Cross-ministerial **S**trategic **I**nnovation Promotion **P**rogram (SIP), 2nd Phase
Self-driving Transport (System and Service Expansion)

Investigative Study on the Social Implementation and Permanent Adoption of Self-driving Transport Service in Rural Areas

Interim Report

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(1) Goal of R&D or Study

Background

Growth Strategy 2020

In the mobility category, six KPIs (key performance indicators) are specified. The one that concerns rural areas is the following “KPI: Unmanned self-driving transport service within local areas will be made available at no less than 100 different locations across Japan by 2030.”

Public-Private ITS Initiative/ Roadmaps 2020

“〈Vision of self-driving transport for 2020: Self-driving transport service that utilizes the framework of demonstrative experiment〉”
“The plan is to set up such service nationwide by around 2025 so that regional communities across Japan have means of mobility available to elders, etc.”

Purpose

Purpose of the research

“Demonstration of social implementation”: Support social implementation at five different locations.
“Long-term demonstration”: Conduct a long-term demonstrative experiment at one location in such a manner that approximates the actual service adoption.

Update and compile **the introduction manual for social implementation** of the self-driving transport service based on the outcomes of the above experiments.

Project goal

Project goal

Establish, widely implement, and promote a sustainable service model.

(2) R&D or Study Descriptions and Methodology

1) Overall research design

Social background

- **Measure to address rural flight**
- **Mobility support for elders**
- **Measure to address people without access to shops**

Necessity for self-driving transport service in mountainous regions

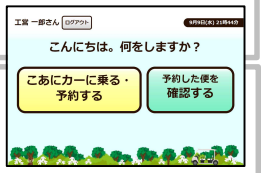
① Clarification of objectives

- Newly identified objectives and objectives from the previous year's demonstrative experiment

Objectives and requirements to be clarified on demonstrative experiment sites: Classification example	
Technical objectives	• Securement of vehicle passage space (utilization of road-to-vehicle communication, pavement markings, etc. to alert the rest of traffic), etc.
Service operation objectives, etc.	• Administrative set-up (organizations involved and assignment of roles) • Measures for achieving operational sustainability (including maintenance and management), etc.
Regional impact objectives	• More opportunities for local residents (especially elders) to get out of their homes and go to places • Support for efficient goods distribution within local communities • Creation of new tourism opportunities, etc.

② Cultivation of social acceptability

- Consensus formation between local residents and regional service operators
- Awareness promotion and public education in and around the targeted locales



③ Feasibility of introduction to rural areas

Self-driving technology ICT

- **Easy-to-handle vehicle**: Cart-type vehicle
- **Road-to vehicle communication technology**: • Electromagnetic guide lines • Magnetic marker
- **Reservation and operation management system**: Cooperation with the SIP system architecture project, etc.

Public-private cooperation scheme

Support to facilitate cooperation between service operators and municipalities, etc.

Upgrade the self-driving transport service introduction manual.

(2) R&D or Study Descriptions and Methodology

2) Creation of an up-to-date self-driving transport service introduction manual

① Update **the manual so that it can be used for the introduction of sustainable self-driving transport service in rural areas,** based on the measures tested and verified in this demonstrative experiment for addressing specific objectives such as the manner of service delivery that is optimized for each locale's specific needs, service operation organization, etc.

- The introduction manual for rural areas must be practical and organized for a convenient step-by-step review of introduction feasibility so that it can be universally applied to similar projects in the future.

1. Identification of issues and objectives
- Understand the current situation.
- Identify specific needs.

2. Service outline design
- Service specification (service descriptions, routes, schedule)
- Demand estimation

3. Organizational set-up
- Hold local information sessions and workshops.
- Establish a council and specify role assignment.

4. Vehicle and infrastructure review
- Vehicle review
- Detailed route review

5. Detailed service specification review
- Vehicle operation plan review (administrator, drivers)
- Vehicle operation management system review
- Fare schedule, revenue source, and expenditure review
- Review of operational sustainability and various cooperation schemes

6. Preparation for experiment, handling of required procedures
- Secure vehicle passage space.
- Prepare a vehicle operation management system.
- Vehicles, infrastructure: Apply for subsidy.
- File application to register as a fare-charging service involving private vehicles, obtain insurance, handle legal requirements on vehicles, hold workshops, etc.

7. Social acceptability review
- Hold information sessions in local communities.
- Review of measures to promote service use.

Social experiment & social implementation

(2) R&D or Study Descriptions and Methodology

3-1) Key points of the social implementation demonstration

① Initial actualization of service maintenance and management for social implementation

Challenge: Lack of know-how related to the maintenance and management of self-driving-adapted road infrastructure and vehicles

⇒ **Organize information on the maintenance and management methods by chronological phase (initial set-up, normal operation, and service malfunction periods).** Actively **accumulate and share related know-how through information exchange** with other SIP projects, etc. in preparation for the eventual social implementation.

⇒ **The manual, Q&A, etc. that will be prepared must be easy to understand** for both municipalities and service operators, **specifying the assignment of roles** in each phase among the road managers, service operators, etc.

② Improvement of service awareness and demand cultivation in local communities

Challenge: Many users are from outside the self-driving service introduction areas, and it is difficult for the service to take root in the local communities.

⇒ **Accurately understand the challenges being faced by the municipalities along with the needs of local residents, etc.** so that the transport service can be delivered to those who truly need it (in terms of routes, schedule, vehicle operation method, etc.).

⇒ **Implement it** with a schedule that is coordinated with the schedules of community buses, food trucks, etc. as well as with local community events **so that it becomes an essential service that is part of local people's daily living**.

(2) R&D or Study Descriptions and Methodology

3-1) Key points of the social implementation demonstration

③ Promotion of the service across wide-ranging age demographics in cooperation with educational institutions, etc.

Challenge: Low level of understanding of self-driving technology and service among people interferes with smooth operation.

⇒ Cooperate with other parties involved in SIP self-driving transport projects in the area of social acceptability to **quantify the effects and improve social acceptability through information sharing**.

⇒ Offer educational sessions at local educational institutions (elementary schools, etc.) as to the features and necessity of self-driving transport service, etc. so that **those children can serve as a medium through which to promote awareness within families and communities**.

④ Update the service introduction manual so that it can be universally applied across similar projects.

⇒ Based on ①, ②, and ③ above, **set up a contact point for manual preparation, updating, and fielding inquiries**.

(2) R&D or Study Descriptions and Methodology

3-2) Key points of the long-term experiment

① Introduce new technologies that allow for more flexible expansion of service routes

⇒ **Use vehicles that do not require electromagnetic guide lines** to conduct on-site tests on their technical and operational performance, while paying attention to the road conditions in rural areas and cost-effectiveness.

② Conduct the experiment in such a manner that reflects future service operations.

⇒ **Formulate service operation plans in conjunction with prospective service operators** such as municipality, NPO, etc.

③ Verify the service operation management system in actual operation

⇒ **Test the system for both prescheduled service and on-demand service,** depending on the needs of local users.

⇒ Set up a service operation management center **for monitoring vehicle operation status and in-vehicle status**.

④ Provide the service while charging fares.

⇒ **Use an applicable program in the locale**, such as the fare-charging transport service involving private vehicles, **and receive fares from the users**.

⇒ Run the experiment for one to two months to promote regular use, and **examine the sustainability of the service operation**.

3-3) Demonstration sites

- The social implementation demonstration and the long-term experiment will be conducted in the locations specified below.

