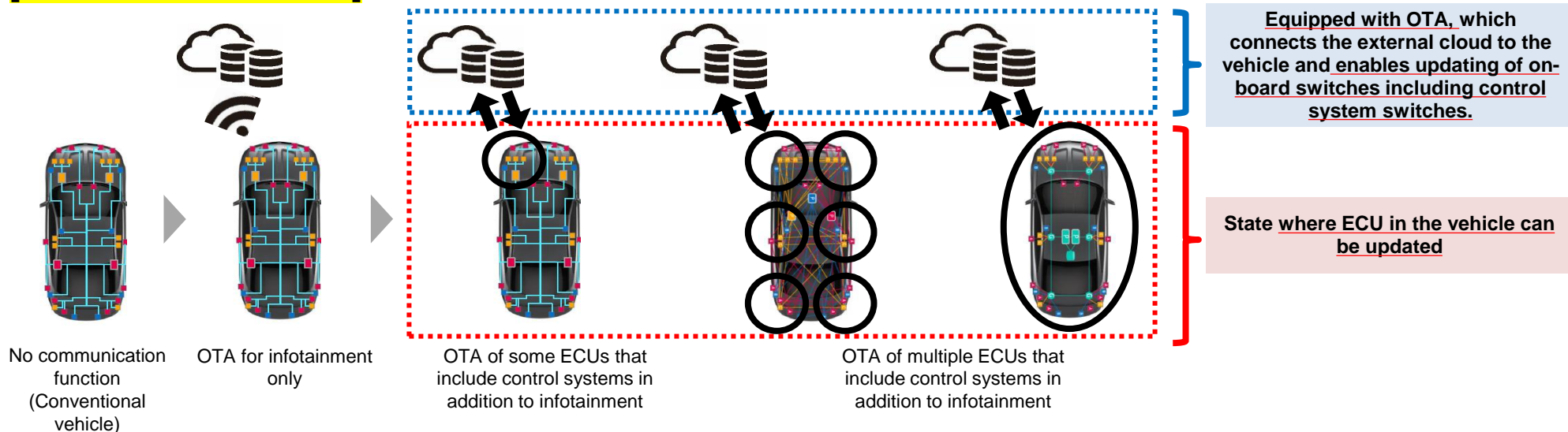
- It is assumed that the significance of SDV is to continuously and speedily provide new added values of automobiles such as performance improvement, addition/expansion of functions and services not limited to conventional models through update of SW.
- On the other hand, the trend toward SDVs involves multiple stages, including communication functions, OTA functions, and vehicle OS (*). In addition, not only BEVs but also all powertrains, including ICEs, will be converted to SDVs.
- In these circumstances, it is important to aim for “shift to diversified SDV” in terms of powertrain, functions, and price, based on the target market and Japan's strengths (diversity of powertrain, ride comfort, etc.).

