

Cross-ministerial Strategic Innovation Promotion Program (SIP) Phase 3: Building a Smart Mobility Platform—Research and Development of Support for Preemptive Prevention of Traffic Accidents through Proactive Risk Notification

Report of Project Results

March 2026

Traffic Accident Preemptive Prevention R&D Consortium

(Nippon Signal Co., Ltd., Sumitomo Electric Industries, Ltd., Honda R&D Co. Ltd.)

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1

Overview of the Research and Development Project

1-1. Background, Rationale, and Objectives

Background of the research and development project

- The UN has set targets for reducing traffic fatalities by 2030, and Japan has set similar targets for around 2035. In Japan, about half of fatal traffic accidents involve violations committed by vulnerable road users, such as pedestrians, bicyclists, and motorcyclists. Achieving these targets will therefore require measures targeted at vulnerable road users.
- Accidents at railroad crossings also involve a high proportion of vulnerable road users, highlighting a similar need to support them.

Key traffic safety measures in different countries

- The United Nations has set a target of reducing the number of traffic accidents by 50% over the decade leading up to 2030. In Japan, as well, the Transportation Policy Council has set targets for reductions in the number of traffic accidents, to be achieved through vehicle safety measures.

United Nations



"Second Decade of Action for Road Safety"

Reduce the number of road traffic deaths and injuries by at least 50% each between 2011 and 2030.

National governments

- * Formulate safety plans, conduct accident investigations, and improve accident data systems

Private sector

- * Formulate policies based on the Safe System approach*

Promotion of vehicle safety technologies

- * Motorcycle helmets, ABS, DRL
- * Vehicle safety technologies (AEB/ISA, etc.)
- * Promotion of NCAP third-party evaluations

Implementation of Safe System*

- * Protection of vulnerable road users through the use of V2X communications.
- * Recommendation of 30 km/h speed limits in urban areas.
- * Road safety measures in low- and middle-income countries.

Source: Decade of Action II (2021-2030) Global Plan

Japan



"11th Traffic Safety Basic Plan"

By 2025, aim to achieve the world's safest road traffic by reducing 24-hour fatalities to 2,000 or fewer and serious injuries to 22,000 or fewer.

"Transportation Policy Council"

By around 2035, aim to eliminate fatal traffic accidents caused by newly marketed vehicles which are preventable using automobile technologies.

2030 targets

Through vehicle safety measures, achieve the following reductions compared with 2020 levels.

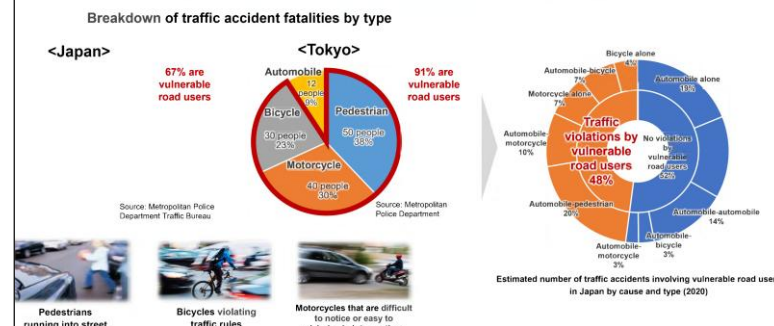
- (1) Reduce the number of people killed in traffic accidents within a 30-day period by 1,200.
- (2) Reduce the number of people severely injured in traffic accidents by 11,000.

Source: March 29, 2021 Central Traffic Safety Measure Council Meeting and June 28, 2021 Transportation Policy Council Motor Vehicle Section Meeting

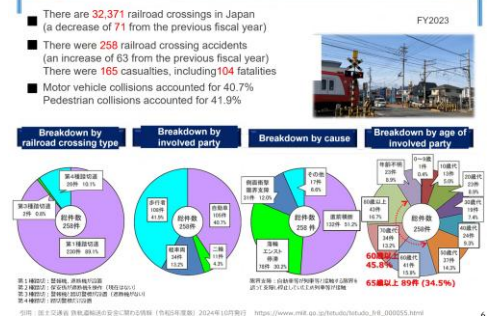
Traffic accident occurrences

- Approximately 70% of traffic accident fatalities in Japan involve vulnerable road users such as pedestrians, bicyclists, or motorcyclists. Approximately 50% of fatal accidents involving vulnerable road users are the result of traffic violations by vulnerable road users.
- Over 100 people a year die in railroad crossing accidents, and collisions with pedestrians account for roughly 40%.

Vulnerable road users, including motorcyclists, account for roughly 70% of all traffic accident fatalities



Incidence of traffic accidents at railroad crossings



Societal challenge to be addressed

Reduce traffic accidents and create an environment where everyone can move freely

Many traffic fatalities involve so-called vulnerable road users (pedestrians, motorcyclists, bicyclists, etc.). In pursuit of zero traffic fatalities, the automotive industry has been developing and deploying in-vehicle technologies such as ADAS. However, measures focused solely on motor vehicles and drivers cannot achieve this goal.

Accordingly, the Consortium proposes a **mobility platform that connects** not only motor vehicles and road infrastructure but also **all traffic participants**, including pedestrians, as a new approach focused on vulnerable road users.

(Hereinafter referred to as the “Mobility Platform.”)

* Source: Honda’s independent tabulation based on 2020 ITARDA data on accidents caused by traffic violations involving vulnerable road users.

Concept for realizing the vision

- In addition to conventional communication-based measures using in-vehicle devices and roadside infrastructure, we aim to create a Mobility Platform that connects all traffic participants by providing smartphone apps integrated with the Mobility Platform to both drivers and vulnerable road users.

Cyberspace

Mobility Platform

Platform for real-time collection and use of data from diverse traffic participants

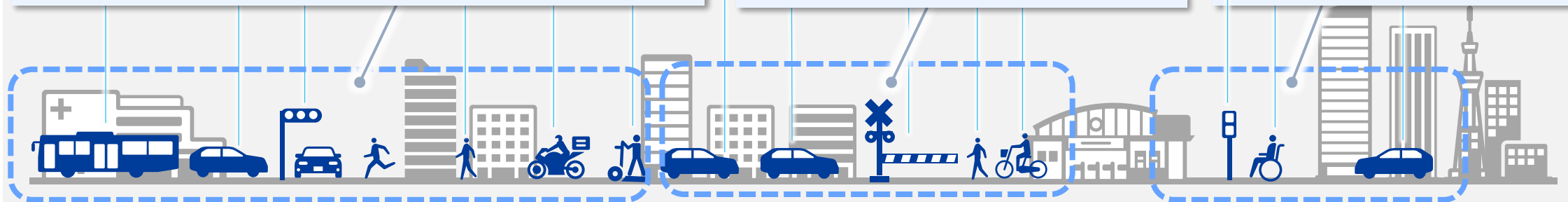
Collect data and provide accident-risk and traffic-signal information via smartphone apps and V2N transmission, without relying on infrastructure*

Use Cases 1 and 2
Reducing accident risk by alerting both drivers and vulnerable road users

Use Case 3
Reducing the risk of railroad crossing accidents

Use Case 4
Supporting signalized crossings for people with limited mobility

Real world



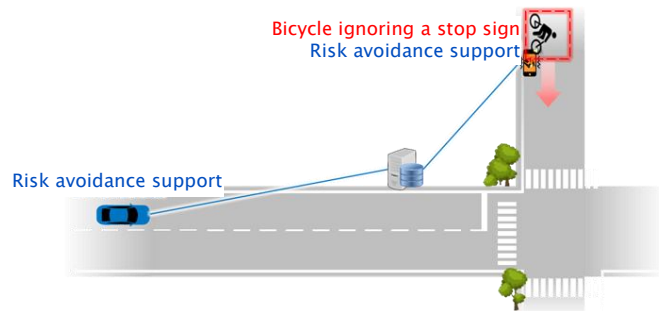
* We also envision applying the data and programs on the platform to other use cases in the future.

Conceptual image of the support offered in each use case

1 Accidents caused by unsafe behavior of vulnerable road users

1-1

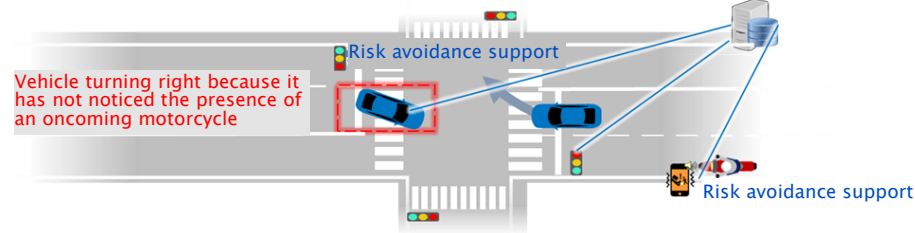
Bicycles suddenly entering intersections with blind spots



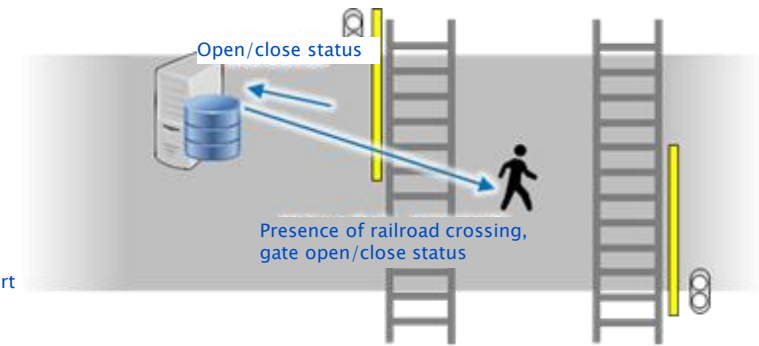
2 Accidents caused by failure to notice hazards in blind-spot environments

2-1

Failure to notice motorcycles due to blind spots caused by oncoming right-turning vehicles

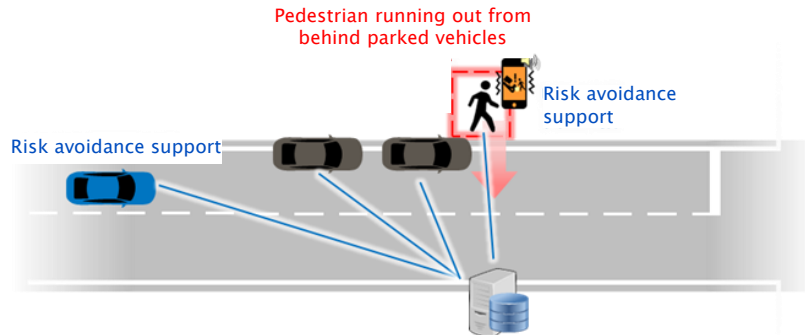


3 Entrapment at railroad crossings after the warning signal starts



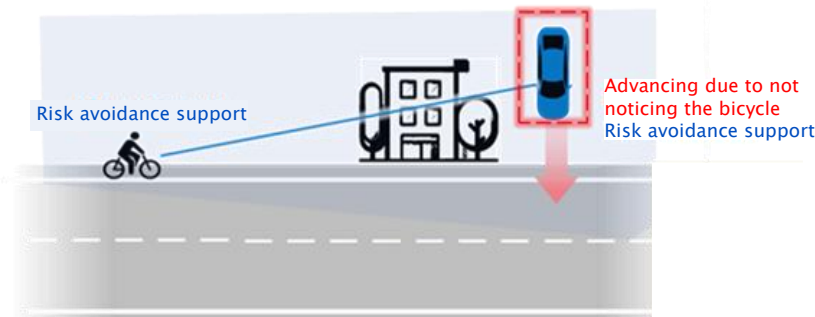
1-2

Pedestrians running out from behind parallel-parked vehicles

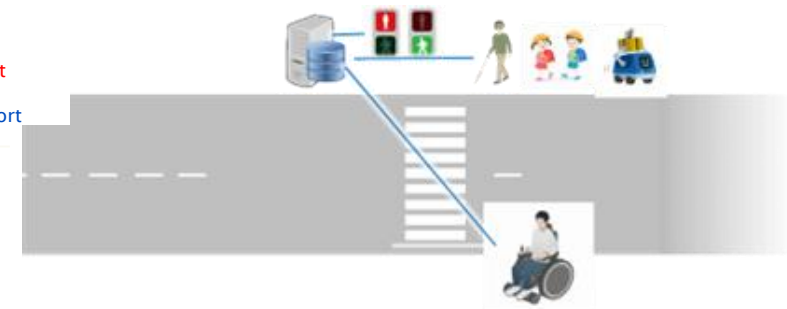


2-2

Failure to notice bicycles due to blind spots caused by buildings or other obstacles.