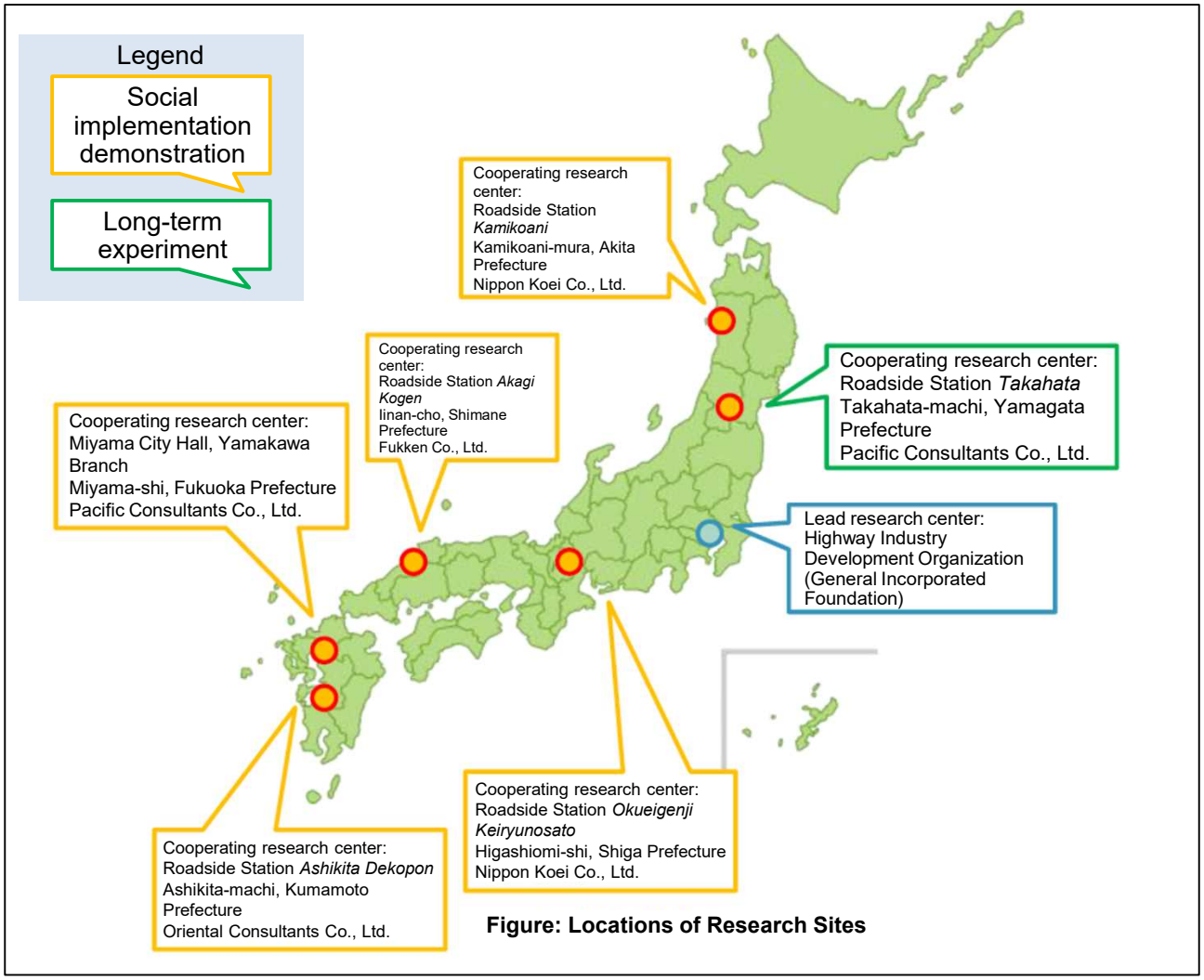


Figure: Locations of Research Sites

(2) R&D or Study Descriptions and Methodology

3-3) Demonstration sites

Experiment sites	Descriptions of the long-term experiment and the social implementation demonstration	Parties responsible for handling operation
①Kamikoani	• The local NPO and the roadside station to handle operation, after **the local company sets up the service operation**. • Assist with the handling of various procedures that are necessary **for transferring the service infrastructure to the municipality, etc.** • **Provide service in a manner specific to each of the four seasons** to maintain sufficient usership, etc.	• Kamikoani-mura Iso Service Kyokai, NPO
②Okueigenji Keiryunosato	• **Contemplate on service specifications** that meet the needs of local residents, tourists, cargo transport, etc. • **Design the service operation** while involving various stakeholders from the locale. • **Review measures for improving financial sustainability** by implementing appropriate service operation specifications.	• New organization will be set up to handle operation (as per plan).
③Akagi Kogen	• **Design the service operation** such that it can be sustained by the existing organization with the help of local volunteers. • Contemplate on service specifications optimized **for maintaining steady operating income** and ease of use by local residents. • **Examine a service model** that is optimal for meeting various types of transport demands.	• Iinan-cho Township • Iinan-cho Tourism Association
④Miyama	• Provide a transport service to and from the service locations, along with **a monitoring service for elders**. • Provide **a grocery delivery service to help with the shopping needs** of those experiencing difficulty going shopping themselves and those affected by the coronavirus epidemic. • **Contemplate on the feasibility of implementing an energy management system** that utilizes the power generated at the biomass center.	• Miyama-shi
⑤Ashikita Dekopon	• **Reassess the service areas and needs based on disaster impacts.** • **Establish a service operation method** optimized for social implementation, including fare collection methods, service status monitoring, etc. • Contemplate on a service scheme conducive to achieving **operational sustainability and financial balance in terms of income and expenditure**.	• Ashikita Kanko Taxis • Toshihiro Co., Ltd.
⑥Takahata	• **Ensure availability of transport means** to support elders with their activities of daily living. • Implement **the transport service in coordination with existing public transport** with a view to promoting local tourism and economy. • **Develop a transport and service coordination scheme** optimized for promoting local industries and economy.	• New organization will be set up to handle operation (as per plan).

(2) R&D or Study Descriptions and Methodology

● Verification criteria for social implementation (1/2)

1. Items that are considered crucial for the permanent adoption of self-driving transport service

Verification items	Specific points of verification	Sites
(1) Implementation of service routes, schedule, transport switching methods, etc. in coordination with public transport and other vehicles that reflect user needs	1. Improve the village's overall public transport service through optimization of intermodal passenger transport within the village. 2. Assist transport switching in a manner optimized for interconnection with the main public transport mode (i.e., community bus). 3. Consider adding shortcut routes to improve convenience and promote use. 4. Implement transport service in coordination with the community bus and provide transport assistance in disaster-affected areas. 5. Coordinate with JR and other existing public transport, and spread preexisting demands across different transport modes.	1. Kamikoani 2. Okueigenji 3. Akagi Kogen 4. Ashikita Dekopon 5. Takahata
(2) Diverse fare collection methods	1. Verify the feasibility of publicity income diversification by offering monthly fare, children's fare, small-sized cargo transport service, etc. 2. Improve revenue by implementing an optimized fare schedule, generating additional income through cargo transport, etc. 3. Examine the feasibility of providing cashless service and introducing coordination with local currency.	1. Kamikoani 2. Okueigenji 3. Miyama-shi
(3) Examination of ways through which to ensure stable operation of the service status monitoring, reservation, and other key operation functions and the vehicle operation management system; and system verification	• Simplify the reservation and operation methods in cooperation with the system architecture project, and establish the operation manual.	• All sites
(4) Examination of operational sustainability	1. Review the operation plan and the prospect of applying for a license to operate fare-charging service involving private vehicles in conjunction with the service operator to which the operation will be handed over in the future. 2. Consider ways to reduce the operation cost by implementing alternate-day operation based on seasonal and other factors, adopting reservation-based service, etc. 3. Consider offering the service for four days or so per week, focusing mainly on weekends and holidays when demands will likely be high for tourism. 4. Consider adding shortcut routes to improve convenience and promote use. 5. Consider offering merchandise delivery service to local residents whose dwellings are along the service routes.	1. All sites 2. Kamikoani 3. Okueigenji 4. Akagi Kogen 5. Miyama-shi
(5) Compliance with various legal requirements	• Create manuals for the maintenance of guide lines and vehicles, and provide education and training to the local company, etc.	• Kamikoani

(2) R&D or Study Descriptions and Methodology

● Verification criteria for social implementation (2/2)

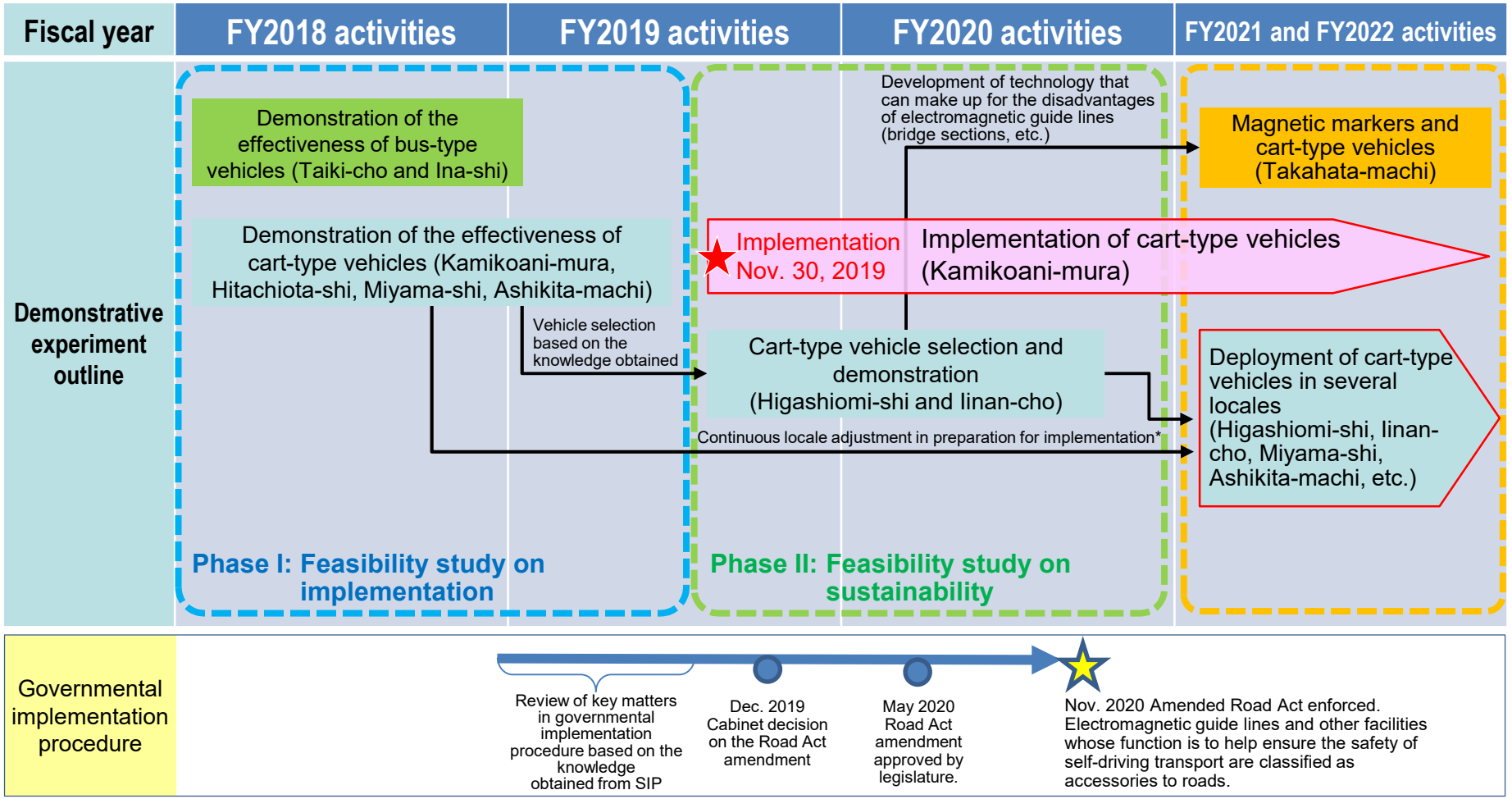
2. Items related to securement of self-driving vehicle passage space