* Role installed in an integrated ECU to separate HW and SW

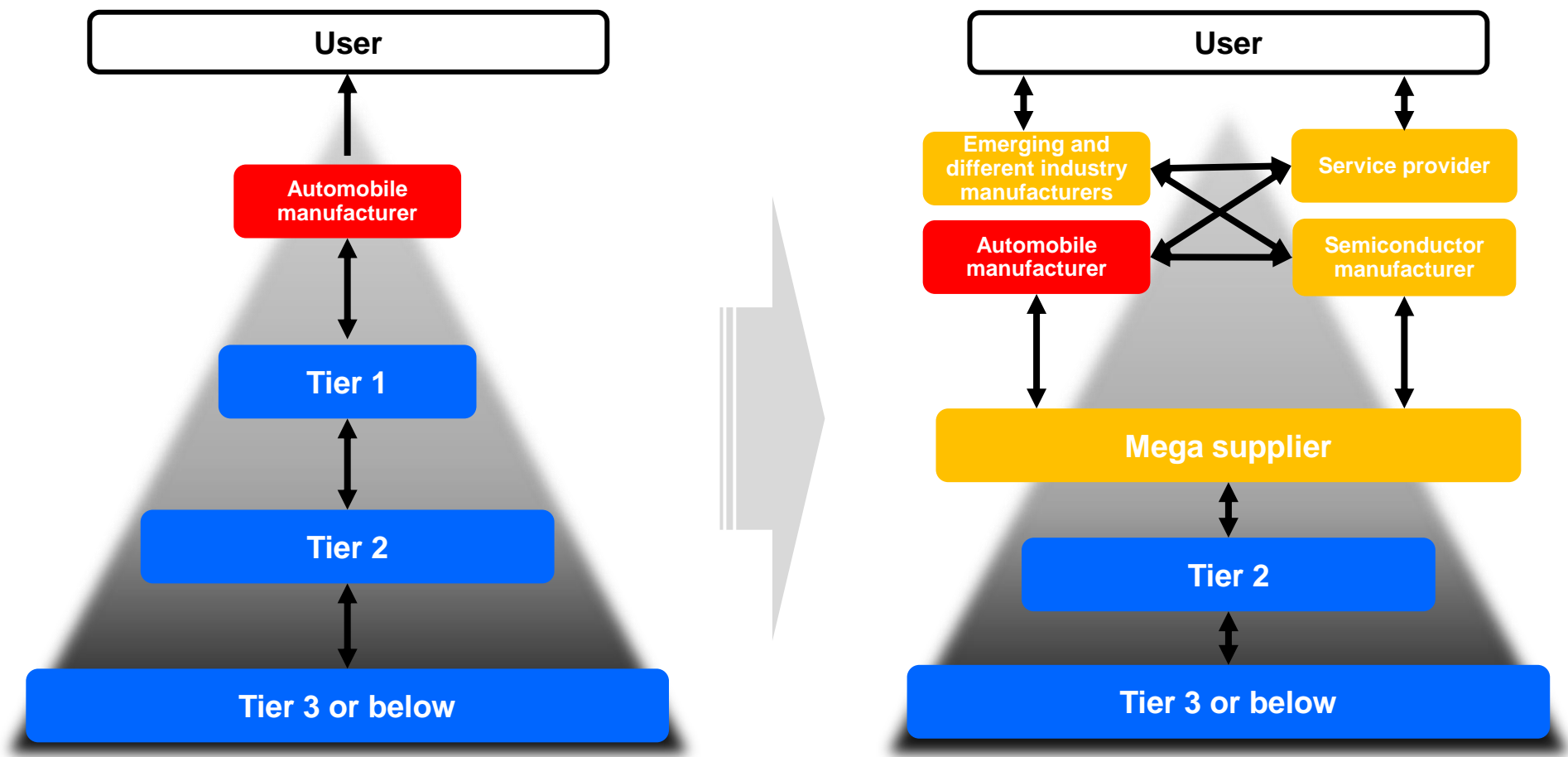
[Values that SDV realizes]

- Improvement in development efficiency by separating HW and SW, flexible SW design changes and functional updates after release, various monetization points in collaboration with different industries (entertainment, interior, charging/energy management, etc.)
- Constantly updated with the latest vehicle safety and operability features, and flexibly customizable by selecting additional features, services, etc.

[Diversified SDV forms]



Game Changes by Mobility DX: Changes in Industrial Structure



Towards Realization of Automated Driving and Other Mobility Services

- First, by implementing mobility services as local services as early as possible, including in the form of MaaS, improve social acceptability and environment to solidify the foundation and address the basic issues.
- At the same time, advance sophistication and commercialization of technologies to realize services in more complex traffic environments, leading to the full-scale spread of automated driving and other mobility services.
- The results obtained from each interact and support each other on both wheels.

➤ Concretization of business quickly responding to social needs for people flow and logistics

Early implementation of MaaS and Level 2 or higher automated-driving mobility services **improves social acceptability** and **environment**.

Pursue **commercialization** possibilities by embracing values.

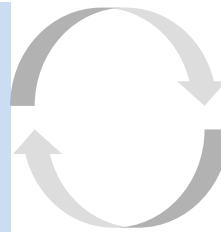
Current state

- ✓ Automated driving requires high initial/running costs.
- ✓ Application and systems of MaaS exist in various regions in a mixed state. Surrounding traffic participants and potential users are not familiar with new mobility services.
- ✓ Efforts to link data to ensure added value on the value chain side are not sufficiently advanced.

Demonstration prioritizing resolution of issues other than business feasibility

There are many short-term and small-scale demonstrations and they fail to penetrate.

Exploring use cases for data linkage



Integrate the results and establish a business model at various layers.

➤ Development/implementation of advanced technologies such as robot taxis for the future

Technologies are **sophisticated** to realize an automated driving business (robot taxi, etc.) even under complex conditions, leading to **commercialization** through large-scale deployment.

Current state

- ✓ Not much progress has been made in the development of automated driving vehicles in Japan that can drive freely in complex traffic environments.

Lack of development funds, software personnel, etc.