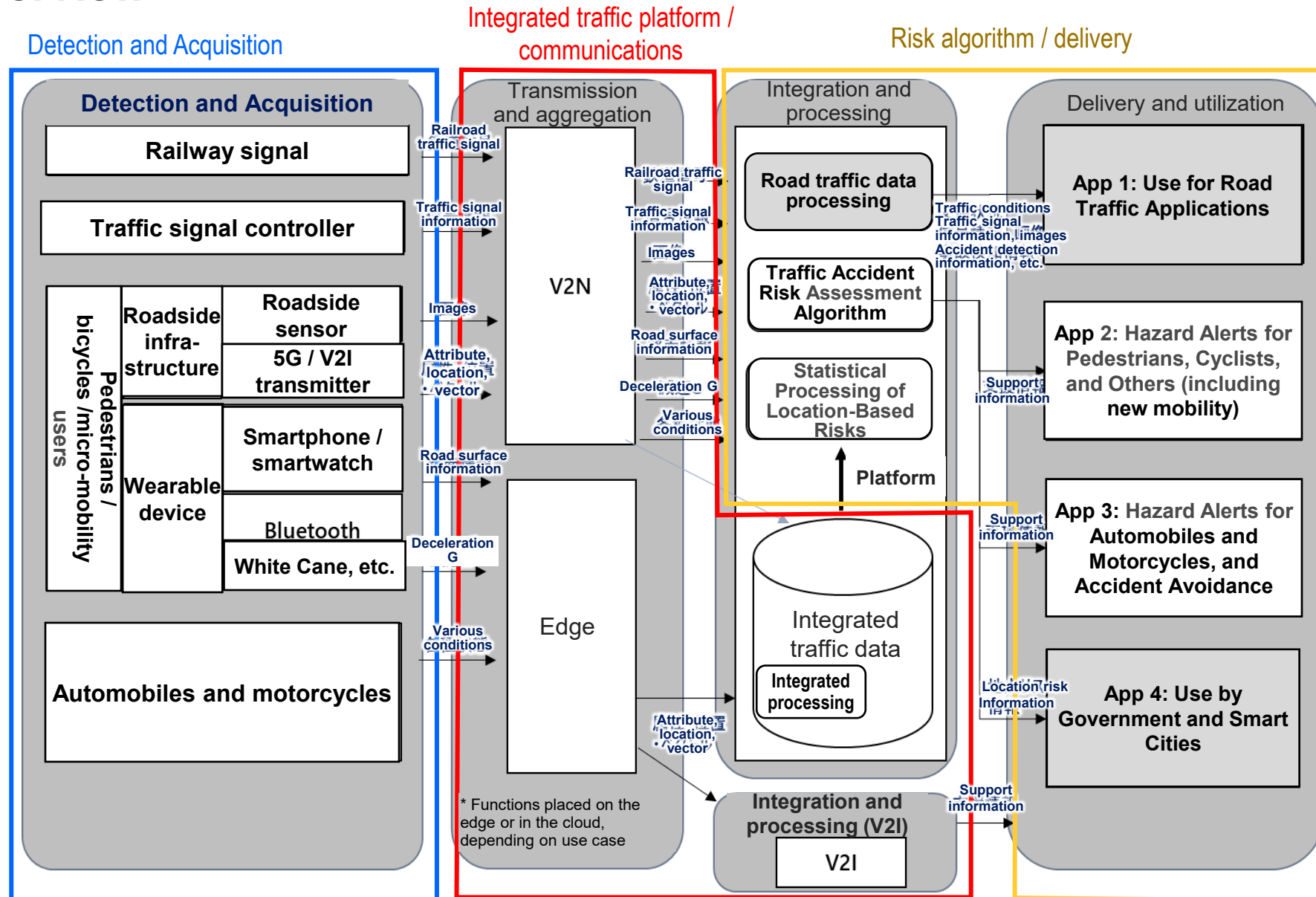
4 Signalized crossings by vulnerable road users and users of new mobility devices



2

Technical Results and Progress

System Overview

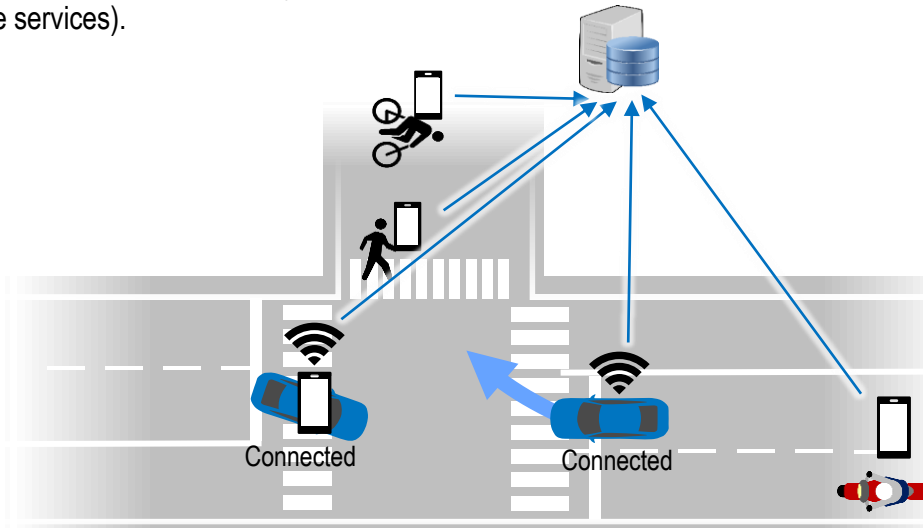


Mechanisms for Realizing Use Cases 1 and 2 and Their Technical Features

- This research and development project aims to build an **all-connected system** that leverages smartphones and other mobile devices carried by many traffic participants, as well as general-purpose network communications such as 4G and 5G.
- The system is expected to have a simple structure and to enable early real-world deployment over a wide area.

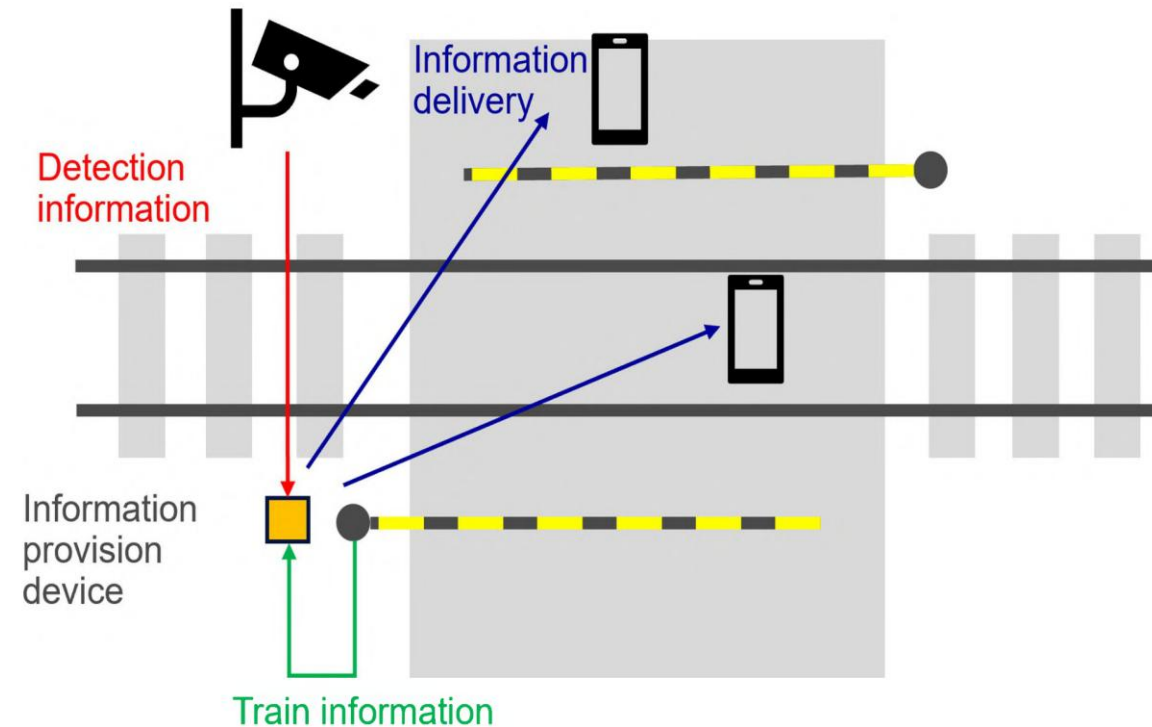
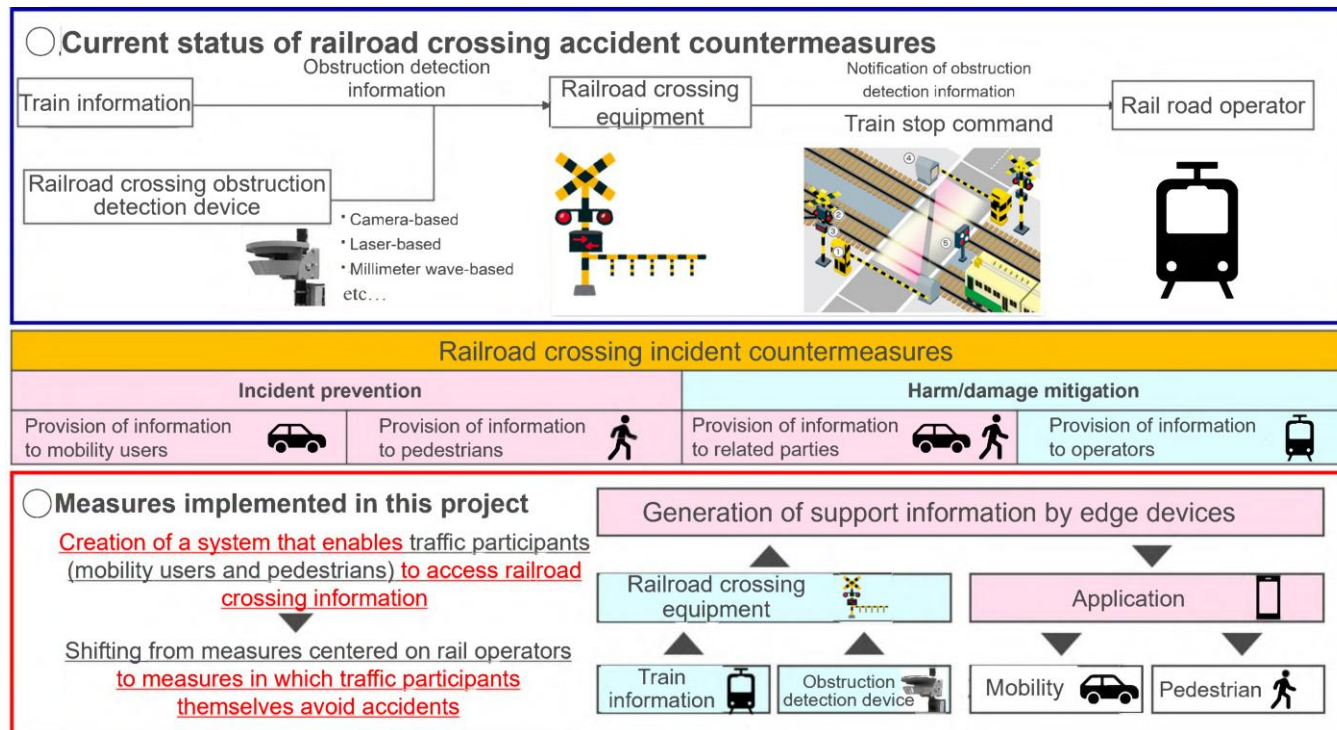
All-connected system

- The locations of individual traffic participants are obtained using **smartphone apps, V2N transmission, and the like** (in-vehicle linkage is also envisioned).
- **Service can be provided anywhere without relying on infrastructure.**
- The number of app installations will affect the frequency of service provision (measures to promote widespread adoption are envisioned, such as integration with mega-apps and multiple services).



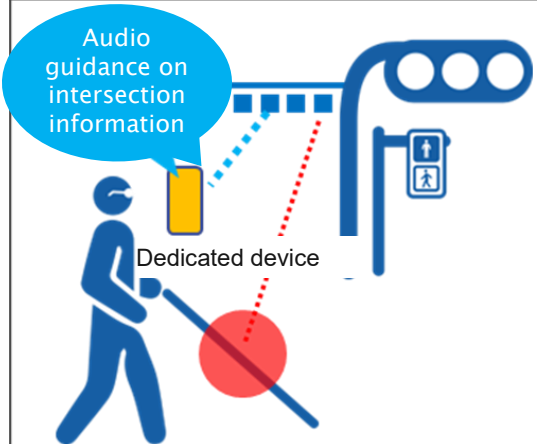
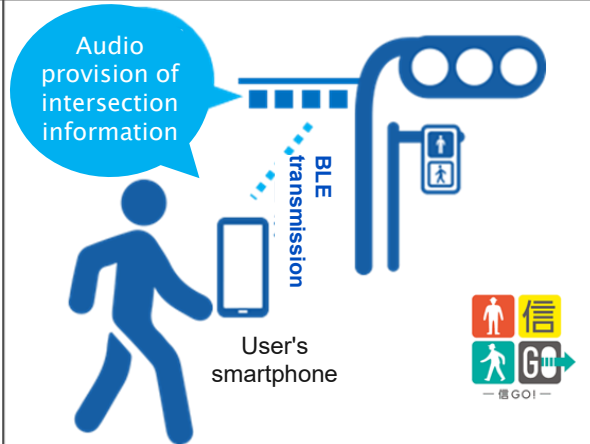
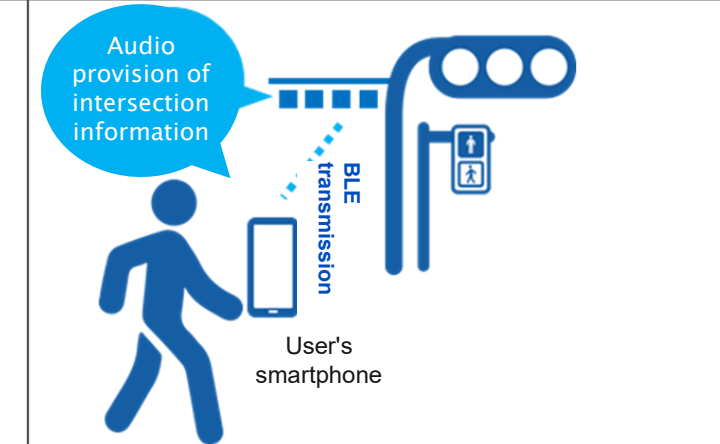
Mechanisms for Realizing Use Case 3 and Their Technical Features

- A system that provides railroad crossing information to general road users to support proactive risk avoidance
- It leverages Bluetooth AoA technology to enable both positioning and infrastructure communication with a single technology