Verification items	Specific points of verification	Sites
(1) Measures for securing vehicle passage space utilizing road-to-vehicle communication technology, etc.	1. Secure exclusive passage space on a permanent basis on agricultural roads (examine the feasibility of unmanned operation, etc.) 2. Review key topics on vehicles and infrastructure, such as magnetic-marker-based control, and examine potential solutions. 3. Examine the possibility of adopting a road design providing separate passages for self-driving vehicles and the rest of traffic on national roads to address the difference in their travel speed, and the possibility of installing gates at entry and exit points.	1. Kamikoani 2. Takahata 3. Akagi Kogen
(2) Measures for ensuring traffic safety in sections that are difficult for autonomous vehicles to navigate	1. Install pavement markings, signs, and vehicle-approaching indication plates that are connected to road-to-vehicle communication. 2. Examine the possibility of adopting a road design providing separate passages and exclusive spaces for pedestrians and bicycles. 3. Examine the possibility of installing escape areas for oncoming and passing traffic. 4. Examine the possibility of providing detours for automobiles to get to bypasses and implementing measures for suppressing their travel speed.	1. All sites 2. Ashikita Dekopon 3. Ashikita Dekopon 4. Miyama-shi
(3) Assignment of functions between the vehicle and the road optimized for implementation	• Review the result of (2) as stated above and prepare a report describing optimal approach to functional assignment that takes into consideration the road and roadside conditions.	• All sites
(4) Effective communication method (HMI) that promotes smooth integration of self-driving vehicles into the rest of traffic	1. Promote service use across diverse age demographics through cooperation with educational institutions, etc. (provide an educational program to young children so that they become a catalyst for promoting understanding and awareness of self-driving transport service across a wide range of age groups). 2. Examine the feasibility of having the vehicles emit signals (audio and light) to promote alertness, etc. in cooperation with the related SIP self-driving transport project (HMI team), etc.	1. All sites 2. All sites
(5) Evaluation of vehicle operation environment	1. Examine the allowable service operation conditions specific to each locale's seasonal, and climatic characteristics, etc. 2. Study the effects of guide line and RFID installation, etc. on the pavement.	1. All sites 2. All sites (with a main focus on Kamikoani)

①Overview of Project Activities and Results

<Previous Activities and Future Plans>

○ In the SIP 2nd period (from FY2018), the project team started developing the self-driving transport system that is socially implementable in rural areas (the period is broken down and organized into Phases I through III based on the different stages of system design review).
○ After all demonstrative activities are concluded in the specified locales and the results and identified issues are reviewed, apply the knowledge to develop the type of self-driving transport service system that can be implemented effectively nationwide.



*Adjustment of locales in view of the effects of the novel coronavirus epidemic, recurring disasters, etc.

①Overview of Project Activities and Results

<Plan for the Realization of Self-Driving Transport Service That Can Be Implemented Nationwide>

○Strive to develop a sustainable service operation design that can be implemented after the conclusion of SIP, based on the findings (knowledge) obtained from the demonstrative experiments.

Red text: Scheduled for execution in 2020 and 2021.
Green text: Involves use of SIP knowledge.

Launch phase — Generate interest.

Planning phase — Define service specifications.

Demonstrative experiment period — Examine adaptivity on site.

Implementation phase — Transfer operation to the local operators.

Continuation/ activation phase — Provide support to ensure operational continuity.

Utilization of SIP framework

Vehicles	Service operation	Environmental development

Solicitation and selection through open public procurement

Experiment council operation
(planning → local approval → experiment: procedural execution)

- Monitoring of use trends and technological trends
- Demand forecast
- Understanding of local needs
- Vehicle selection
- Service offerings
- Social acceptability
- Operational sustainability
  Utilization of volunteers
  Fare schedule, etc.
- Securement of vehicle passage space (exclusive, mixed)
- Examination of necessary infrastructure
- Development of marker-type vehicle
- Infrastructure development and examination
- Utilization of matching funds

Service implementation
(handling of local procedures, integration into public transport plans, etc.)

- Vehicle procurement
- Fare-charging service program involving private vehicles
- Transfer of infrastructure
- Last one mile (intermodal coordination)
- Coordination among service operators
- Implementation of marker-type infrastructure

Development of sustainable operation system

- Maintenance method
- Post-sale service method
- Coordination with other services
- Cultivation of other income sources
- Use of crowdfunding
- Road management: Service operators
- Maintenance and management
- Risk management

Activities in 2023 and beyond

Vehicles	Service operation	Environmental development

Nationwide deployment

→ Horizontal coordination framework

Council, etc.
(planning → local approval → experiment: procedural execution)

- Cabinet Office's initiative on the social implementation of future technologies (organizational set-up, etc.)
  ⇒Cabinet Office's initiative + Road Bureau's initiative
- Other: Auxiliary (support) initiatives

Regional revitalization promotion grants (at the time of experiment)

- Vehicle lease
- Experiment
- Other: Auxiliary (support) initiatives

Development as part of road construction projects (using grants, etc.)

Matching fund guide

Service implementation and sustainable operation system

- Purchase assistance (1/3 of cost subsidized, etc.)
- Maintenance + After-sale service (Need to negotiate with vehicle manufacturers)

Implementation of know-how on service operation
+
Expense support (subsidy, assistance)

[Roads]
Infrastructure development, maintenance, and management as part of road projects

[Space (locations)]
- Support to promote use and utilization of roadside stations and other facilities

- Safety evaluation
- Follow-up
- Automobile operation service insurance

①Overview of Project Activities and Results <Vehicle-Related Matters>

	Vehicles	
	Bus-type	Cart-type
Launch • Planning	○ Examine the possibility of public transport replacement targeting the existing bus service (requirements include relatively high speed transport, long range, and ability to travel on arterial roads) → **Stable service operation achieved.** → Meanwhile, it remains difficult to achieve and maintain high enough speed as yet to become a viable mode of alternative public transport. → **System expenses are an issue.** * It is likely that implementation during the 2nd SIP period would not occur. ⇒ **Development will mainly focus on system implementation involving cart-type vehicles.**	○ Examine the local acceptability of the vehicle as means of transport in terms of safety, security, reliability, and comfort. ○ Examine the effectiveness of towed vehicles (trailers) as means of goods transport. → It is confirmed that the vehicles (powered vehicles and trailers) can be operated reliably even in the snow, sloped sections, and narrow roads. → **Levels of comfort** in winter and summer **remain an issue** (acceptability of roofless and low-speed vehicles has been confirmed). → **It is necessary to examine the feasibility of vehicle use in actual service operation.**
Demonstrative experiment • Implementation preparation	—	○ Facilitate examination in actual service operation at Kamikoani. ○ Examine cart-type vehicle selection based on the characteristics learned in Phase I (deploy cart-type vehicles in new locales (Okueigenji, Akagi Kogen)). ○ Examine the operational feasibility of fare-charging transport service involving private vehicles (volunteer drivers). → At Kamikoani, **the feasibility** of fare-charging transport service involving private vehicles **has been confirmed in actual year-round operation** (vehicle operation). → It is confirmed that **the system is operable in the target locale** (measures, etc. were also tested to maintain passenger comfort in winter). → **It is necessary to examine the feasibility of sustainable long-term service operation.** → **It is necessary to address the technical issues related to electromagnetic guide lines (in sections where it is difficult to install them, etc.).**
Continuation	Legend Goals/**Results** **Issues, challenges, newly identified objectives**	○ Examine maintainability, handling of irregular events, follow-up service, efficiency optimization, etc. in cooperation with concerned companies, etc. for long-term service operation. ○ Examine repairability and upgradability to ensure perceived passenger safety, ways to utilize the service, etc. to cater to the needs of local users. ○ Examine the resolutions (magnetic markers and cart-type vehicles) of the issues related to electromagnetic guide lines.