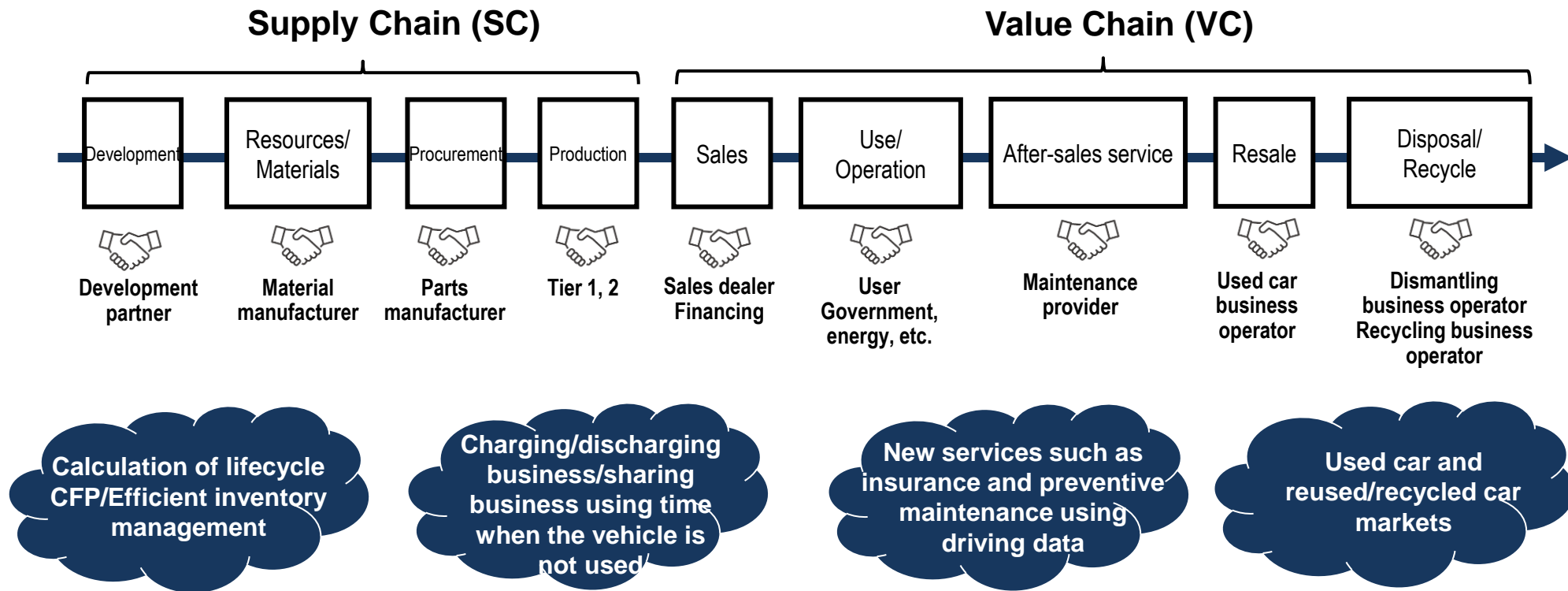
Entry of foreign development players into Japanese market

Lack of development capability due to limited experience of running on public roads, etc.

Progress in Data Utilization

- Data collaboration with various partners including those from different industries in the supply chain and the value chain will enable the provision of new social values and services and securement of traceability (e.g., CN support in the life cycle).