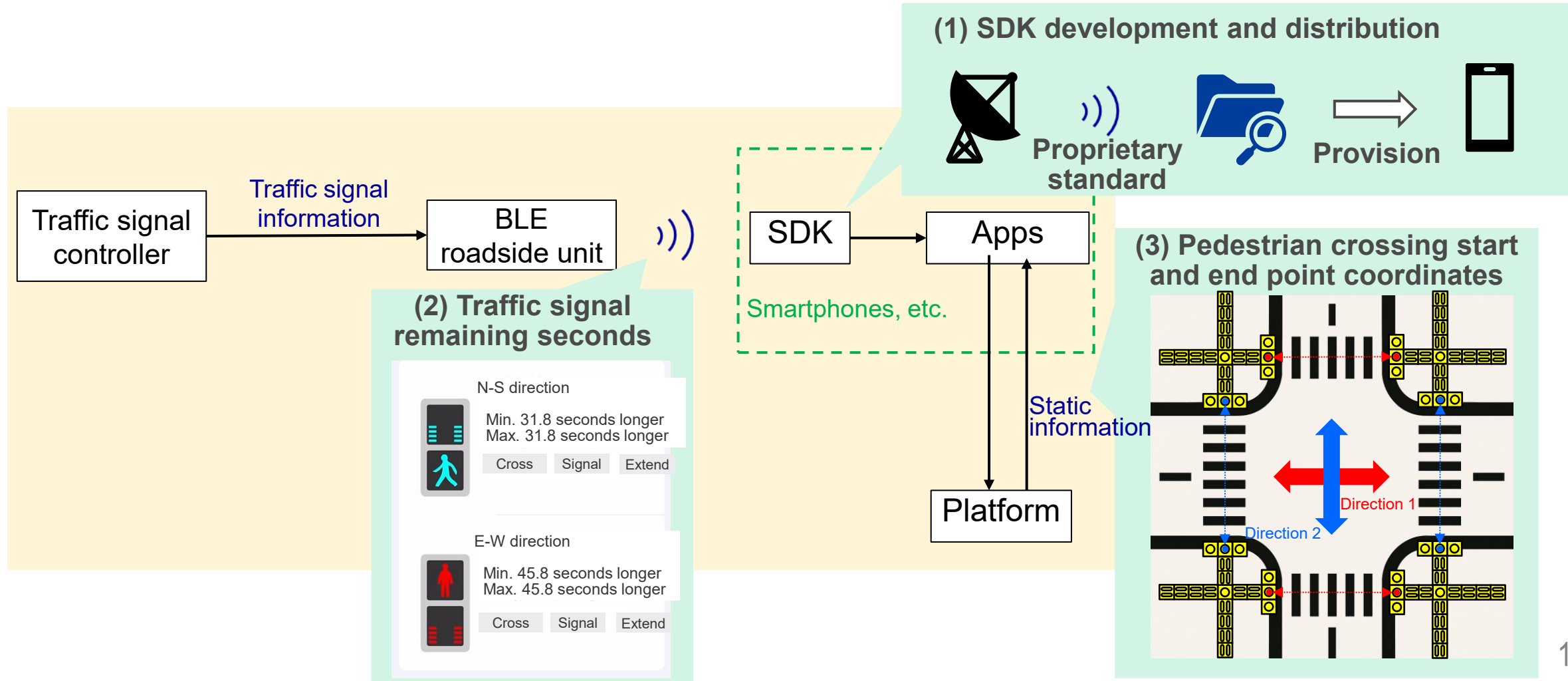
Mechanisms for Realizing Use Case 4 and Their Technical Features

- Uses advanced PICS developed during SIP Phase 1
- Content will be added in collaboration with app vendors to improve service convenience

PICS	Advanced PICS	Improved Advanced PICS in This Project
 Audio guidance on intersection information Dedicated device	 Audio provision of intersection information BLE transmission User's smartphone 信 GO!	 Audio provision of intersection information BLE transmission User's smartphone 信 GO!
[Support content] Intersection / traffic signal information	[Support content] Intersection / traffic signal information	[Support content] Intersection/traffic signal information
[Features] Can be used with a dedicated reflective material	[Features] Can be used with a smartphone	[Features] To improve service convenience, the following content has been added: (1) Remaining traffic signal time (2) Coordinates of the start and end points of the pedestrian crossing (static information)
[Challenges for wider adoption] • Dedicated equipment is required - A dedicated reflective material must be attached to the white cane	[Challenges for wider adoption] • Only a limited number of service apps are available • - Current status: Only supported by Nippon Signal's "Shin GO!" app	

Mechanisms for Realizing Use Case 4 and Their Technical Features

- In UC 4, we will create a mechanism that enables traffic signal information to be accessed using an SDK.
- At the same time, we will also work to expand sub-content (static information) to improve convenience.



Technology Development Progress and Outlook from FY2026 onward: Infrastructure Sensors

Up through FY2025

[Achievements] Research and development of pedestrian sensors

- Basic functions were confirmed in FY2024
 - Detection of pedestrians and other objects
 - Estimation of pedestrians' intention to cross
 - AI-based detection of pedestrian behavioral attributes that may lead to accidents(PoC for AI-based detection of visually impaired pedestrians and pedestrians using smartphones while walking)
- In FY2025, labor-saving improvements in AI training were made to facilitate deployment, and field validation is currently underway in Tsukuba.

[Comparison with the initial plan]

- The initially targeted technical level has been achieved.
- A study on the real-world deployment of infrastructure sensors was planned for FY2025, but widespread adoption is expected to take time due to business model issues such as cost sharing.
→ To enable early implementation, we are planning coordination with location information service providers as a means of obtaining pedestrian attribute information without relying solely on infrastructure sensors.

FY2026 - FY2027

The Consortium does not plan to carry out technology development on its own, but instead plans to explore collaboration with location information service providers and existing infrastructure

[Issues still to be addressed for real-world implementation]

- Infrastructure sensor business model
- Deliberation of methods for obtaining pedestrian attribute information by means other than infrastructure sensors

[Actions planned for FY2026/FY2027 to address remaining issues]

- Deliberation of collaboration with positioning information service providers
 - Deliberation of the feasibility of using data obtained from service providers as object information for UCs 1 and 2
 - Deliberation of the feasibility of providing Consortium SDK/APIs to smartphone apps of location information service providers to promote wider adoption
 - Deliberation of the benefits to service providers of using Consortium data
 - PoC for the above

FY2028 onward

[Target state for real-world implementation]

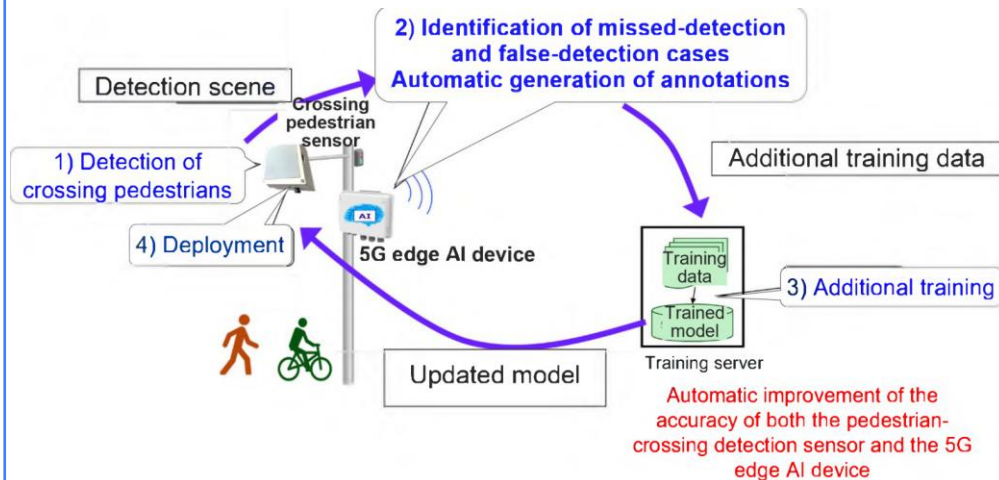
- Provision of Consortium SDK/API to outside service providers and integration of those providers into the project
- Implementation of traffic accident reduction services using data provided by outside service providers

Infrastructure Sensor Research and Development

- Deliberation aimed at reducing infrastructure sensor installation costs and verification of sensor functions in public road environments
- Since the effectiveness of the system was confirmed and the initial research and development goals were achieved, this research and development work was provisionally completed in FY2025

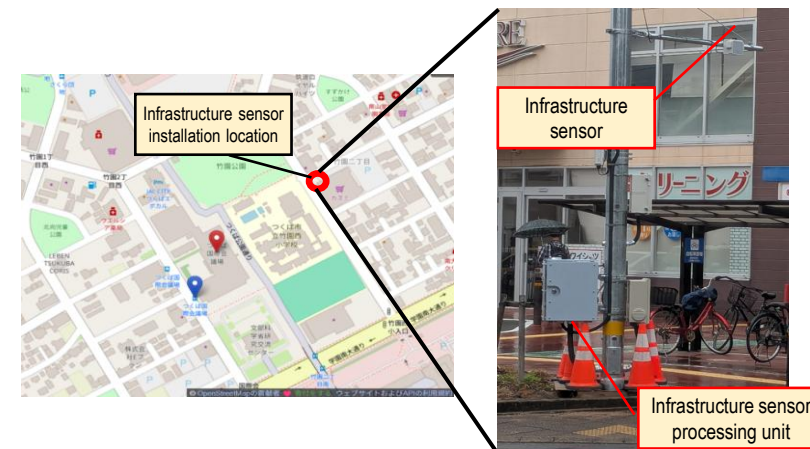
Initiatives for Real-World Implementation

- We developed a function **to automate the generation of annotations*** required to ensure a sufficient recognition rate for image-recognition AI
 - This contributes to reducing the implementation **burden at the time of real-world deployment**, including infrastructure installation costs
- * Annotation generation: Generation of ground-truth data for AI training



Public Road Demonstration Testing in Tsukuba City

- The developed sensor was installed at an actual intersection in Tsukuba City, and public road demonstration testing was conducted
- We conducted field verification of the sensor's detection functions, including pedestrian movement vectors and estimation of pedestrians' likelihood of crossing based on attribute identification
- We confirmed that **annotations were generated automatically** and that this **improved the detection rate**



2-2. Status of deliberation regarding Elemental Technologies

Technology Development Progress and Outlook from FY2026 onward: Mobility Platform and Transmissions

Up through FY2025

- **Implementation of the Platform Server** (implementation of the experimental system configuration)
 - System configuration using on-premises servers and AWS
 - Definition of the production system configuration
 - Anomaly monitoring functions
 - System redundancy configuration
 - Security measures
 - Configuration for regional expansion
- **Completion of platform load evaluation in public road environments**
 - Evaluation of processing times and improvements to delay points
 - Device load verification (scalability evaluation)
- **Completion of evaluation of transmission network characteristics in public road environments**
 - Examination of the acceptability of transmission delays
 - Examination of the need for supplementary functions based on packet loss rate evaluation
 - Comparison of transmission characteristics of different carriers (DOCOMO, KDDI, SoftBank)
- **Preparation of the static information database**
 - Deliberation of items for improving convenience of advanced PICS
 - Linking of PICS signal information with route information

FY2026-FY2027

- **Construction of Platform Server** (implementation of the production system configuration)
 - Implementation of anomaly monitoring functions
 - Implementation of redundancy system
 - Implementation of security measures
 - Implementation of a configuration designed to support regional expansion
 - Identification of operation and maintenance issues
- **Evaluation of platform load in wide-area environments**
 - Evaluation of processing time and improvements to delay points
 - Device load verification (scalability evaluation)
- **Evaluation of transmission network characteristics in wide-area environments**
 - Examination of the acceptability of transmission delays
 - Examination of the need for supplementary functions based on packet loss rate evaluation
 - Comparison of transmission characteristics of different carriers (DOCOMO, KDDI, SoftBank)
- **Preparation of the static information database**
 - Deliberation of scheme for maintaining static database

FY2028 onward

- **Implementation in pilot deployment areas**
 - Integration with existing infrastructure, existing platform, etc.
 - Establishment of maintenance framework

Technology Development Progress and Outlook from FY2026 onward: Detection Data Acquisition, Risk Algorithm, and Delivery

Up through FY2025 : Completion and confirmation of basic specification verification

- **Development of smartphone applications for detection data acquisition and delivery**
 - Implementation in smartphone with experimental configuration
- **Development of risk algorithm**
 - Implementation of the experimental system configuration in the risk algorithm platform
- **Confirmation of system viability in closed*1 and public-road environments*2**
 - Evaluation of support timing : confirmation that support can be provided at the intended timing by delivering the results of risk algorithm processing
 - Evaluation of smartphone positioning accuracy in the experimental environment

⇒ Conducted with consideration for real-world robustness

*1 Performed by test members

*2 Testing performed by test members. Persons in surrounding area were members of the general public.