①Overview of Project Activities and Results <Vehicle Operation- and Service-Related Matters>

	Vehicle operation and service
Launch • Planning	○ Implement various measures in many different locations and examine the outcome to determine which ones are optimal for horizontal implementation nationwide. • Replacement for existing public transport (Taiki-cho, etc.) • New route implementation (fare-charging transport service involving private vehicles: Kamikoani, etc.) • Use of designated stops and other similar locations (connecting transport service: Hitachiota, etc.) → It is necessary to **assess local people's interest in using the service as well as their perceived levels of safety and security associated with the service** and to **examine service implementability in actual operation** in each locale. ○ Demonstrate transport service carrying both cargo and passengers (bus-type: Taiki-cho, etc.; cart-type: Miyama-shi, etc.) → The service **proved to be highly effective** in the target locales, while it is still necessary to **demonstrate the service's sustainability**. ○ Conduct fare payment/reservation system operation (QR code, on-demand service, etc.) and test wide-ranging service modes (drone transport, etc.). → **While high service effectiveness and data utilization are promising**, it is necessary to **examine the operation expenses and the outcomes to determine cost-effectiveness** and assess the impacts of various interservice tie-ups.
Demonstrative experiment • Implementation preparation	○ Implement the first-ever full-scale transport service of its kind in Japan at Kamikoani. • **The service's feasibility was proven in actual year-round operation** (the NPO offered it as a fare-charging transport service involving private vehicles). • Improvements were made in the year-round service operation, in the areas of route setting, service schedule, etc. → It is necessary to **examine ways to improve profitability, etc.** for sustainable service operation. ○ Examine service specifications (especially the fare schedule) to make sure that they are suitable for each locale's characteristics. ○ Develop the system in cooperation with other SIP programs. • The service's implementability was proven while applying wide-ranging fare schedules (Akagi Kogen, Okueigenji). • Operations of the common service reservation and operation management systems were demonstrated. → **The characteristics of each locale as it pertains to fare settings were confirmed** (fare schedules designed to promote high-frequency use, etc.) → It is necessary to **formulate schemes for the formation of stable cooperative arrangements with other services, etc. and for system utilization through implementation in various locales**.
Continuation	○ Develop sustainable service provision and operation capability with the support of local volunteers, etc. (Promote cultivation of other income sources through cooperation with roadside stations, etc.) ○ Improve usership diversity, income source diversity, and service acceptability in each locale through cooperation with other business operators, etc.

①Overview of Project Activities and Results

<Matters Related to Environmental (Infrastructure) Development>

	Environmental development (infrastructure, etc.)	
	Infrastructure communication system	Road space
Launch • Planning	○ Examine the effectiveness of the road-to-vehicle communication system in environments where it is difficult to accurately determine the vehicle position. • Magnetic markers were tested (precision control including correct vehicle positioning at stops (Taiki-cho); testing in tunnels (Ina-shi)) • Electromagnetic guide lines were tested (testing in winter weather conditions (Kamikoani) and narrow roads (Hitachiota). → **The effectiveness** of the road-to-vehicle communication system **was confirmed, clearing the way for the amendment of the Road Act**. → **It is necessary to examine the system's implementability** in actual operation.	○ Examine road space specifications that allow for self-driving vehicles' safe and stable operation that are separate from automobiles. • Escape areas (to address the travel speed difference) and pavement markings (to alert the rest of traffic) were installed to evaluate their effects (Miyama, Dekopon). • Vehicles were operated at Lv4 in exclusively designated spaces (Kamikoani, Dekopon). → The effectiveness of the pavement markings, etc. was verified in alerting other traffic in the locales tested (Miyama, Dekopon). → **It is necessary to examine their implementability in actual operation.** → The travel speed difference still needs to be addressed to make sure that the passengers will feel safe while using the service (countermeasures must involve road-vehicle coordination).
Demonstrative experiment • Implementation preparation	○ Implement the infrastructure communication system at Kamikoani year-round to examine its operational performance. → Knowledge was accumulated during regular infrastructure maintenance, etc. → In addition to normal times, **it is necessary to examine operational capability in irregular events, along with the effects of temporal deterioration caused by seasonal changes, etc.** ○ Examine the infrastructure design in special sections (bridges). → Measures were implemented using locally-optimized infrastructure installation methods.	○ Operate the service in an environment having more proximate conditions (Lv4 operation; examine exclusive space specifications optimized for addressing the travel speed difference). → Operational feasibility with the support of local communities → The service was tested at Kamikoani in exclusively designated space and the vehicles' operability and acceptability were verified. → Meanwhile, **expenses, etc. remain an issue for sustainable operation**. ⇒ As part of the activities scheduled for the 2nd period of SIP, service operation in mixed traffic environments would be conducted with a view toward nationwide implementation. ○ Vehicle operability was examined with pavement markings, etc. installed at transport nodes.
Continuation	○ Implement the system in multiple locales to identify effective infrastructure maintenance, management, and renewal methods that can handle irregular events, seasonal effects, and regional changes. ○ Examine the operability of cart-type vehicles in combination with the use of magnetic markers.	○ Examine ways to achieve safe and stable service operation in cooperation with local communities, including the maintenance and management of vehicle passage space, pavement markings, etc. handled locally in a reliable manner.

②Local Activities <Issues, Challenges, and Newly Identified Objectives That Must Be Addressed for Service Introduction: Bus-Type Vehicles>

Local sites	Vehicles		Operation and service		Environmental development (infrastructure, etc.)	
	Activities and results	Issues, challenges, and newly identified objectives	Activities and results	Issues, challenges, and newly identified objectives	Activities and results	Issues, challenges, and newly identified objectives
Taiki-cho, Hokkaido	• Examine the possibility of replacing existing public transport (bus service) in a cold region (relatively high travel speed and long range). • Examine the possibility of safe and secure vehicle operation.	• **Lack of vehicle speed while traveling on arterial roads** • **High system expenses due to the system being so advanced** (both initial and operating costs)✵ * It is necessary to achieve lower-cost implementation based on enhanced marketability.	• Examine the acceptability of replacing existing public transport. →It was confirmed that the locals would be highly interested in using the service if it will be connected to the existing large-area bus service and that they would place importance on safety and security assurance, etc. →Conducted a trial operation as an approved fare-charging transport service involving private vehicles. • Examine various fare payment methods. →QR code was used to test the passenger boarding/deboarding management system, as it can be easily created locally, which proved to be highly effective and usable. • Examine the feasibility of mixed cargo and passenger transport service. It was proved that the service would be effective in the locale and people would be interested in using such service.	[General service-related] • **Secure sufficient human resources for actual service operation (drivers and operators).**✵ [Fare payment and reservation system] • It is necessary to examine the system operation expenses and effects. [Mixed cargo and passenger transport] • It is necessary to demonstrate the sustainability of mixed cargo and passenger transport service.	• Examine the vehicle control using magnetic markers to apply precision control especially in sections where vehicle control must be most accurate. →It was confirmed that a sufficient level of precision could be achieved in vehicle positioning at stops.	• It is necessary to examine implementability in actual operation.
Ina-shi, Nagano	• Examine the possibility of replacing existing public transport (bus service) in a mountainous region (relatively high travel speed and long range). • Examine the possibility of safe and secure vehicle operation.		• Examine the acceptability of replacing existing public transport. →It was confirmed that the locals would be highly interested in using the service if it will be connected to the existing community bus service and that they would place importance on safety and security assurance, etc. • Examine various fare payment methods. →IC cards were used to test the passenger boarding/deboarding management system, as it is similar to the existing system, which proved to be highly effective and usable. • Examine the feasibility of mixed cargo and passenger transport service and the usability of drone delivery service. It was proved that the services would be effective in the locale.	[General service-related] • **Secure sufficient human resources for actual service operation (drivers and operators).**✵ [Fare payment and reservation system] • It is necessary to examine the system operation expenses and effects. [Mixed cargo and passenger transport] • It is necessary to demonstrate the sustainability of mixed cargo and passenger transport service. • It is necessary to examine the effects of tying up with a diverse range of other services such as drones.	• Examine the feasibility of using magnetic markers to make up for GPS unavailability (in tunnels). →The knowledge was obtained that would be crucial in properly installing infrastructure to efficiently switch between GPS and magnetic markers in tunnels.	

While the needs for bus-type vehicles are rather significant, this vehicle type is abandoned because it is highly unlikely that the issues, etc. as described above would be all cleared before the end of the SIP period.

②Local Activities <Issues, Challenges, and Newly Identified Objectives That Must Be Addressed for Service Introduction: Cart-Type Vehicles>