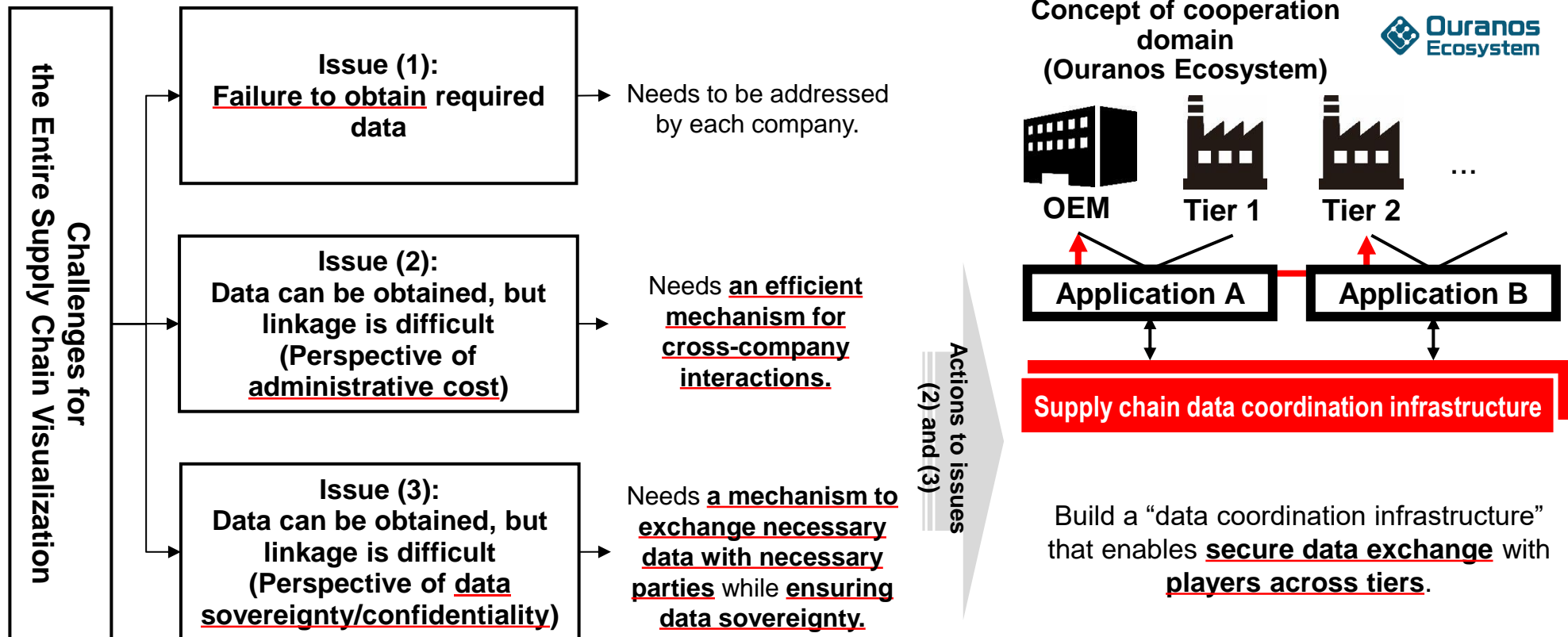
Various use cases of data utilization in the automobile life cycle