FY2026 - FY2027 : Acceptability and reliability verification

- **Quantitative evaluation of effectiveness**
 - Quantitative evaluation of traffic accident reduction effects using a traffic-flow simulation capable of modeling human behavior
- **Acceptability verification**
 - Deliberation on responses to excessive support, misdetection, and lack of support
 - Evaluation of support timing through a DS simulator and questionnaires
- **Reliability verification**
 - Verification of system reliability in public-road environments and with general traffic participants
 - Positioning accuracy: System design taking positioning accuracy into account, and verification of responses when accuracy degrades
 - Transmission delay: System design taking transmission delay into account, and verification of responses when latency increases
 - Verification of support for multiple vehicles and across multiple areas
 - Verification of system under increased data volume
- **Migration of risk algorithms to Mobility Platform**

FY2028 onward

- **Promotion of wider adoption**
 - Expansion of support use cases: Passing, rear-end collisions, people lying on the road, sudden changes in behavior, red-light violations, etc.
- **Area expansion (high-density population areas, etc.)**

Technology Development Progress and Outlook from FY2026 onward - Detection and Acquisition

Up through FY2025

- **Object data acquisition using smartphones**
 - Accuracy evaluation in public-road environments
 - Object matching function
 - Matching with infrastructure sensor detection results
 - Interface alignment
 - Added conversion processing to make information acquired from smartphones compatible with the RtTL4 interface
- **Acquisition of traffic signal information**
 - Establishment of connectivity in the experimental system configuration
 - Testing the use of traffic signal information
- **Connection to infrastructure sensors**
 - Coordination with other projects
 - ITS Japan (interface coordination)
 - Next-generation ITS (CTI Engineering, Oki Electric, Panasonic)
 - Evaluation of transmission time from infrastructure sensors to the PF
- **Acquisition of railroad crossing information**
 - Development of AoA-based object data acquisition technology
 - Interface coordination for railroad crossing information

FY2026 - FY2022

- **Object data acquisition using smartphones**
 - Accuracy evaluation in wide-ranging environments
- **Acquisition of traffic signal information**
 - Establishment of connectivity in the production system configuration
 - Utilization of traffic signal information
- **Connection to infrastructure sensors**
 - Addition of collaboration with other projects
- **Acquisition of railroad crossing information**
 - Implementation of an AoA-based function for determining whether a user is inside or outside a railroad crossing
 - Development of a support system using the inside/outside determination function
 - Verification of feasibility of support system
 - Development of SDK for accessing railroad crossing information

FY2028 onward

- **Implementation in pilot deployment areas**
 - Implementation at railroad crossings outside the demonstration test sites
 - Deliberation regarding use of information by external apps

Measurement Items and Verification Results in Public Road Demonstration Testing

- In November 2025, a demonstration test of system operation was conducted on public roads in Tsukuba City

System viability

- Three use cases were verified on public roads, confirming that support (information provision and caution alerts) was provided at the intended timing.

Transmission delay times

- Transmission delay times between smartphone → PF → smartphone were measured for each use case.
→ The average delay was approx. 1.2 seconds for each use case

Location accuracy

- The location accuracy of each support target was measured for each use case.
→ Smartphone location accuracy was at the road level.

Usability

- Measurement of battery consumption during one hour of continuous operation.
→ Consumed approx. 200 mAh (support provision: 7 instances of information provision and 5 caution alerts)
→ 15 or more hours of operation can be achieved

◆ Test results (system viability)

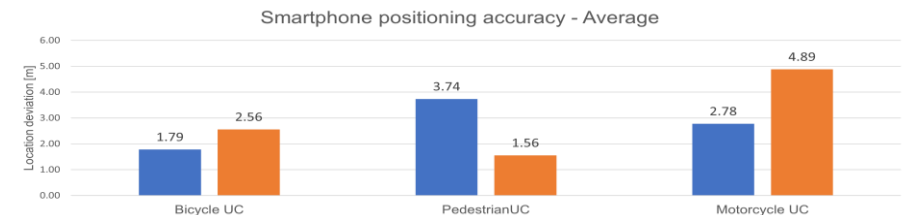
UC	Information Provision Timing	Caution Alert Timing	Overall Result
1)-1 Bicycles suddenly entering intersections with blind spots	11/11	11/11	OK
1)-2 Pedestrians running out from behind parallel-parked vehicles	4/4	4/4	OK
2)-1 Failure to notice motorcycles due to blind spots caused by oncoming right-turning vehicles	5/5	5/5	OK
KPI	TTC 6~10[s]	TTC 3~6[s]	—

◆ Test results (delay times)

Smartphone → Mobility Platform → Honda Platform → Mobility Platform → Smartphone

UC	Delay time (ms)	1	2	3	6	7	8
Bicycle UC	Total delay	1155.4 (1917/846)					20.7 (26.0/15.0)
	Delay for each section	68.2 (172/8)	270.0 (607/16)	664.1 (791/601)	0.1 (1.0/0.01以下)	69 (384/0.01以下)	
Pedestrian UC	Total delay	1157.7 (1876/846)					20.9 (31.5/16.3)
	Delay for each section	80.8 (209/0.01以下)	259.6 (519/17)	671.1 (1344/578)	0.2 (1.0/0.01以下)	85.2 (343/17)	
Motorcycle UC	Total delay	1299.5 (1968/768)					25.3 (31.1/19.1)
	Delay for each section	83.6 (1368/0.01以下)	338.8 (605.0/8.0)	759.1 (958/569)	0.3 (1.0/0.01以下)	103.1 (525/15)	

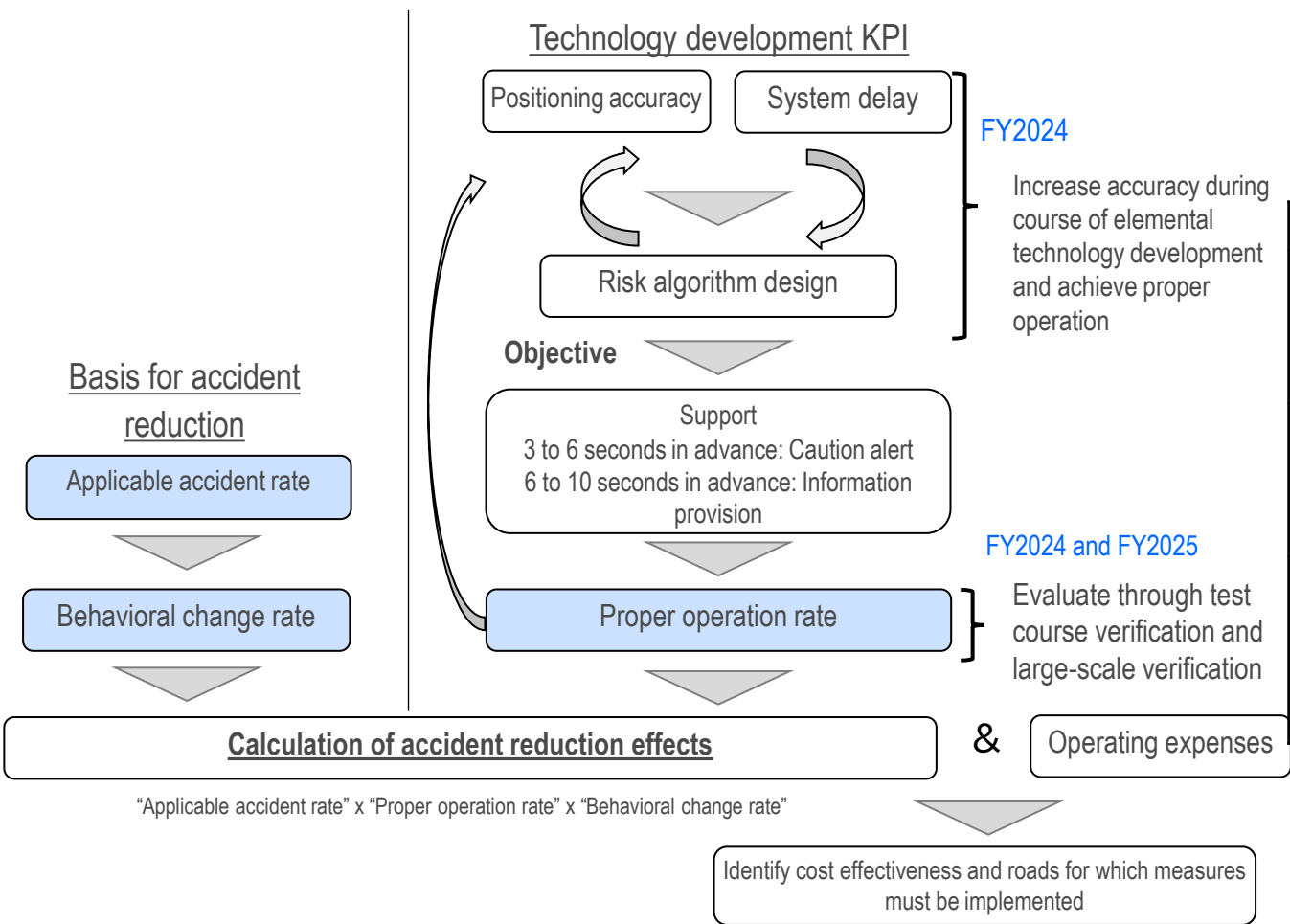
◆ Test results (location accuracy)



Trial Calculation of Accident Reduction Effects for Use Cases 1 and 2 / Calculation Logic

- The calculation logic for accident reduction effects is organized as shown below.
- In this calculation, we assumed a 100% adoption rate and estimated accident reduction effects as of fiscal year 2028 based on “applicable accident rate” x “proper operation rate” x “behavioral change rate”

[Calculation logic for accident reduction effects]



Calculation item	Definition	Calculation method
Applicable accident rate	Percentage of traffic accidents to which this system could be applied	The applicability rate for this system was calculated based on ITARDA traffic accident statistical analysis (See details on following page)
Proper operation rate	Percentage of cases in which the system worked properly as intended	In this calculation, based on the results of the closed test course verification project, we assumed a proper operation rate of 100%
Behavioral change rate	Percentage of cases in which users changed their behavior as a result of support and were able to avoid an accident	In this calculation, we assumed this rate to be 100%, based on the assumption that users would always change their behavior (We plan to perform these calculations using a simulator in FY2026.)

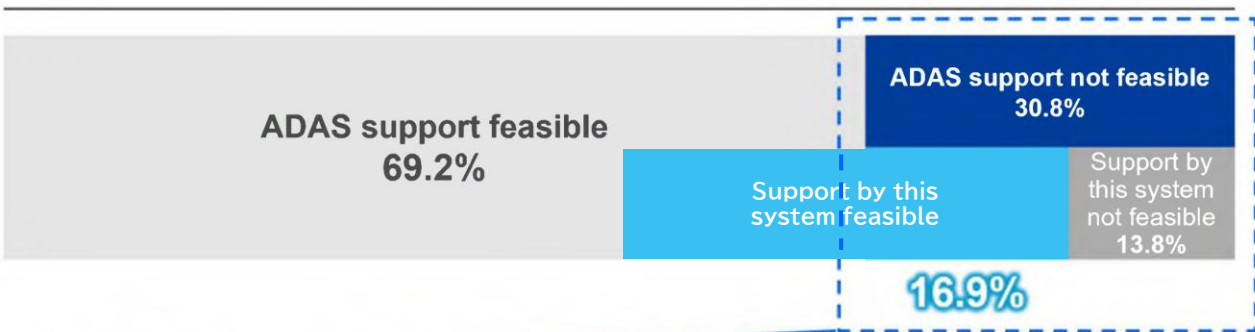
Trial Calculation of Accident Reduction Effects for Use Cases 1 and 2 / Preliminary Calculation Results

- For combinations of ITARDA accident categories, carriageway widths, and the presence/absence of traffic signals, we assumed the system performance as of FY2028 and determined the “applicable accident rate.”
- “Applicable accident rate” = (number of fatalities that could be reduced by the system) / (total number of fatalities for the relevant accident categories) x 100

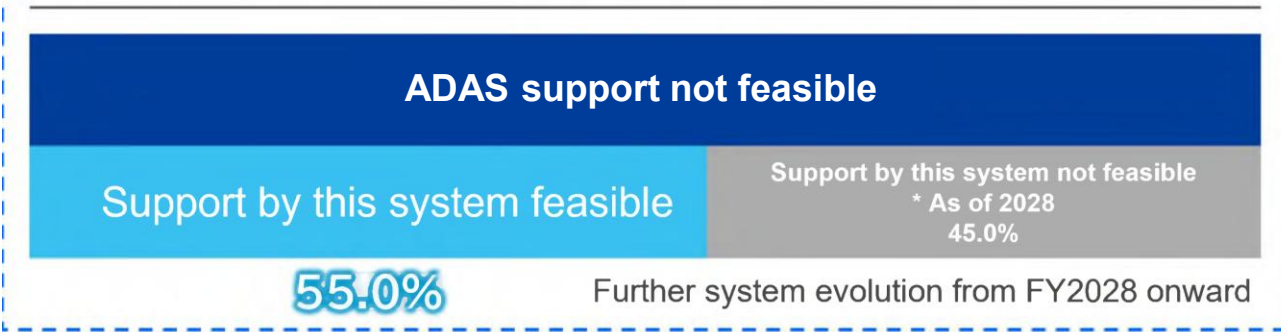
* For all fatal accidents from 2020 to 2024

Using this system together with ADAS could improve accident reduction effects for total accidents by roughly 17%.