Local sites	Vehicles		Operation and service		Environmental development (infrastructure, etc.)	
	Activities and results	Issues, challenges, and newly identified objectives	Activities and results	Issues, challenges, and newly identified objectives	Activities and results	Issues, challenges, and newly identified objectives
Kamikoani-mura, Akita	• Examine the safe operability of vehicles and trailers during winter. It was confirmed that they could be operated normally, even in the snow (on compressed snow) and sloped sections.	• The issue of passenger comfort remains (measure against cold). • It is necessary to examine feasibility in actual operation.	• Implement appropriate service routes based on the vehicles' travel speed, etc. →It was confirmed that people were highly interested in using the service. →It was confirmed that people place importance on service safety and security, etc. →The trial operation was conducted as an approved fare-charging transport service involving private vehicles, and its feasibility was confirmed.	• Examine implementability in actual operation.	• Examine safe vehicle operability during snowfall and on the snow using electromagnetic guide lines. It was confirmed that the road-to-vehicle communication was effective. • Examine vehicle operation in Lv4 exclusive passage space. It was confirmed that the allocation of such exclusive space would ensure service safety, and that the local people and organizations were willing to provide support, etc.	• It is necessary to examine implementability in actual operation. • It is necessary to implement measures for ensuring passengers' feeling of security.
Hitachiota-shi, Ibaraki	• Examine the safe operability of vehicles and trailers on narrow roads in and around residential areas. • Roofless vehicles (carts), which are different from regular ones, were used to confirm its acceptability. It was also confirmed that such roofless vehicle model got high ratings in terms of its effectiveness in providing people with increased opportunities to get out of their homes and go to places, etc.	• It is necessary to examine feasibility in actual operation.	• Implement service connectivity between the self-driving vehicles and the scheduled-route bus service to the city center (switching at designated locations and stops), and conduct service operation management in cooperation with the public transport service providers, which prove to place less burden on the local communities. • Examine the functional significance of self-driving transport service across the entire locale. • Examine the performance of the tablet-computer-based reservation system. Its effectiveness was confirmed, and the result of the examination would be utilized in specification decision.	• Examine implementability in actual operation. • Ensure smooth integration into the entire locale's transport plan. • Improve the system use rate.	• Examine optimal electromagnetic guide line installation points to ensure safe operation of vehicles and trailers on narrow roads in residential areas. It was confirmed that the road-to-vehicle communication system would be effective.	• It is necessary to examine implementability in actual operation.
Miyama-shi, Fukuoka	• Examine the safe operability of vehicles and trailers in steeply sloped sections. It was confirmed that they could be operated stably.	• The issue of passenger comfort remains (measure against heat). • It is necessary to examine feasibility in actual operation. • It is necessary to alleviate people's sense of insecurity due to the sides of the vehicles having open design.	• Examine the effectiveness of the reservation system that could be used in on-demand service operation. Its effectiveness was confirmed. • Examine the feasibility of providing produce shipment support service (mixed cargo and passenger transport service using carts). The service proved to be effective in goods transport utilization.	• Examine implementability in actual operation. • It is necessary to demonstrate the service's sustainability by offering mixed cargo and passenger transport.	• Examine the possibility of smooth service operation in mixed traffic. Set up escape areas (on borrowed private land) to achieve congestion-free operation, and determine their effectiveness. • Install pictograms depicting the vehicle design to clearly indicate where the vehicles' designated passage spaces are. It was confirmed that this helped improve the level of understanding among pedestrians, automobile users, etc.	• It is necessary to examine implementability in actual operation. • It is necessary to implement measures for providing an improved sense of security to passengers by addressing the travel speed difference.
Ashikita-machi, Kumamoto	• Examine the safe operability of vehicles on arterial roads and narrow roads in residential areas. It was confirmed that they could be operated stably.		• Use the passenger boarding/deboarding management system (using IC cards) to collect and analyze data, and examine ways to improve the service schedule and routes. The system's effectiveness was confirmed along with its usability in performing such tasks.	• Examine implementability in actual operation.	• Install text-based pavement markings to clearly indicate where the vehicles' designated passage spaces are, and examine what types of markings are easy to understand for pedestrians, etc. • Use the cyclist and pedestrian roads in railroad underpasses to conduct vehicle operation in Lv4 passage spaces. It was confirmed that use of such exclusive spaces would be safe.	• It is necessary to examine implementability in actual operation. • It is necessary to implement measures for ensuring passengers' feeling of security.

While some issues remain in the minutia, this will proceed to the next phase, which is sustainability examination in actual service operation over extended periods.

②Local Activities <Issues, Challenges, and Newly Identified Objectives That Must Be Addressed to Achieve Sustainable Service Operation>

Local sites	Vehicles		Operation and service		Environmental development (infrastructure, etc.)	
	Activities and results	Issues, challenges, and newly identified objectives	Activities and results	Issues, challenges, and newly identified objectives	Activities and results	Issues, challenges, and newly identified objectives
Kamikoani-mura, Akita Service implementation From Nov. 30, 2019	[Long-term service operation] • Develop and examine the efficacy of regular maintenance and management methods that can be used year-round. [Local characteristics] • Examine points to pay attention to for service implementation in cold regions.		[Local characteristics] • Examine service use trends including year-round changes occurring seasonally, on different days of the week, by the hour. • Review and flexibly adjust the service routes, schedule, etc. to cater to the local needs through service implementation. [Local service operation] • Conduct service operation in coordination with the series of events that take place at the roadside station, etc. throughout the year. • Examine ways to recruit sufficient numbers of local volunteers throughout the year and utilize them.	• It is necessary to examine ways through which service profitability, etc. can be improved to ensure operational sustainability. • It is necessary to establish reliable methods of cooperation with other services and of system utilization based on the knowledge obtained from diverse locales during service implementation.	[Long-term service operation] • Develop and examine the efficacy of regular maintenance methods that can be used year-round. [Route characteristics] • Examine technical topics that are key in securing exclusive vehicle passage space for Lv4 service operation.	• In addition to normal times, it is necessary to examine the effects of temporal deterioration through irregular events, seasonal changes, etc.
Higashiomi-shi, Shiga	[Local characteristics] • Select vehicles that are suitable for the local service routes and passenger characteristics (low-speed mobility vehicles selected): The vehicle type switch occurred since the previous short-term experiment (bus-type ⇒ cart-type). • Examine the feasibility of having local residents handle vehicle operations (as drivers and operators).	• It is necessary to examine operational sustainability over the long term.	[Local characteristics] • Examine various ways to provide the transport service (through sales of books of tickets, one-day tickets, and other fare options) in coordination with local events, and in such a manner optimized for the characteristics of service users in the locale (mainly for daily activities and goods transport) and from other areas (tourism). [Local service operation] • Examine a viable safety management measure support model involving public transport service providers (to reduce the burden on the NPO in safety assurance).	• It is necessary to establish reliable methods of cooperation with other services and of system utilization based on the knowledge obtained from diverse locales during service implementation.	[Route characteristics] • Deal with the areas of the bridges that present difficulty in terms of infrastructure installation.	• Securing funding to cover expenses for maintaining exclusive vehicle passage spaces remains a challenge. • It is necessary to address the technical issues related to electromagnetic guide lines (in road sections where it is difficult to install the guide lines).
Iinan-cho, Shimane	[Local characteristics] • Select vehicles that are suitable for the local service routes and passenger characteristics (low-speed mobility vehicles selected): The vehicle type switch occurred since the previous short-term experiment (bus-type ⇒ cart-type). • Examine the feasibility of having local residents handle vehicle operations (as drivers and operators).		[Local characteristics] • Examine the feasibility of a subscription-based service model (under which local residents will pay fixed flat fares and use the service with high frequency). [Local service operation] • Examine service operation arrangements that involve cooperation with other various services offered by the tourism association, etc. (roadside station administrator, orchards, tour guides).		[Route characteristics] • Examine passage spaces where the travel speed difference exists (allocation of exclusive and mixed passage spaces on national roads).	

Identify methods of problem-solving and service operation that are suitable for the local characteristics, and proceed to the service popularization phase.

②Local Activities <Action Items for the Expansion of Service Implementation>

Local sites	Locale's characteristics	Vehicles	Operation and service	Environmental development (infrastructure, etc.)
Kamikoani-mura, Akita	• Service implementation for the longest period above the rest of the local sites • Heavy snowfall region	• Examine the issue of temporal deterioration caused by seasonal changes, etc. that should be addressed. • Prepare a manual for dealing with emergency events. • Formulate a future updating plan.	• Examine the feasibility of tie-ups with tourism and observation tours, etc. that cater to the needs of those visiting from outside the locale. • Examine measures by which to reduce system expenses (insurance change, etc.). • Examine the feasibility of cooperating with (or operating) other services at the roadside station, such as mobile shop operation, as part of the service implementation.	• Examine an efficient infrastructure management model (to address significant temperature shifts, involve local residents as well as the service operator to manage the infrastructure, etc.). • Examine infrastructure issues that must be addressed in long-term service operation resulting from pavement repairs.
Higashiomi-shi, Shiga	• Large numbers of users visiting from outside the locales to use the roadside station, etc. (a clinic and community facilities are also operated on the premises)	• Examine a vehicle maintenance model that involves cooperation with a public transport service provider (taxi company).	• Examine the operational feasibility of providing last-mile transport means to the roadside station, and of providing connecting means to the community bus service. • Contemplate cooperating with other businesses (i.e., goods transport service, etc.).	• Examine vehicle operation issues that are typically experienced in narrow road sections (including route setting that considers the steeply sloped road layout, etc. for reliable service operation over the long term).
Iinan-cho, Shimane	• Narrow service area • Snowfall region	• Examine issues such as the vehicle speed setting optimized for the needs of different uses (There is usually only one single travel speed setting).	• Examine the feasibility of providing a diverse range of services along the same service routes (tourism use at low-speed, various service operations using the same routes, etc.) • Examine ways to improve service acceptability in cooperation with educational institutions (elementary schools).	• Examine optimal vehicle operation paths during snowfall to address pedestrian safety, etc.
Miyama-shi, Fukuoka	• Cooperation with other types of services • Coordination with new locations	• Examine the feasibility of cooperating with an electric power company based on the characteristics of EVs.	• Examine a business model that involves cooperation with other types of services (resident monitoring service, etc.). • Examine the feasibility of efficient EV operation in cooperation with an electric power company.	• Examine long-term service operation of road spaces that are optimized for the travel speed difference between the self-driving vehicles and the rest of traffic (measures for addressing passing traffic, speed suppression, pavement markings, etc.).
Ashikita-machi, Kumamoto	• Community revitalization by allowing for local area shopping, hospital visits, etc. • Many sections of mixed traffic passage	• Formulate measures for ensuring vehicle safety/passenger security in mixed traffic passage sections (installation of safety bars in the vehicles, etc.).	• Examine ways through which to cooperate with public transport service providers such as local railway and community bus services. • Develop a collaborative model involving public transport service providers and local residents (for implementation under a new operational structure).	
Takahata-machi, Yamagata	• Test field for newly developed vehicles and road-to-vehicle communication facilities • Heavy snowfall region	Develop vehicles that utilize magnetic markers (involving test drive on actual roads).	• (The plan is to examine the operational feasibility of the new vehicles and facilities based on the characteristics of the magnetic marker system.) * Vehicles under development	• Examine road-to-vehicle communication technology that utilizes magnetic markers to aid self-driving vehicles.