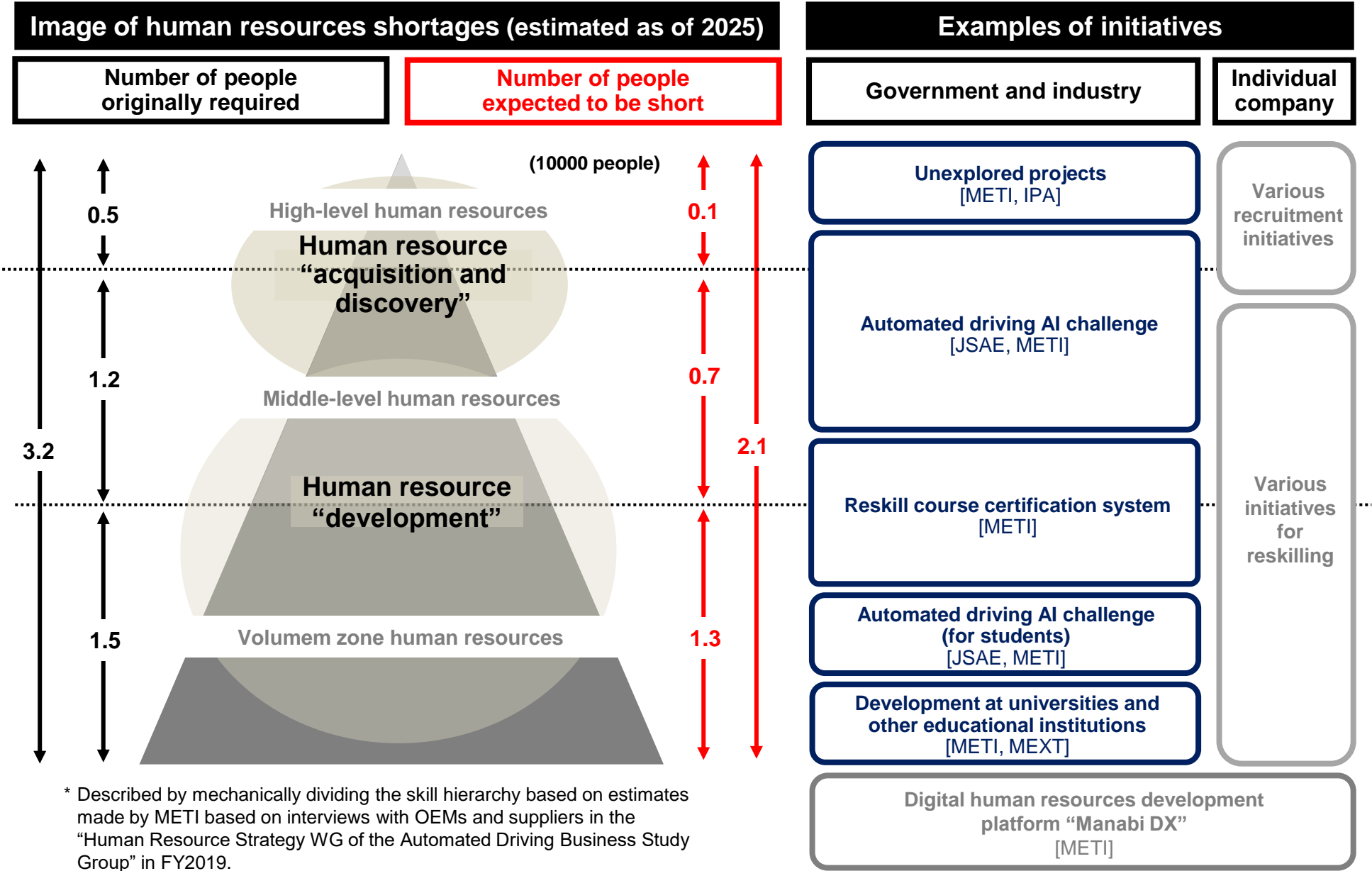
Ouranos Ecosystem

- To visualize the entire supply chain, it is necessary for each company to acquire necessary data and link it across companies.
- METI established Ouranos Ecosystem as mechanisms for cross-border data sharing and system integration across companies, industries, and national borders.
- We expand use case of data exchange in automotive industry under Ouranos Ecosystem.

Challenges and Direction of Cooperative Domains for the Entire Supply Chain Visualization