Coverage Rate of This System for All Automobile-Involved Accidents



Coverage Rate of This System for Accidents Not Feasible for ADAS Support



Further system evolution from FY2028 onward

	Total
Total number of fatalities in the relevant accident categories	13133
Number of fatalities that could be prevented by the system	4054
Applicable accident rate	30.9%

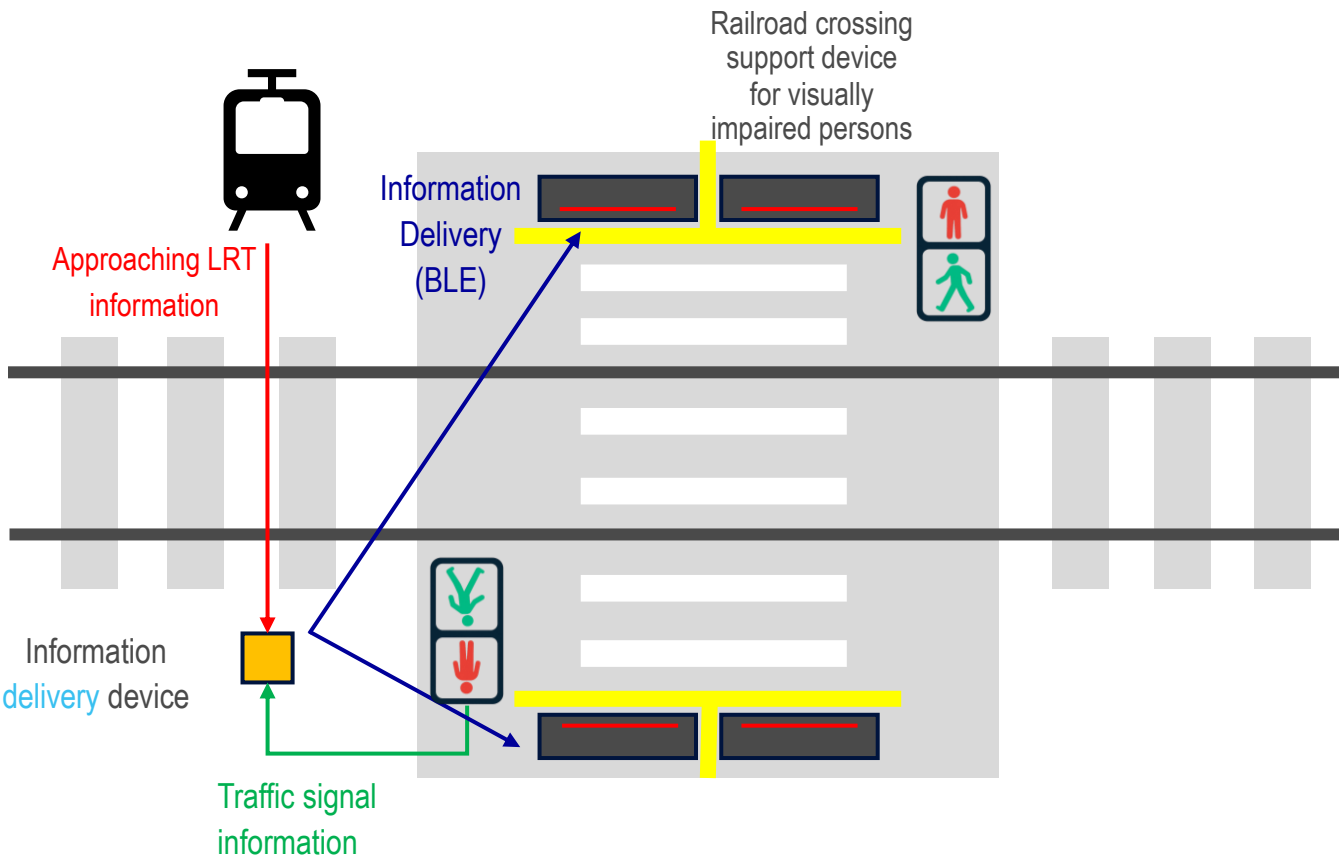


Assuming an adoption rate of 100% and the system performance as of FY2028, the system could reduce accidents in the ITARDA accident categories by 30.9%.

Applicable accident rate	Proper operation rate	Behavioral change rate	Accident reduction effects
30.9%	100%	100%	30.9%

These are preliminary calculation results at the current stage and will be further refined from FY2026 onward.

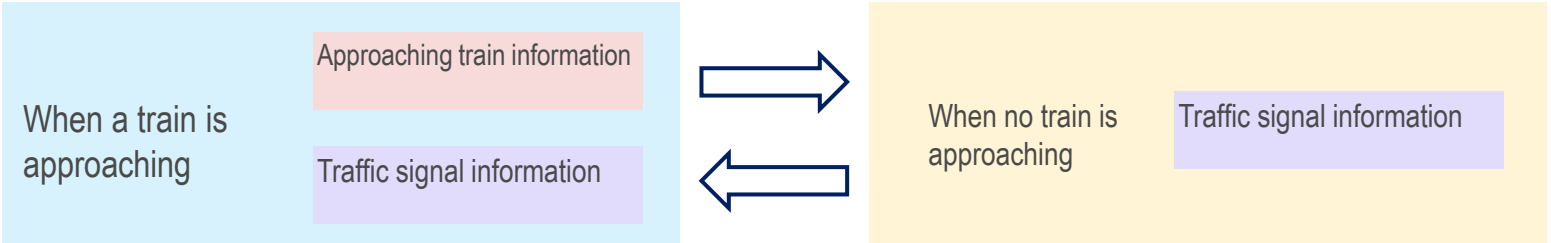
Introduction to the Developed Technology



Trough-Type Railroad Crossing Support Device for Visually Impaired Persons

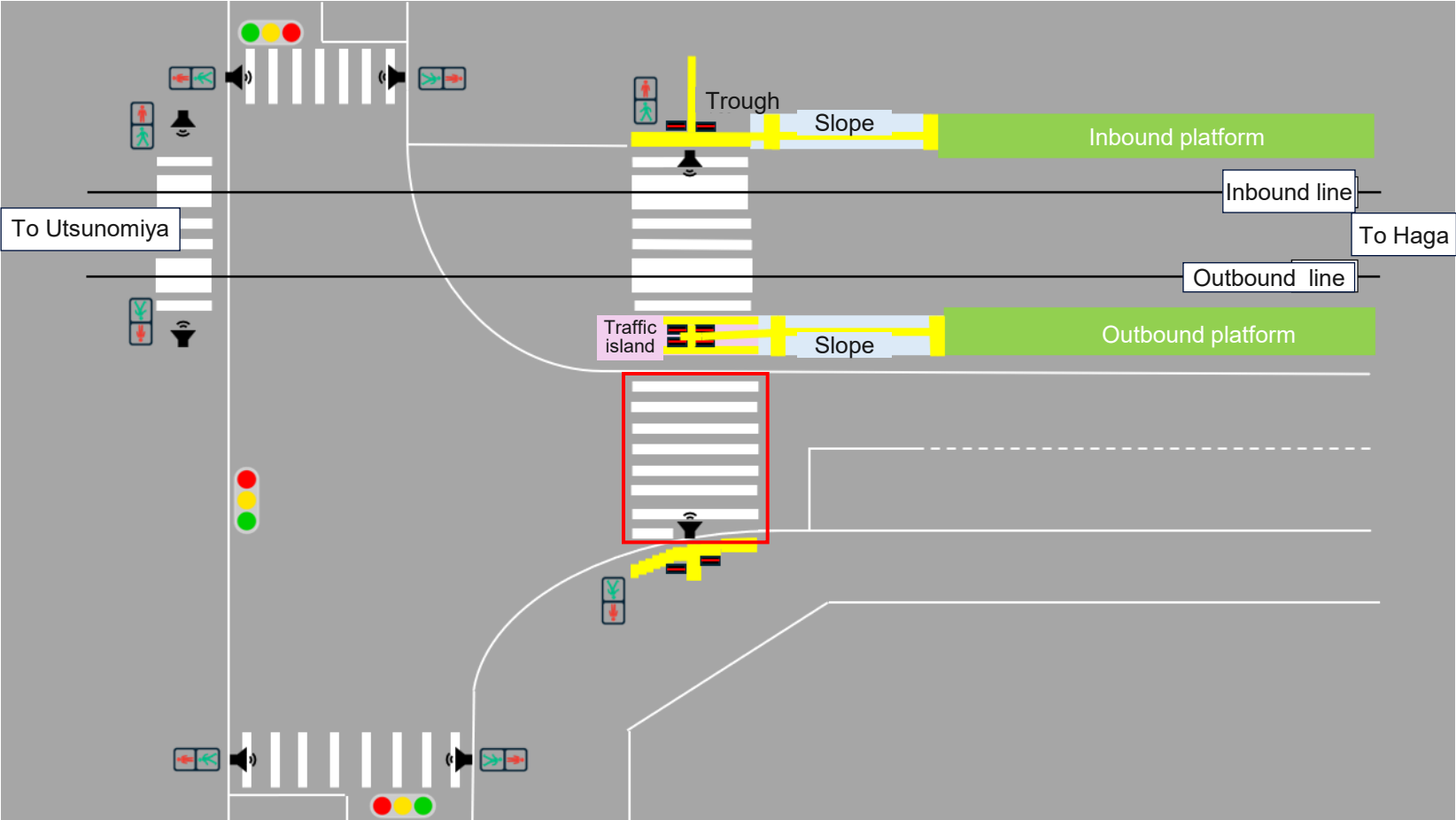


- Functions provided by technology
- Traffic signal notification function (LED, speaker, and vibration)
 - Approaching train information provision function (speaker)



Overview of the Demonstration Test (FOT)

- * Test period: November 2025 to February 2026
 - * Test location: Seiryō High School Stop on the Utsunomiya Haga Light Rail Line
 - * Test participants: Visually impaired persons (a mix of blind and low-vision participants)
 - * Test content: 1) Crossing tests on the LRT tracks and intersections using a railroad crossing support device for visually impaired persons
2) Confirmation of behavioral changes in visually impaired persons at pedestrian crossings with widened white-line spacing
- *In conjunction with this, we also verified the impact on visually impaired persons of the wider white-line spacing at pedestrian crossings, which became permissible under the 2025 legal revision.



Environment 1	With trough	Without trough
Sound	6 routes	6 routes
No sound	6 routes	6 routes
Total	24 routes	

area

* Pedestrian crossing white-line spacing: 45 cm

Environment 2	With trough	Without trough
Sound	6 routes	6 routes
No sound	6 routes	6 routes
Total	24 routes	