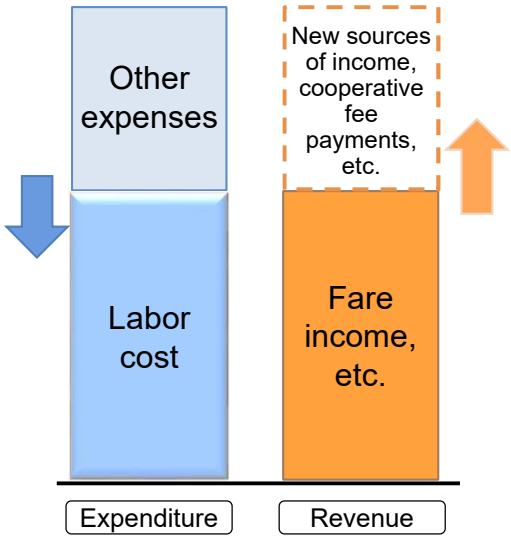
* Some locales have had these action items moved to Phase III due to the novel coronavirus epidemic and recurring natural disasters, etc.

Prepare a service operation manual explaining the know-how conducive to successful long-term operation and leverage it for service popularization.

③Estimation and Acceptability of Expenses by Municipalities <Example of Operating Costs>

○ Facilitate the development of the targeted business model during the SIP period.
○ Examine ways to suppress the expenditures (cost reduction through various cooperative arrangements and income source diversification) and increase the revenue (promotion of tourism and inspection tours, etc. in the post-coronavirus phase and cooperation with the roadside stations and private businesses, etc.) by experimenting in the implementation fields and apply them to other service sites.

▼ Sample revenue and expenditure structure



Expenditure suppression through cooperation with a roadside station

The roadside station provides space for the self-driving transport service, free of charge, to set up a reception inside the facility.

⇒ Transfer the reception and other administrative task to the roadside station staff (dual job functions) so that the labor cost required in service operation can be reduced.

Have the roadside station staff and local volunteers operate the service of the week.

⇒ Review data from previous fiscal years to determine which days of the week have the most number of users, and only operate the service on those days of the week to reduce the operation cost.

Revenue increase through cooperation with other services and by offering new services

Give away free service tickets to shoppers at the roadside station. By developing service routes that include stops at convenience stores, user convenience can be improved.

⇒ Actively acquire usership within the village to provide transport to and from shop locations, etc.

Examine the feasibility of cooperating with tourism DMOs to solicit tourist traffic, inspection tours, etc.

⇒ Generate user traffic from outside the village.

Utilize the service to provide transport to and from the roadside station.

⇒ Examine the feasibility of providing full-scale cargo transport service, and effective fare schedule implementation (including adoption of cooperative fee-based system).

Serve as a cooperative space for insurance companies, etc. to test their products under development, while receiving from them cooperative fees and advertisement fees.

⇒ Cultivation of new income sources through corporate tie-ups, etc.

④Vehicle Operability Evaluation and Issues in Winter <Iinan-cho, Shimane>

○ Self-driving vehicles were operated on snow-covered roads during winter to determine their safety.
○ The next step is to hold discussions with concerned parties to formulate safety measures optimized for the operating conditions for full-scale service implementation.

[Test plan]

Items	Descriptions
Test date and time	Jan. 29, 2021 (Fri) *The test consisted of two parts, one taking place in the morning and the other in the afternoon.
Test descriptions	• A service route was divided up into several shorter sections, and each pass went through those sections several times. • The vehicle was operated on parking lots, public roads (collective land parcels and steeply sloped roads on apple orchards), etc. to observe any issues that might arise. • After the test was completed, the participants held a review conference at the roadside station to exchange opinions on the test result. • As people inside and outside the vehicle took turns at making comments, some of the opinions were provided from the users' perspectives.
Vehicle equipment	• Chains were installed on the vehicle's stud-less snow tires (the morning portion of the test was conducted with the chains on, but they were removed for the afternoon session). • Electrically heated mats were installed on the seats. • The vehicle was operated with the vinyl curtains down at all times to insulate from the cold air caused by the snow.
Attendees	Representatives from Iinan-cho, tourism association, local public transport service provider, township association chair, Ministry of Land, Infrastructure, Transport and Tourism, and Fukken Co., Ltd. (14 attendees in total)

▼After the test drive, the attendees participated in a review conference and exchanged opinions.

▲Vehicle traveling along the apple orchard route (①)

The vehicle was operated on the apple orchard route in winter weather.

- While the current self-driving transport implementation plan does not include passage through the apple orchard in winter, the path was chosen to test the vehicle's operability on steep slopes in such condition.
- It was proven that the vehicle could navigate through such steep slopes without issue.

Operation along the Akanajuku route

- The test involved the vehicle making several focused passes through the collective land parcels in Akana to observe the vehicle's operating status and any issues that would be presented on the particular route.

▼Vehicle traveling near the Akana Nursery (②)

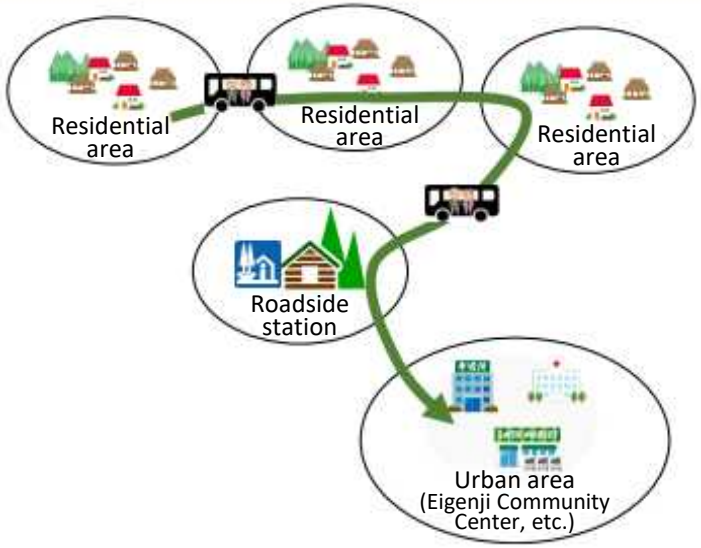
▼Vehicle traveling through the collective land parcels (③)

	Winter test drive evaluation and issues identified	Measures that must be implemented for full-scale service operation	Party(ies) responsible for action
① Operation on snow-covered roads	• No major issue was experienced during vehicle operation on snow-covered roads. • The test revealed that the stud-less snow tires alone would be sufficient for proper vehicle operation if the snow accumulation is not so much. • The brakes were abruptly applied on steep slopes to mimic emergency manual intervention, but the vehicle was able to operate normally.	–	–
	• When there is major snowfall, the snow accumulated on the shoulder of the road in the collective land parcels could possibly interfere with vehicle operation.	• Set local snow removal rules in the collective land parcels. • Ensure proper switching to manual operation as needed. • Examine the feasibility of specifying criteria based upon which service suspension will be decided, etc.	• Local parties • Service administrator
② Vehicle conditions	• The vinyl curtains alone were not enough to insulate from the cold as the wind would still come in through the gap near the floor. Additional measures are needed to keep the passengers warm.	• Provide loaner lap blankets, install electrically heated mats, etc.	• Service operator
		• Examine ways to achieve better insulation by completely shutting out the cold air using vinyl curtains.	• Yamaha (Requests will be communicated through the SIP project.)
	• Comments were made to the effect that it would be safer to wear seatbelts, etc. on snow-covered, steep slopes, etc.	• The necessity of wearing seatbelts and adopting other safety measures will be reviewed.	• Yamaha (Requests will be communicated through the SIP project.)
	• The snow tends to get inside the vehicle and remain on the floor, which becomes frozen underneath the passengers' shoes and creates a slippery surface.	• Implement anti-slip measures on the steps, floor, etc.	• Service operator
	• As the passengers' luggage size increases in winter, it is necessary to implement measures that allow for smooth boarding and deboarding.	• Install luggage storage spaces, etc. where the passengers can conveniently stow their umbrellas, thick coats, walking canes, etc.	• Service operator
	• Viewing of the side mirrors is obstructed when the vinyl curtains are down.	• When the vinyl curtains are down, direct visual checks, etc. must be conducted instead of relying on the side mirrors to ensure safe vehicle operation.	• The service administrator will give instructions to the drivers.
③ Vehicle performance	• As the vehicle operation has not yet been conducted through all seasons, the knowledge obtained so far on the performance of the self-driving vehicles and the infrastructure, including the tags used by the vehicles, is still insufficient.	• Hold information sessions to explain the performance of the vehicles, tags, etc., and share the operator's manuals.	• Yamaha • HIDO (scheduled to create a vehicle operation manual)

⑤Cooperation with Existing Public Transport <Higashiomi-shi, Shiga>

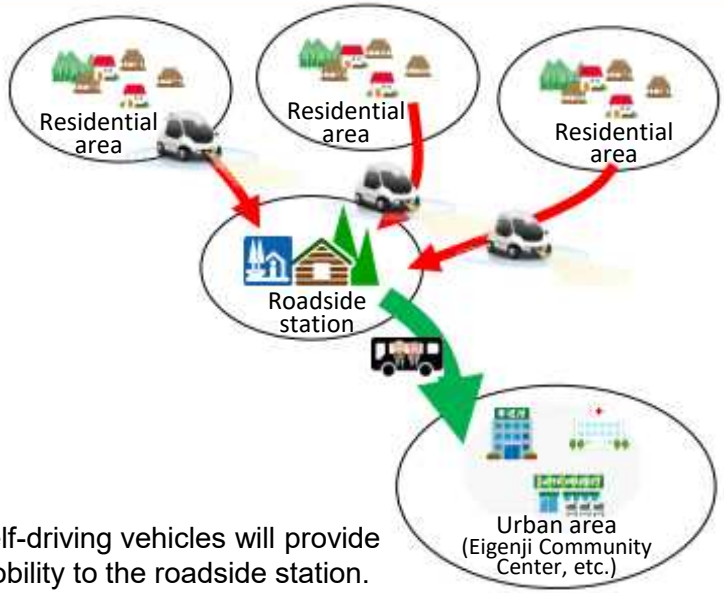
○ The plan involves coordination between the self-driving transport service and the scheduled-route bus service (*Chokotto Bus*) connecting between local residential areas, with the roadside station being the hub.
○ The future plan also possibly involves a cooperative scheme where the self-driving transport service will provide mobility between the residential areas, while the scheduled-route bus service, etc. will connect between the roadside station and the urban area, thereby collectively forming a local public transport network.