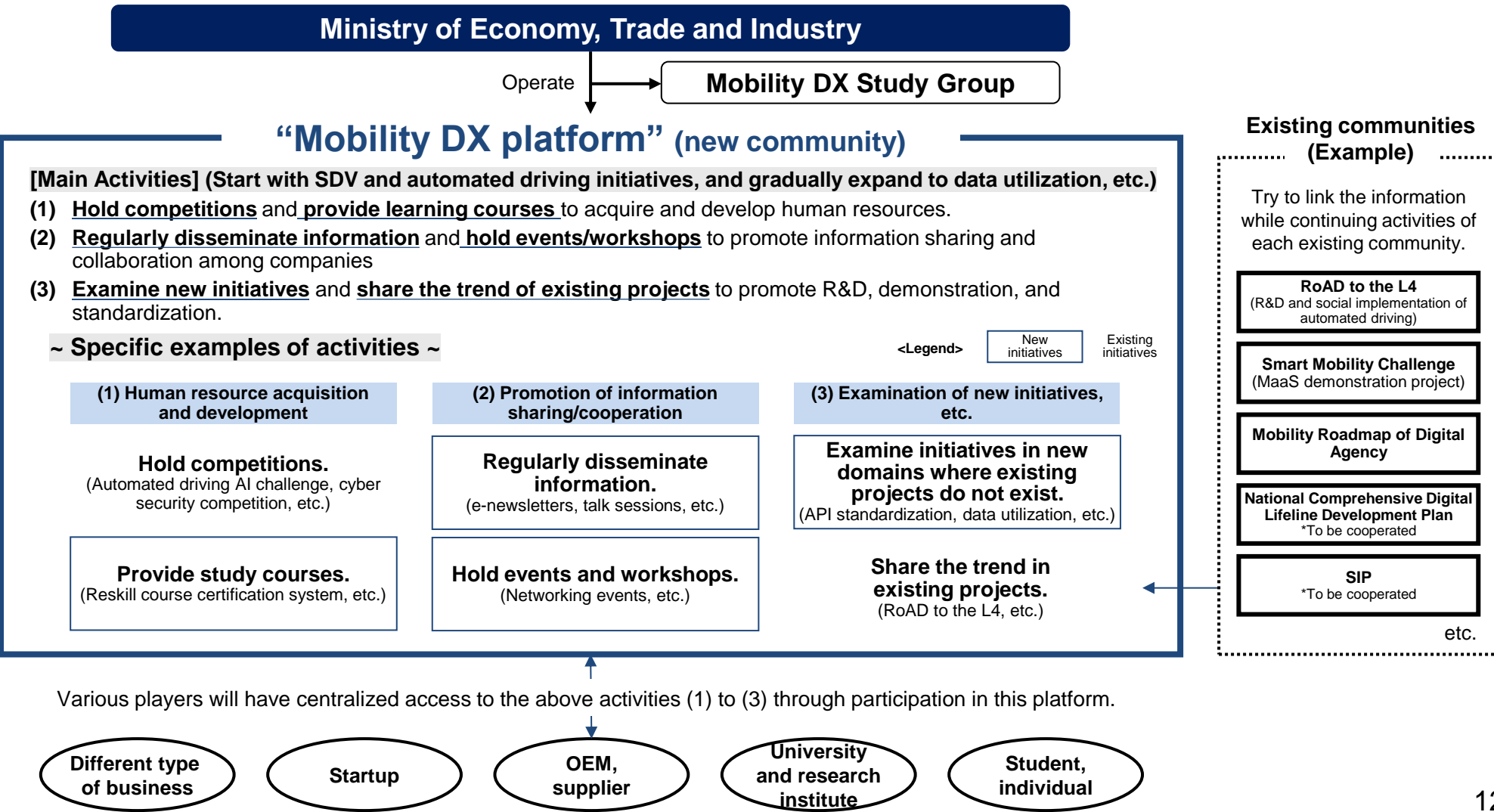


Securing Software Personnel in the Automobile Industry



Mobility DX Platform

- METI launched the “Mobility DX Platform” this fall as a “community” to implement the strategy where various companies, human resources, and information related to SDV and automated driving will gather and interact.



Project to Support the Development and Demonstration of Automated Driving Services to Solve Regional Mobility Issues

- Currently, self-driving cabs are expensive to introduce, and the service is only viable in limited urban areas.
- Aiming to solve regional mobility issues and create MaaS industry, we are to establish a standard model of automated driving and open data set with OEMs and other related players.

<Challenges >

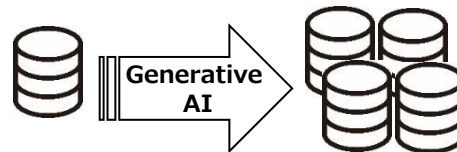
Autonomous driving cabs are only viable in limited urban areas such as Tokyo



- (1) Establishment of an “automated driving standard model” from Japan that can be deployed nationwide

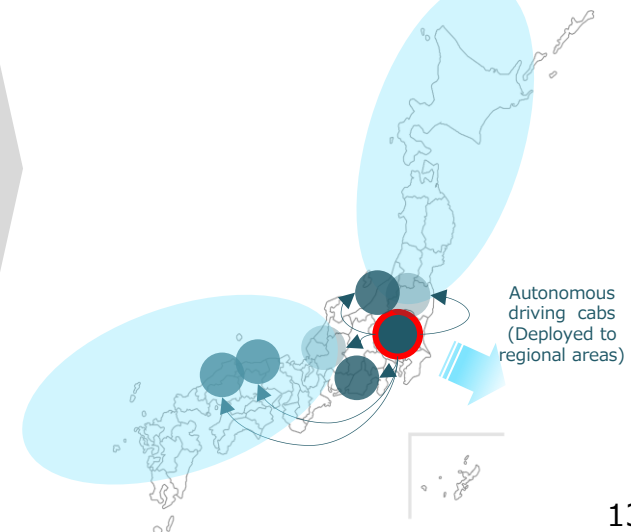


- (2) Construction of “open data sets” necessary to accelerate development of SDV and automated driving



<Target>

Expand autonomous driving into 100 areas including rural areas.



Direction

- In the midst of a game change in the automotive industry, emerging OEMs and tech companies in the U.S. and China are expanding large-scale investments in the AI and digital domains, enhancing their technological capabilities and rapidly securing software talent. At present, international competition for social implementation of SDVs, especially automated driving technology, is intensifying.
- In order to maintain and strengthen the international competitiveness of Japan's automotive industry, it is important for automotive OEMs to cooperate with each other and promote cross-industry collaboration beyond the conventional industry structure.
 - (1), where software and semiconductors constitute the core of competitiveness.Further promote collaboration among Japanese automakers in areas related to automated driving technology
 - (2) Establish a mechanism to create collaboration between existing automobile companies and different industries that possess high technology, which will be the source of SDV competitiveness.