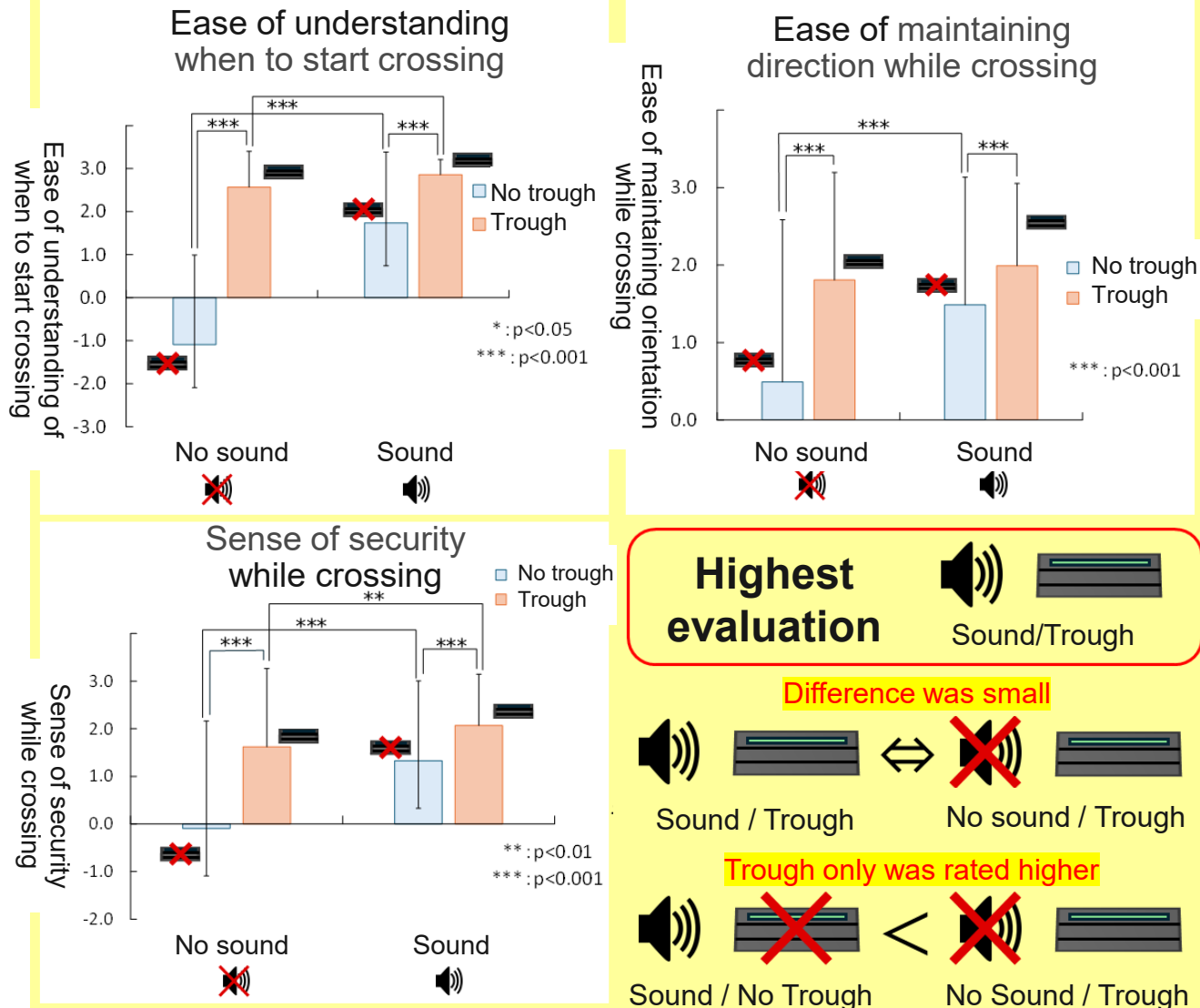
area

* Pedestrian crossing white-line spacing: 90 cm

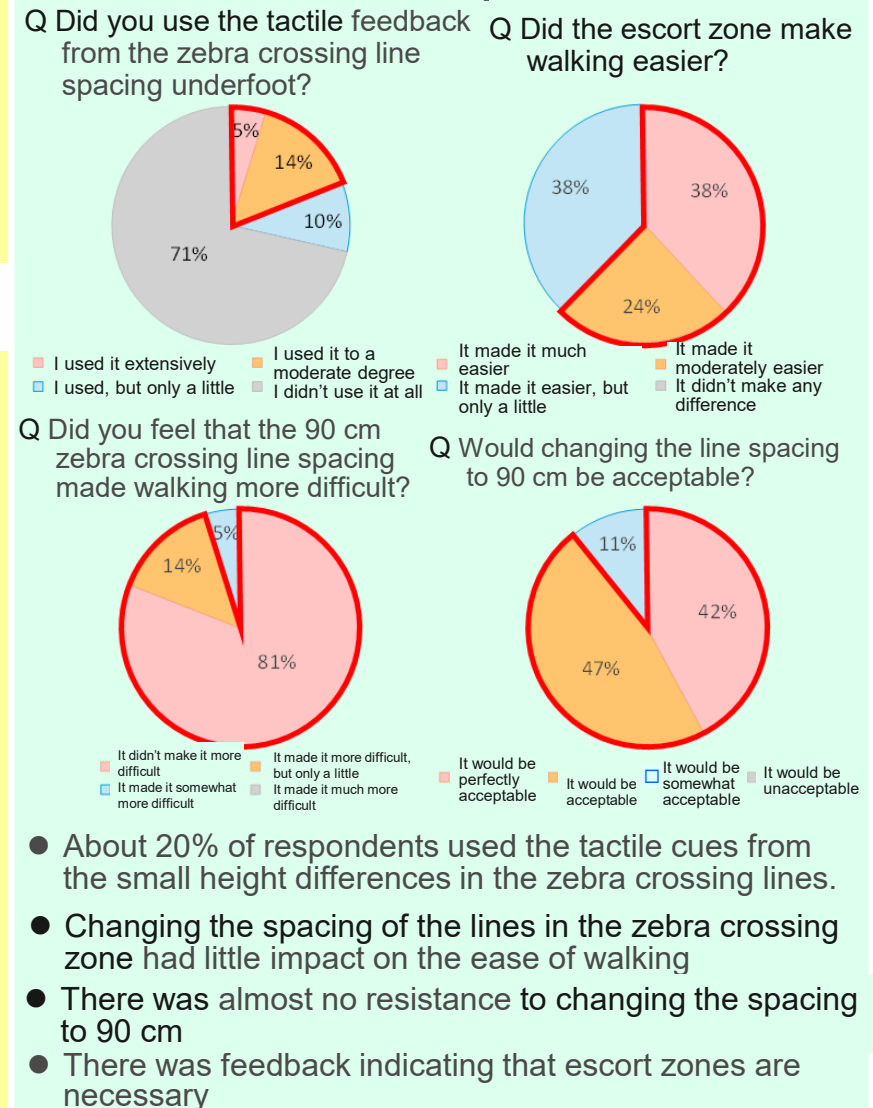
For each environment, two rounds of testing were conducted with 20 participants each.

Effects of Railroad Crossing Support for Visually Impaired Persons (Preliminary Report)

[Effectiveness of the Vibrating Trough]



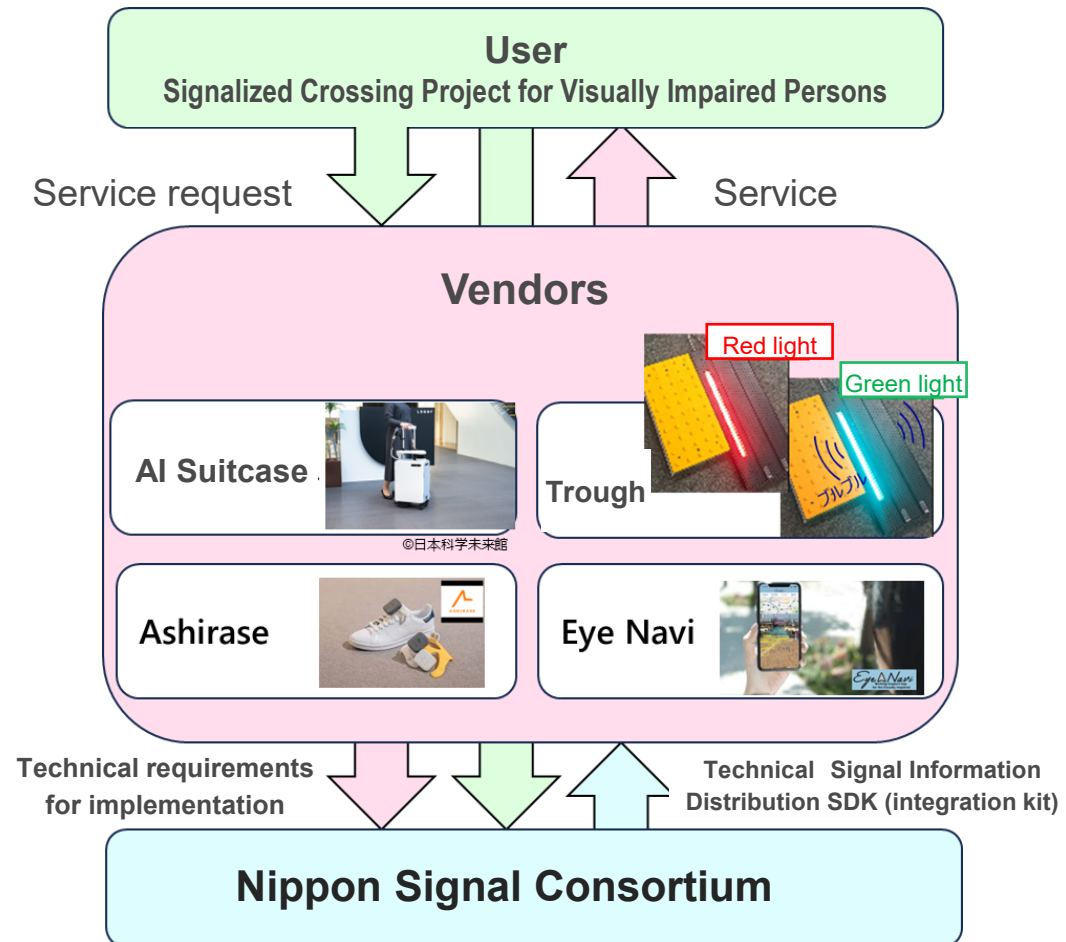
[Zebra Crossing Line Spacing / Escort zone]



2-5. Deliberation of Use Cases (3) UC4 Odaiba

Collaboration with Stakeholders

- Collaborate with users and app vendors to improve the convenience of Advanced PICS
- Promote utilization and expand adoption



Test overview

- * Test period: January to March 2026
- * Test location: Odaiba area, Tokyo, around the Tokyo Wangan Police Station
- * Test participants: Visually impaired persons (a mix of blind and low-vision participants)
- * Test content: Intersection walking test using a support service for visually impaired persons integrated with Advanced PICS

▼ Walking Route Using Ashirase and Eye Navi



▼ Walking Route Using the AI Suitcase



Test Result Overview : User Evaluation (AI Suitcase)

Test Objectives

- Implement the AI Suitcase's crossing decision and walking control functions using traffic signals received from Advanced PICS
- Verify effectiveness of autonomous crossing decision, control, and audio guidance functions
- Gather feedback from visually impaired users on their sense of security and related aspects

Test Results (Key Data)

- Number of test participants: 10 (5 blind, 5 low-vision)
- User evaluation: Average score on a five-point scale (5 = very good, 1 = very poor)
 - **Audio guidance (crossing start timing, signal color, remaining time): 4.5** Benchmark score: 3
 - ✓ All items were rated highly. Audio information was confirmed to be useful in providing peace of mind and helping users prepare.
 - ✓ Some participants pointed out that the timing of the audio guidance to start crossing was slightly late.
 - ✓ The frequency and amount of information were also generally rated highly.
 - **Ability to cross safely and with peace of mind: 4.3**
 - ✓ No particular issues were pointed out regarding the traffic signal integration functions.
 - ✓ Some participants pointed out unease regarding traversing differences in height between roads and sidewalks
 - ✓ "Sense of security compared with everyday signal crossings": 4.15
 - **Need for a traffic signal integration function in the AI Suitcase: 4.9**
 - **Need for Advanced PICS traffic signals: 4.4**
 - **Likelihood that using a robot integrated with Advanced PICS would increase willingness to go out: 4.5**



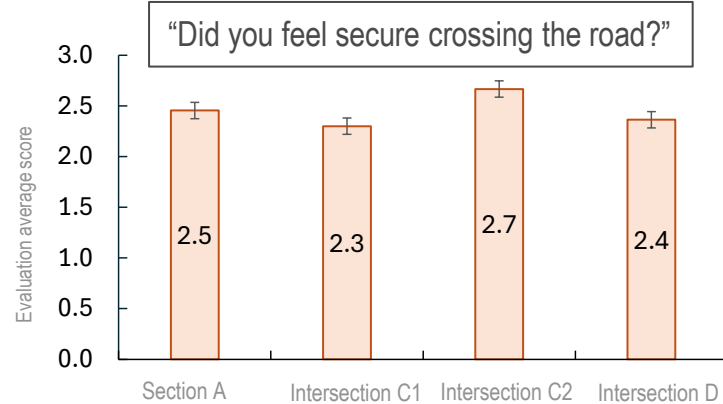
Test Result Overview - User Evaluation (EyeNavi & Ashirase)

Issues with Conventional Advanced PICS

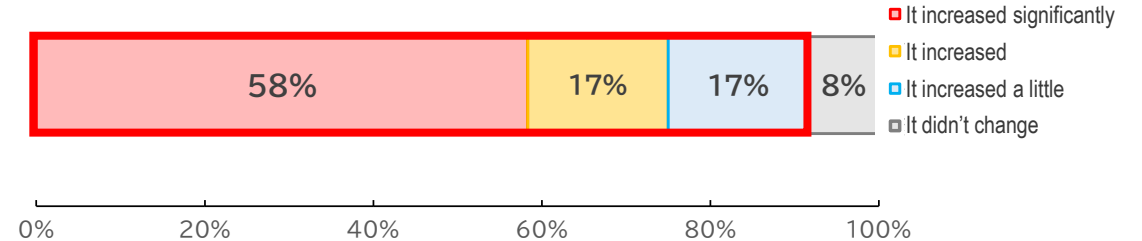
- There is not enough **information to judge** whether it is safe to cross.
- It is inconvenient because **the remaining signal time** is unknown.
- It is difficult to **cross** if users reach the crosswalk **after the signal has already turned green**.
- It is difficult to **decide whether to proceed or stop** when reaching a traffic island.
- At intersections, users want to know **only the signal indication for the direction they are facing**, etc.

Improved Advanced PICS

EyeNavi



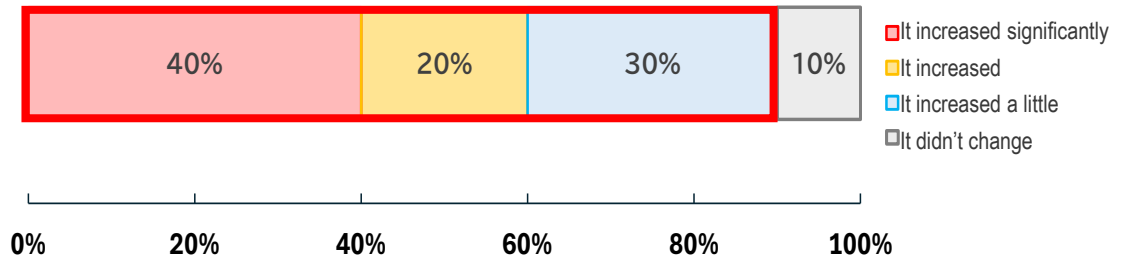
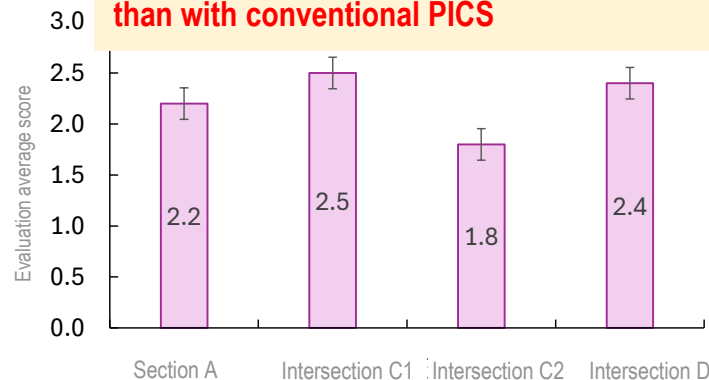
“Did using the walking support system integrated with Improved Advanced PICS increase your willingness to go out?”



All participants indicated that **they felt more secure than with conventional PICS**

90% of participants indicated an increased willingness to go out

Ashirase



Questionnaire

- We administered a questionnaire to participants in the Large-Scale Demonstration Experience Event.
- The results will be used to identify improvements to be made to this fiscal year's R&D items and to assist with deliberations and verification for real-world deployment from next fiscal year onward

* Responses regarding the HMI are treated as evaluations of the current HMI (still under development) and will be used as reference for future R&D.