Current public transport (*Chokotto Bus*)



- Chokotto Bus is the only available means of transport in the locale.
- As the service is provided only four to five times per day, those without access to transport are unable to go to the roadside station.

Future configuration
(Chokotto Bus + self-driving transport service)

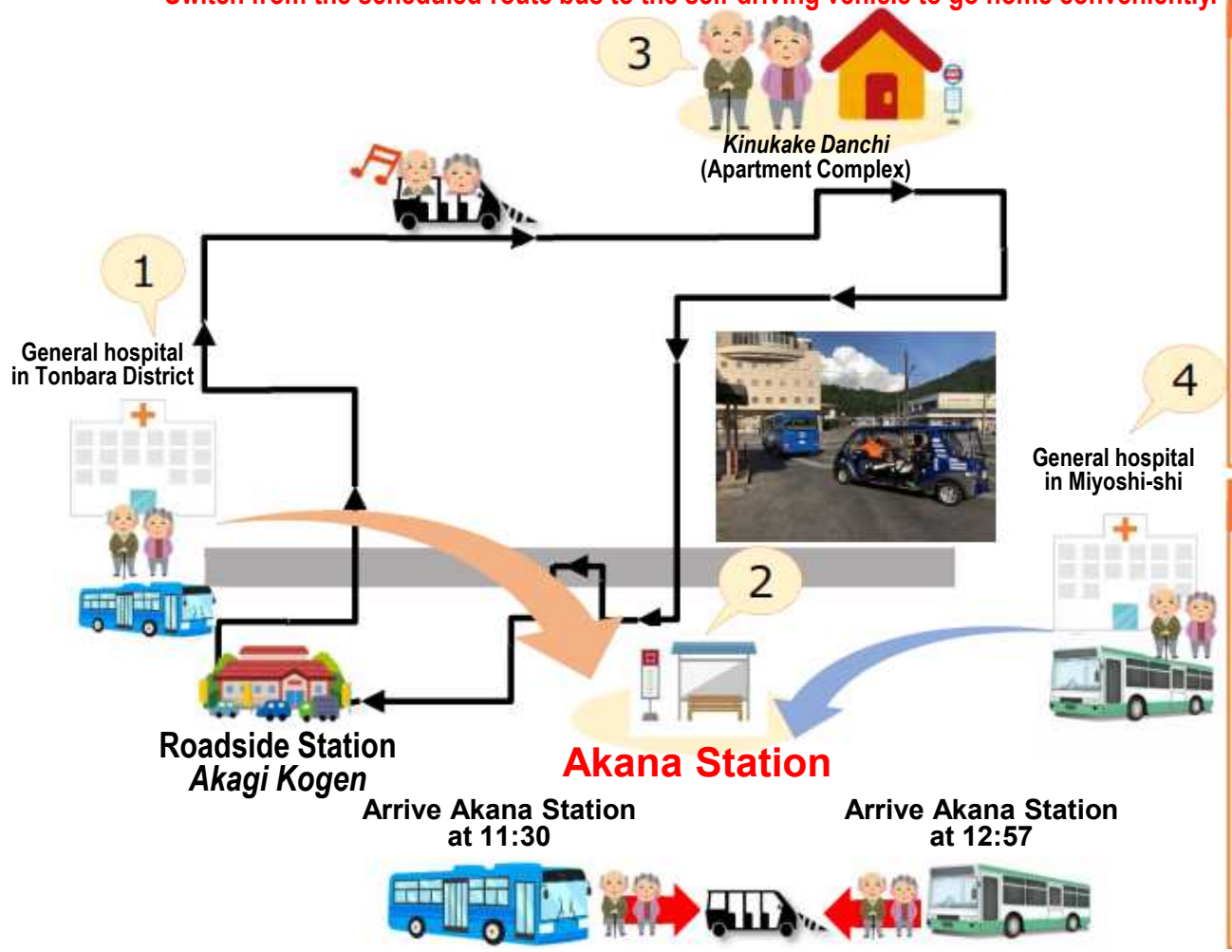


- Self-driving vehicles will provide mobility to the roadside station.
- The vehicles are so easy to use that the local people will be able to operate them with ease (cart-type vehicles).
- As the vehicle operation will be handled locally, people can go to the roadside station without hassle.

⑤Cooperation with Existing Public Transport <Iinan-cho, Shimane>

○ Connection will be provided between the self-driving transport service and the scheduled-route bus service at Akana Station, which is one of the stops on the self-driving transport service route.
○ The plan is to provide mobility with the self-driving vehicles within the residential areas, while the scheduled-route bus service can be used for people who need to travel to the hospital, etc.

Switch from the scheduled-route bus to the self-driving vehicle to go home conveniently.



Route ①

Date: ●●/▲▲ Time: a.m.
—Take the scheduled-route bus to see a doctor at Iinan Hospital—

① Iinan Hospital
↓ 11:30
Switch
11:40
② Akana Station
5th bus
Travel back home, fully immersed in the pleasurable experience of the winds.
11:58
③ Home (*Kinukake Danchi*)

Route ②

Date: ●●/▲▲ Time: a.m.
—Take the scheduled-route bus to see a doctor at Miyoshi Central Hospital—

④ General hospital in Miyoshi-shi
↓
Switch
13:05
② Akana Station
6th bus
Travel back home, fully immersed in the pleasurable experience of the winds.
11:58
③ Home (*Kinukake Danchi*)

⑤Cooperation with Existing Public Transport <Miyama-shi, Fukuoka>

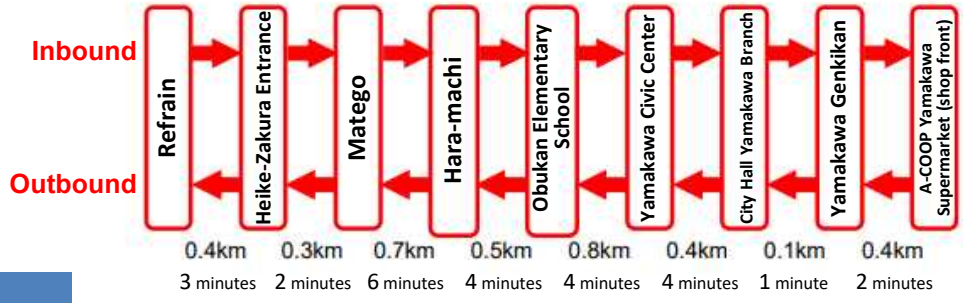
○ Connection will be provided between the self-driving transport service and the community bus service at some of the stops on the self-driving transport service route.
○ The plan is to install onboard systems on six community buses that will allow for vehicle position management and passenger boarding/deboarding management (system-based intermodal coordination).

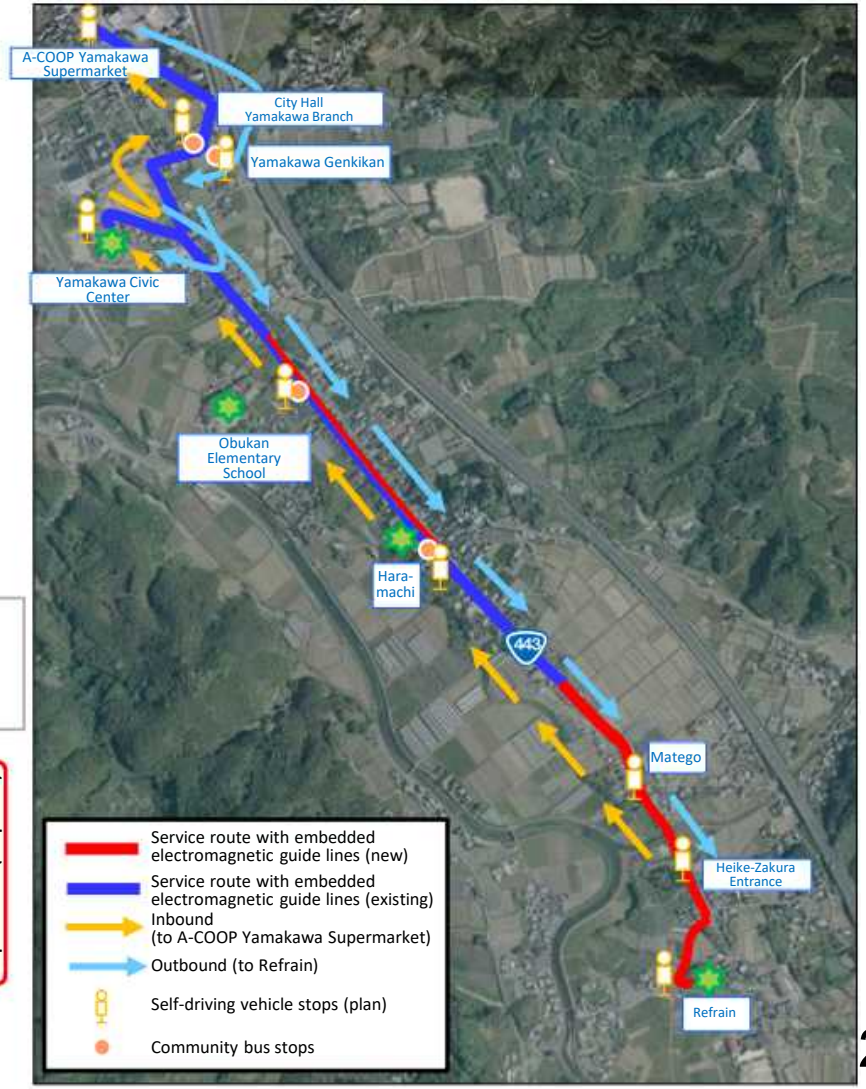
○ A total of seven stops will be set up based on the current service usership.

No.	Stop names	Note
1	Refrain	**New bus stop**
2	Heike-Zakura Entrance	Existing bus stop
3	Matego	Existing bus stop
4	Hara-machi	Existing bus stop
5	Obukan Elementary School	Existing bus stop
6	Yamakawa Civic Center	Existing bus stop
7	City Hall Yamakawa Branch	Existing bus stop
8	Yamakawa Genkikan	Existing bus stop
9	A-COOP Yamakawa Supermarket (shop front)	**New bus stop**

Service route

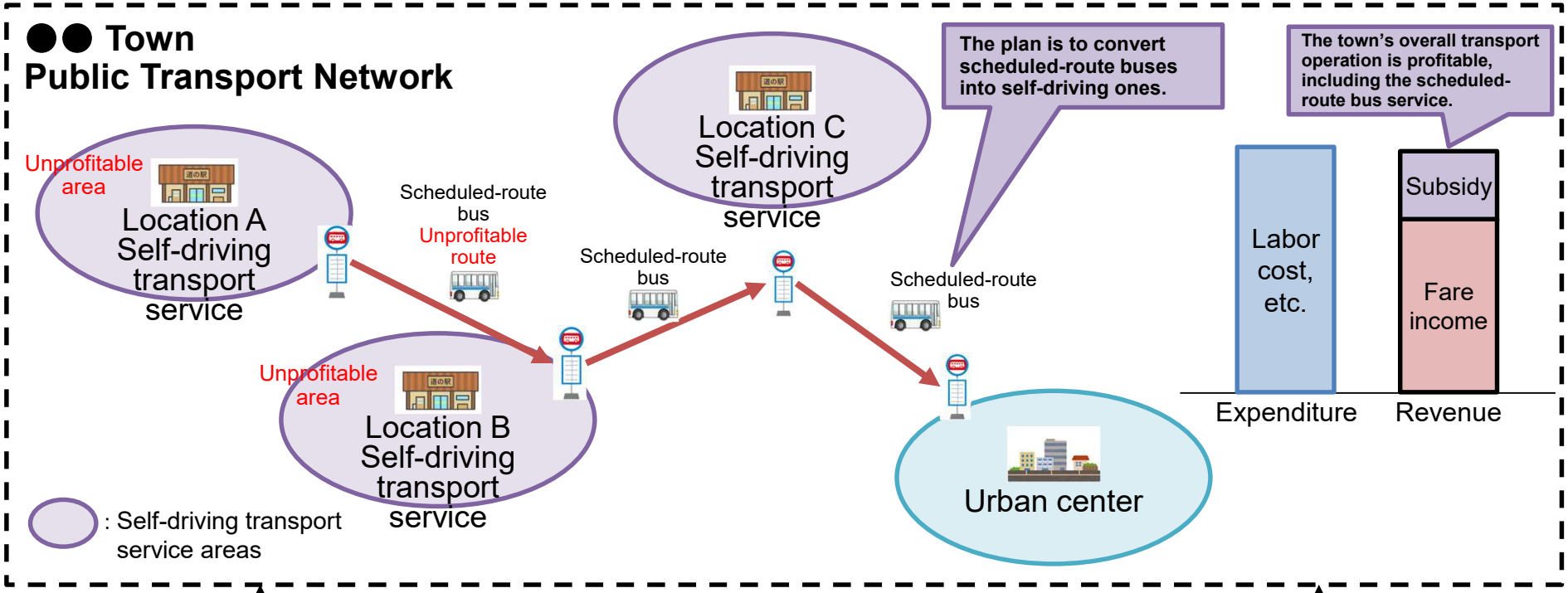
- ◆ Roundtrip transport service from Refrain to A-COOP Yamakawa Supermarket.
- ◆ Distance: approx. 3.6 km one-way
- ◆ Transport time: approx. 26 minutes one-way





⑤Cooperation with Existing Public Transport <Future Vision>

○ The plan is to develop the self-driving transport service into a part of local public transport networks in the future, where the self-driving vehicles will provide mobility within each covered locale, while the scheduled-route bus service will provide connections between different locales.
○ The vision includes setting up service administration centers and vehicle maintenance factories handling all the maintenance and management tasks within each local public transport network.



Use *Mobisuke* to facilitate vehicle operation management and handle service reservations.

Service administration center
(Contractor: ●● Co., Ltd.)

Maintenance, management, and repair of vehicles, electromagnetic guide lines, markers, tags, etc.

Maintenance factory
(Contractor: ●●, Inc.)

⑥Horizontal Implementation Activities <Publicity, etc.>

○ Blog and SNS accounts are operated to communicate information on *Jidosapo*, a portal that is designed to help with the local implementation of self-driving transport service. Another service offered is *Jidoroku*, an online *sugoroku* (Japanese board game) website that lets the users play the game while learning fun facts about self-driving transport service. In addition, the vehicle operation management system *Mobisuke*, which is developed with the support of the SIP project, is also advertised and provided.

Hosting of blog and SNS accounts promoting the *Jidosapo* portal, which is designed to help with self-driving transport service implementation

The blog articles and SNS posts offer useful information on various activities related to self-driving transport service taking place in different parts of Japan, which are designed to promote people's sense of familiarity with the service.

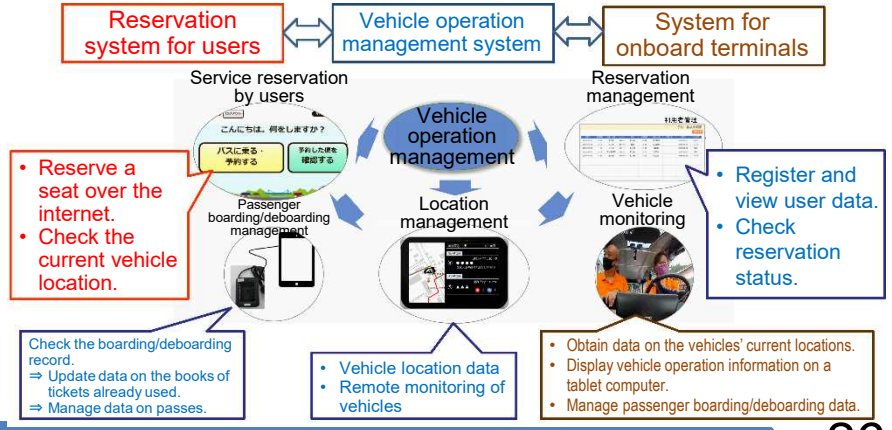
(Blog: NOTE) Articles provide information on *Jidosapo* and many interesting topics related to service implementation feasibility studies, etc.

(SNS: FB) Posts include information on *Jidosapo* and various activities taking place in a wide range of locales related to self-driving transport service.

Provision of the *Jidoroku* online board game mimicking a self-driving transport service

Even if people currently do not have access to any self-driving transport service, they can play a fun game of *Jidoroku* – which is made available on the *Jidosapo* website – with their child to learn about the service.

Publicity and provision of the service operation management system *Mobisuke*



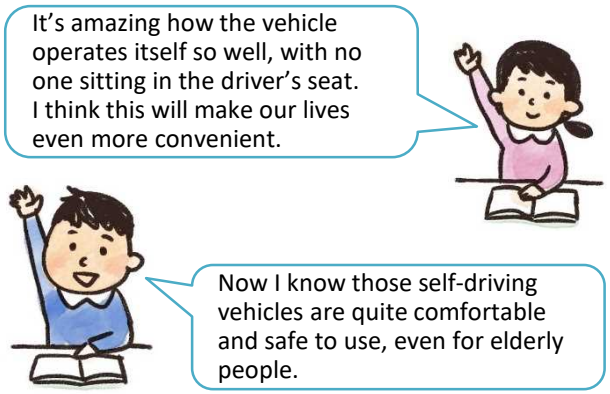
⑥Horizontal Implementation Activities <Cooperation with an Elementary School in Miyama-shi>

○ A class session designed to promote students' understanding of self-driving transport service was offered to a group of 5th-grade students (roughly 50 students in the session).
○ This educational program explained the necessity of self-driving transport service and how the self-driving vehicles function. The students were then shown an actual self-driving vehicle to improve their understanding of the self-driving transport service.

■ Program (45-minute session)

Timetable	Content
10:35-10:45	Why is self-driving transport necessary?
10:45-10:55	What are some of the fascinating facts about self-driving transport?
10:55-11:05	Do you now know enough about self-driving transport?
11:05-11:20	Let's take a look at an actual self-driving vehicle.

■ Children's responses



■ Class sessions

■ Future schedule

- A questionnaire survey will be conducted on children's parents, etc.
- After the social implementation starts in the locale, trial sessions will be provided for people to experience the self-driving transport service.