◆ Overview of the Questionnaire

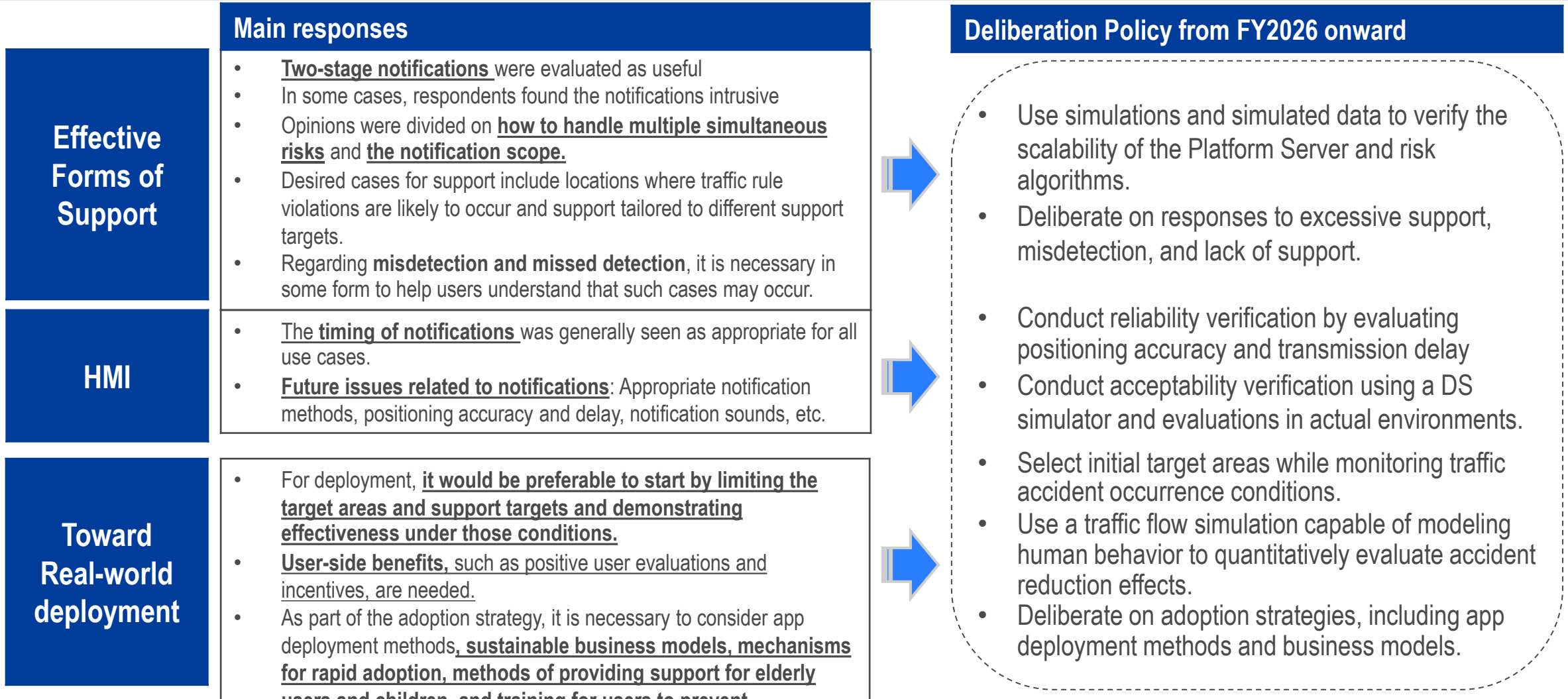
On December 10 and 11, 2025, a questionnaire was administered to participants in the Large-Scale Demonstration Experience Event following the public-road demonstration. Respondents answered questions about effective forms of support, the HMI, and real-world deployment.

◆ Questionnaire questions

Questions on Effective Forms of Support	Questions on the HMI	Questions on Real-World Deployment
• Usefulness of two-stage support and reasons for it. • How to respond when multiple risks occur simultaneously. • Situations in which support would be desirable due to the likelihood of collision, including situations outside the UCs covered in this project. • Issues that should be addressed when notification support does not function, such as in cases of large location errors.	• Whether the timing of information provision and caution alerts in each UC allows users to take safe action. • Issues to be addressed for real-world deployment regarding notification timing, notification content, and related matters.	• Requests from the perspectives of companies considering deployment (priority items, functions and services to be added at the time of implementation, desired deployment scope and adoption rate). • Requests from the perspectives of users (items that users find valuable, and functions or specifications that need to be added to enhance safety or acceptability, etc.). • Issues respondents feel should be addressed so that the service can be effective in reducing accidents when implemented in the real world.

Summary of Deliberation Results / Future Action Policy

- In addition to the questionnaire results below, the Large-Scale Demonstration Experience Event for UC3 also showed generally positive acceptance of the research content.
- As described in 3.3, we have continued explaining the R&D content to stakeholders, and social acceptability has reached [\[SRL=4\]](#).



Summary of Initial Use Cases

- For all four use cases, the elemental technologies have already been established.
- System functionality and performance have also been verified in real-world environments, reaching **TRL = 5 – 6**.

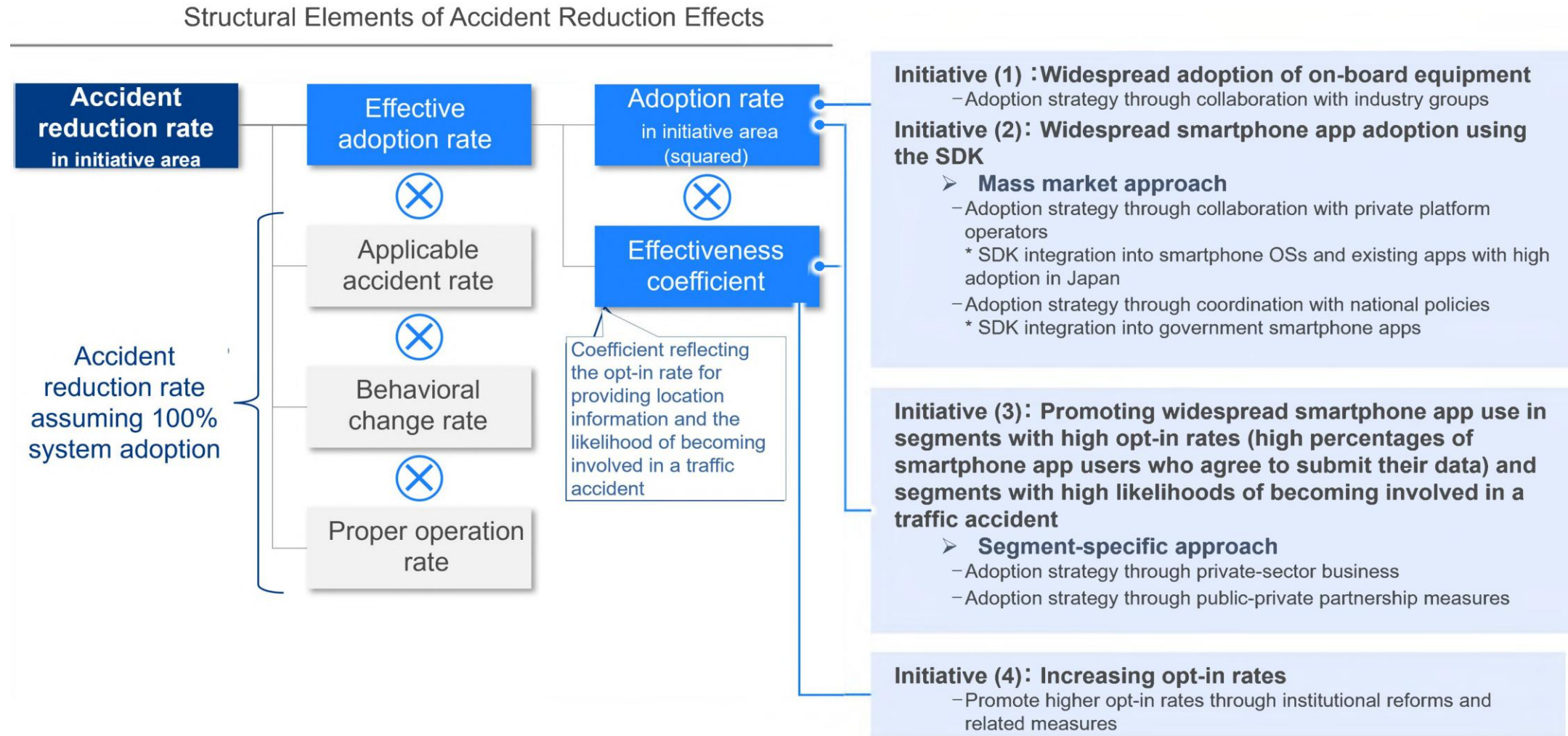
	Use cases 1 and 2	Use cases 3 and 4
Testing Using the Experimental System Configuration	Development of base functions for real-world deployment (platform: test configuration, smartphone: configuration equivalent to production system configuration, connectivity with infrastructure sensors and traffic signals: test configuration). ☒ Evaluation of system reliability, scalability, and robustness in closed public road environment.	Development of of base functions for real-world deployment (platform: test configuration, smartphone: configuration equivalent to production system configuration, connectivity with infrastructure sensors and traffic signals: test configuration). ☒ Evaluation of system reliability, scalability, and robustness in closed public road environment using test configuration.
Testing in the Intended Usage Environment	☐ Production system design and selection of initial rollout areas through dialogues with partner companies. ☐ Evaluation and improvement of system reliability, scalability, and robustness in public-road environments with the production system configuration and general participants. ☐ Simulation evaluation/improvement of accident reduction effectiveness and acceptability.	☐ Production system design and selection of initial rollout areas through dialogues with partner companies. ☐ Evaluation and improvement of system reliability, scalability, and robustness in public-road environments with the production system configuration and general participants. ☐ Evaluation/improvement of accident reduction effectiveness
Service Verification	☐ Service design through dialogues with candidate partner companies. ☐ Evaluation and improvement of user acceptability and business viability as a service	☐ Service design through dialogues with candidate partner companies. ☐ Evaluation and improvement of user acceptability and business viability as a service.
Scaling Plan	☐ Establishment of sustainable service model (a mechanism for continuously delivering value to customers and expanding that value).	☐ Establishment of sustainable service model (a mechanism for continuously delivering value to customers and expanding that value).

3

Results and Progress of Real-World Implementation

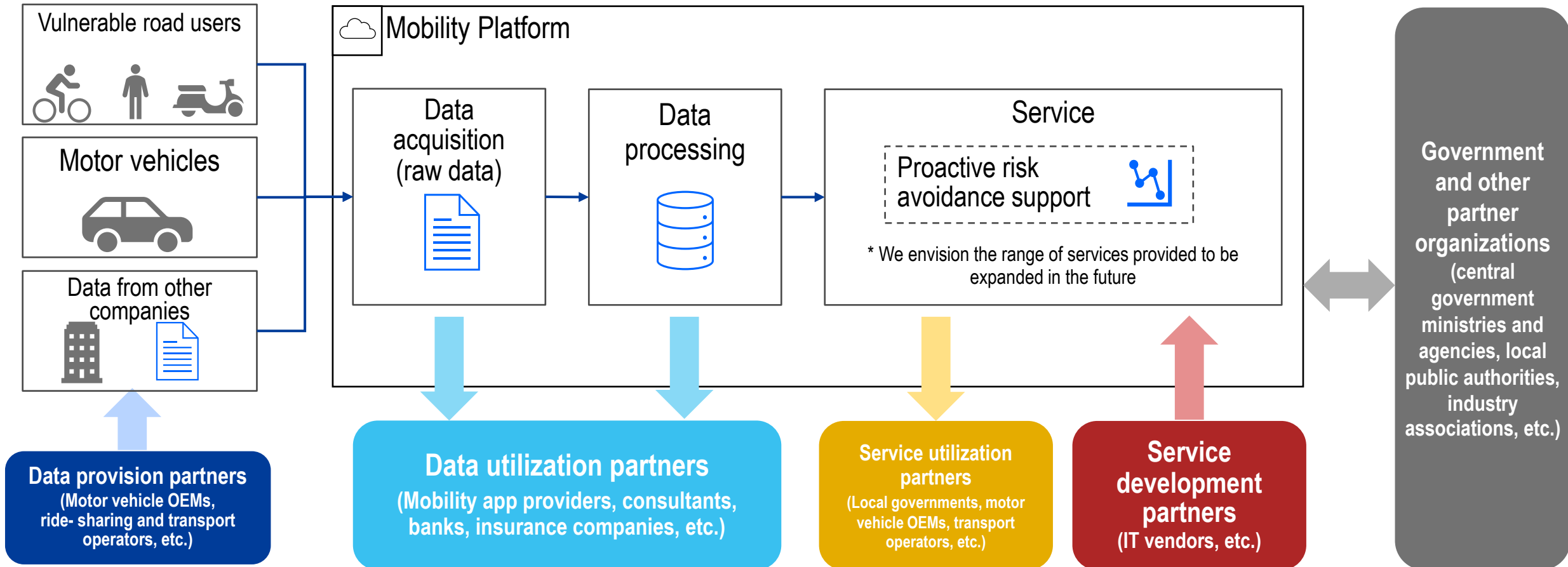
Overview of Adoption and Expansion Activities

- We identified the following four initiatives as measures to raise adoption to a level effective in reducing traffic accidents, and deliberated on partner organizations for each initiative and how to collaborate with them.



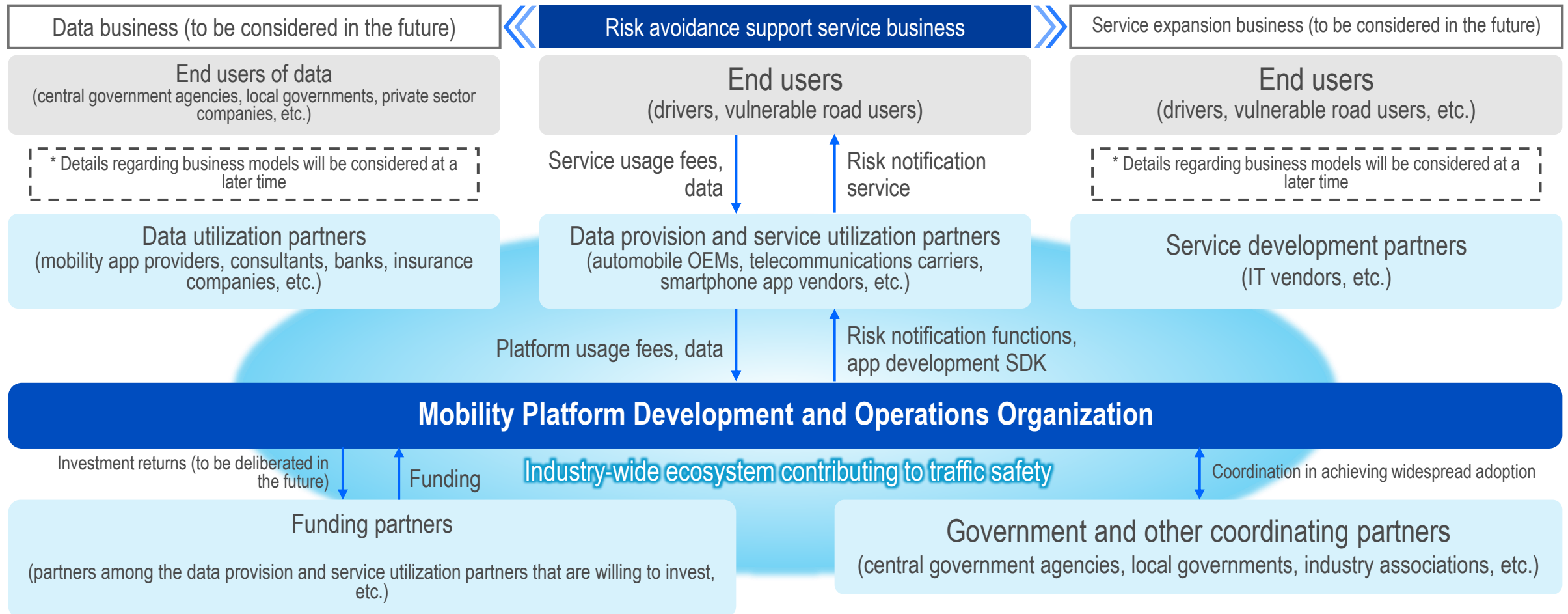
Concept for Building the Business Ecosystem

- Initially, we will involve partners that will both provide data and use the service, with the aim of establishing a proactive risk avoidance support service.
- In the future, we will also involve data utilization partners and service development partners, **aiming to enhance the value of the platform through an entire ecosystem.**



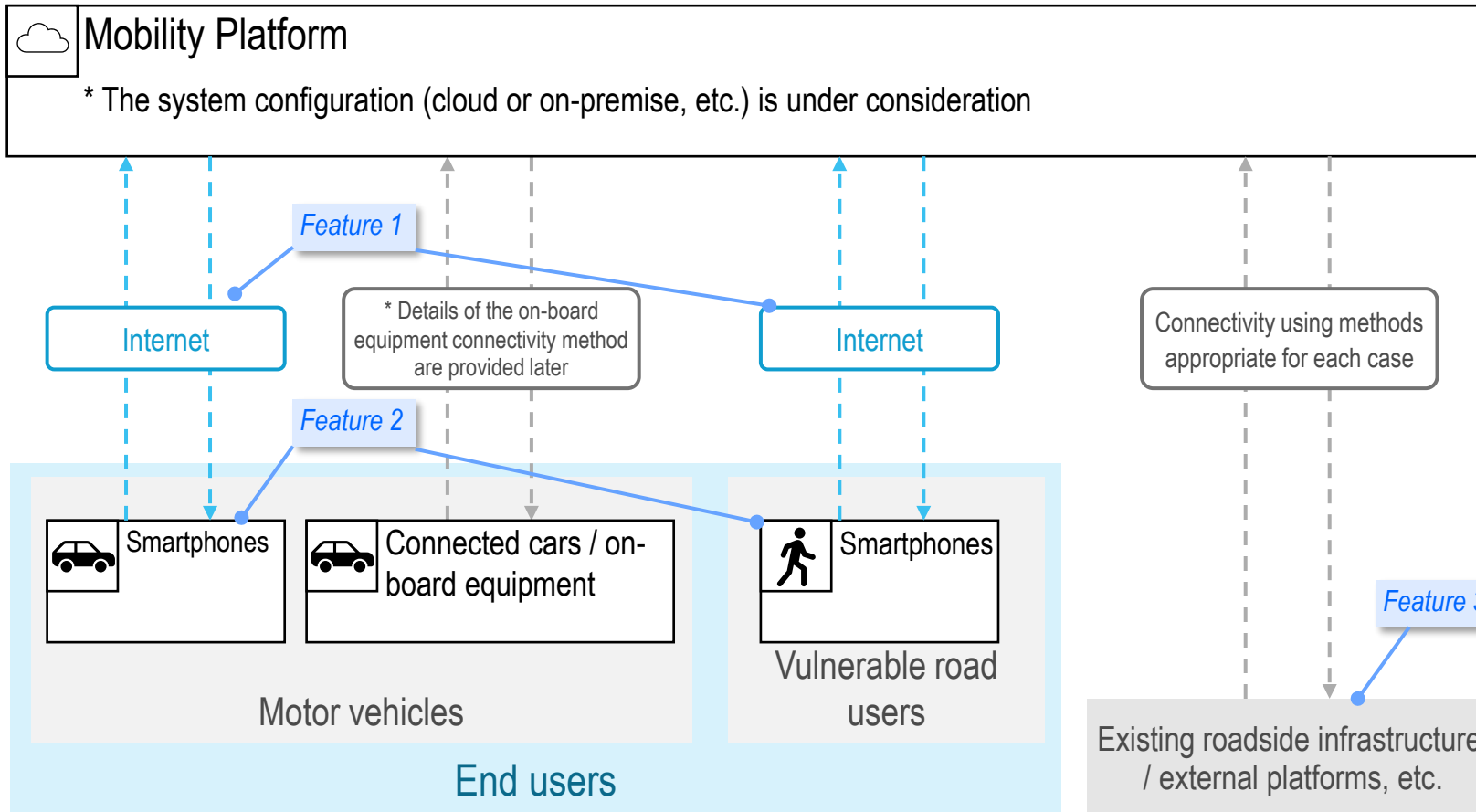
Concept for Building the Business Ecosystem

- In the future, we aim to expand from a proactive risk avoidance support service business into a data business and a marketplace business, thereby achieving more sustainable platform operations (the figure below shows our current concept).



Envisioned Mobility Platform System Configuration and Its Key Features

- Communications between smartphones and the Platform will be handled via the Internet, **making widespread adoption easy as long as users have a smartphone app.**
- To promote widespread use of smartphone apps, we envision **distributing an SDK so that partner companies can embed the service in existing apps**



Feature 1

Because communication between smartphones and the Platform is handled via the internet, the service can be used simply by installing an app.

Feature 2

As a measure to promote smartphone app adoption, we envision distributing an SDK so that partner companies can integrate their existing apps with on-board equipment.

Feature 3

Collaboration with external platforms and related systems will promote coordinated efforts to reduce traffic accidents.

3-3. Stakeholder Engagement

Participant Working Group Meetings

- Participant working group meetings were held for UC1 and UC2 (Tsukuba) and UC 4 (Odaiba) in preparation for the demonstration test.
- The meetings were intended to share overviews of the demonstration tests and evaluation methods, exchange views toward real-world deployment, and strengthen collaboration with related companies.

[UC 1 and 2 Tsukuba]

<WG sessions> (#1 was held in FY2024)

Session	Date	Contents
#2	4/22	Shared the results of closed-environment verification, handled matters in preparation for large-scale demonstration test
#3	6/12	Exchanged information on status of preparations for large-scale demonstration test, discussed issues related to real-world deployment, exchanged opinions on issues involved in demonstration test and real-world deployment
#4	10/30	Exchanged information on detailed contents and schedule of Large-Scale Demonstration Experience Event, exchanged opinions in preparation for real-world deployment
#5	2/27	Reviewed Large-Scale Demonstration Experience Event, exchanged opinions on questionnaire results, future technology development, proposals of business models for real-world deployment, and future project direction

<Participating Companies and Organizations>

Toyota
Suzuki
Daihatsu
SUBARU
Mazda
Nissan
Japan Automobile Manufacturers Association
ITS Japan
Panasonic Cycle Technology
Bridgestone Cycle
NTT DOCOMO BUSINESS
SoftBank

[UC 4 Odaiba]

<WG sessions> (#1 was held in FY2024)

Session	Date	Contents
#2	4/18	Presented status of deliberations with related parties and overview of test, exchanged opinions regarding testing
#3	6/19	Presented overview of verification test, evaluation methods, test plans, and status of discussions with related parties, exchanged opinions in preparation for real-world deployment

<Participating companies and organizations>

Daihatsu
NTT DOCOMO BUSINESS
Miraikan
Ashirase
Computer Science Institute
Singo Project

3-4. Status of External Communications

Events

- Events were held in Tsukuba for UC1 and UC2 and in Utsunomiya for UC3 to provide public-road demonstration experiences and exchange views toward real-world deployment.

Event	Date	Contents	Participants
Tsukuba Large-Scale Demonstration Observation Event	Oct. 9, 2025	UC1 and UC2 public-road demonstrations and exchange of views toward real-world deployment	Program Directors (PDs), Sub-Program Directors (SPDs), Project Managers (PMs), Sub-Project Managers (SPMs), related government agencies, members of other contracted consortia, user reviewers, peer reviewers, etc.
Tsukuba Large-Scale Demonstration Experience Event	Dec. 10 and 11, 2025	UC1 and UC2 public-road demonstrations and exchange of views toward real-world deployment	JAMA (OEMs), bicycle manufacturers, telecommunications carriers, etc.
Utsunomiya Large-Scale Demonstration Experience Event	Feb. 24, 2026	UC3 public-road demonstration and exchange of views toward real-world deployment	Rail operators, stakeholder organizations, etc.



Public-road demonstration(Tsukuba Large-Scale Demonstration Observation Event)



Opinion-sharing session
(Tsukuba Large-Scale Demonstration Experience Event)



In Utsunomiya, the Tochigi Police Department conducted a press briefing session on the morning of the demonstration

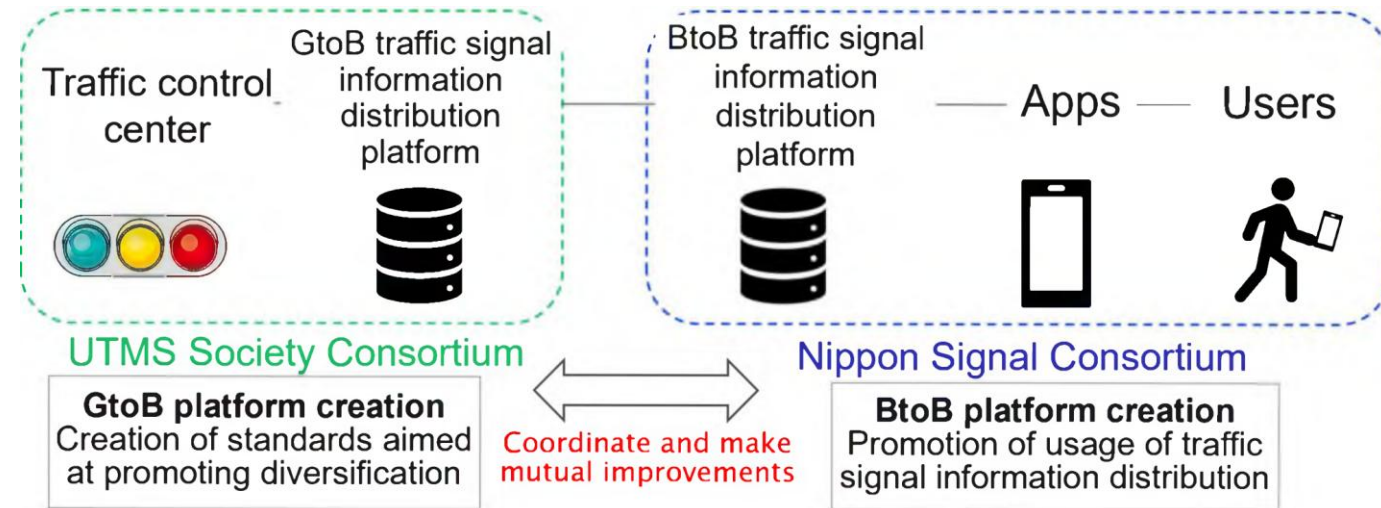
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External Collaboration

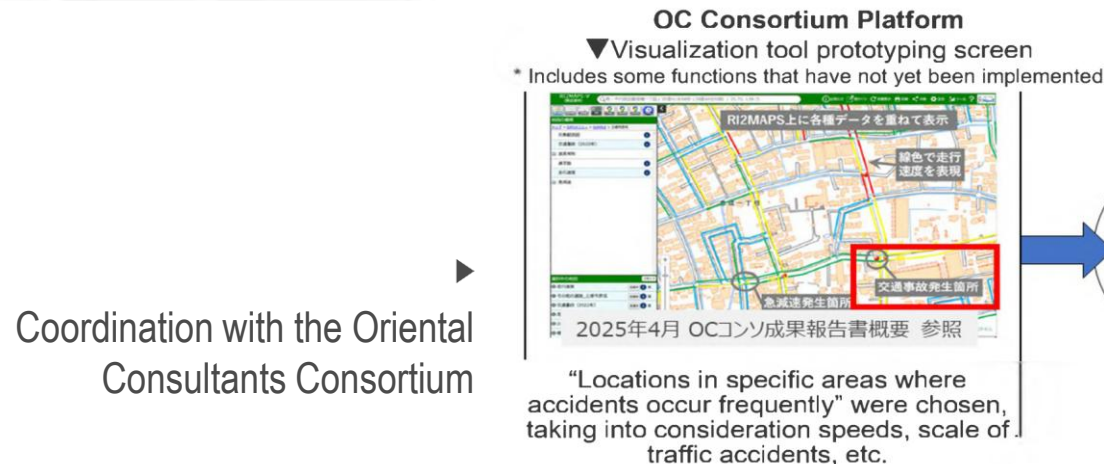
4. External coordination

Coordination between consortiums

- In addition to technical coordination, the UTMS Society Consortium also coordinated with us in jointly holding the Large-Scale Demonstration Observation Event in Tsukuba
- The Oriental Consultants Consortium shared their opinions with us to aid in determining accident reduction benefits in greater detail and performing more precise preliminary expense calculations



◀ Conceptual image of coordination with the UTMS Society Consortium



- Refine preliminary calculations of **reduction in traffic accidents** in specified areas
- Refine preliminary calculations of **deployment costs** in specified areas

