



Establishing an environment that promotes the utilization of mobility-related data

Report overview

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Smart Region Division

Table of Contents

- 1. Background and objectives**
- 2. Research and analysis of issues involved in the promotion of data utilization**
- 3. Output of this project**
- 4. Public-private data federation vision**
- 5. Data handling vision**
- 6. Deliberation council meetings**

1. Background and objectives

1-1. Background and objectives

(1) Identification of issues affecting the Public/private ITS Framework Roadmap 2020

In advancing the social implementation of systems of data federation aimed at the sharing of traffic-related data, we believe that **it is important to establish an environment that enables diverse stakeholders, in and out of the mobility field, to federate data.** To accomplish this, it will be necessary to **utilize a reference architecture model to visualize the entire complex mobility field.** Furthermore, related parties will, for example, need to **establish rules necessary for federating functions and data shared by stakeholders,** to **standardize data specifications,** and to engage in further deliberation and progressively create **systems for sharing data aimed at achieving social implementation,** in service domains in which use cases have yet to be established. When doing so, coordination with the regional development and infrastructure development discussed later is important, so cross-sectional deliberation must be carried out based on the smart city reference architecture.



(Source) Public/private ITS Framework Roadmap 2020, with emphasis (underlining and bold) placed by the co-authors of this material

Background and objectives of this project

Background

The use of mobility-related data (primarily connected car data) is expected to provide a wide range of value in everything from improving safety at the individual vehicle level to meeting social challenges such as controlling traffic flow and providing disaster response. However, due to problems related to the handling of personal information and other data, as well as the lack of rules regarding data federation between stakeholders, social implementation could not be characterized as progressing smoothly.

Objectives

The objective of this project is for the private and public sectors to collaborate and establish an environment that makes it easy for various stakeholders to take part in data utilization efforts.

2. Research and analysis of issues involved in the promotion of data utilization

2-1. Definition of data utilization use cases

- Data utilization use cases were extracted from the results of SIP studies in previous years and redefined as use cases for this study.
- The scope of the study conducted in this project was defined by individually selecting use cases of public-private data utilization separately for individual service users (commercial vehicles, ordinary vehicles, and pedestrians).

Selection perspectives

- 1** The project's aim is public-private data federation, so both public and private data must be used
- 2** Data obtained from vehicles or pedestrians must be used as mobility data
- 3** Use cases must be divided into three categories based on data users (commercial vehicles*, ordinary vehicles, and pedestrians) and for each of these categories, the most diverse data must be used

* "Commercial vehicles" here refers to vehicles managed by vehicle managers. It includes logistics vehicles, construction vehicles, and other vehicles used for business purposes.



Selected UCs

UC for commercial vehicles	Provision of information that contributes to safer and more secure driving environments for truck drivers
UC for ordinary vehicles	Provision of advanced information to vehicles (drivers)
UC for pedestrians	Provision of easy to understand information for smooth movement

(Ref.) Overview of mobility data utilization use cases

- The use cases defined in this study (23 use cases in 9 fields) are shown below.

Table Mobility data utilization use cases within the scope of this document

Field	No.	Use case
Logistics	1	Efficient delivery to depopulated areas
	2	Provision of information that contributes to safer and more secure driving environments for truck drivers
	3	Federation with data infrastructure in other fields (SIP4D)
	4	Accrual of road traffic information
Personal navigation	5	Applications for stress-free tourism
	6	Provision of door-to-door on-demand ride sharing transportation services
	7	Traffic management in normal conditions and in disaster situations
	8	Provision of easy to understand information for smooth movement
	9	Recommendations of activity patterns and means of transportation for residents of tourism cities based on congestion forecasts
Road management	10	Traffic flow anomaly detection
	11	Road condition anomaly detection

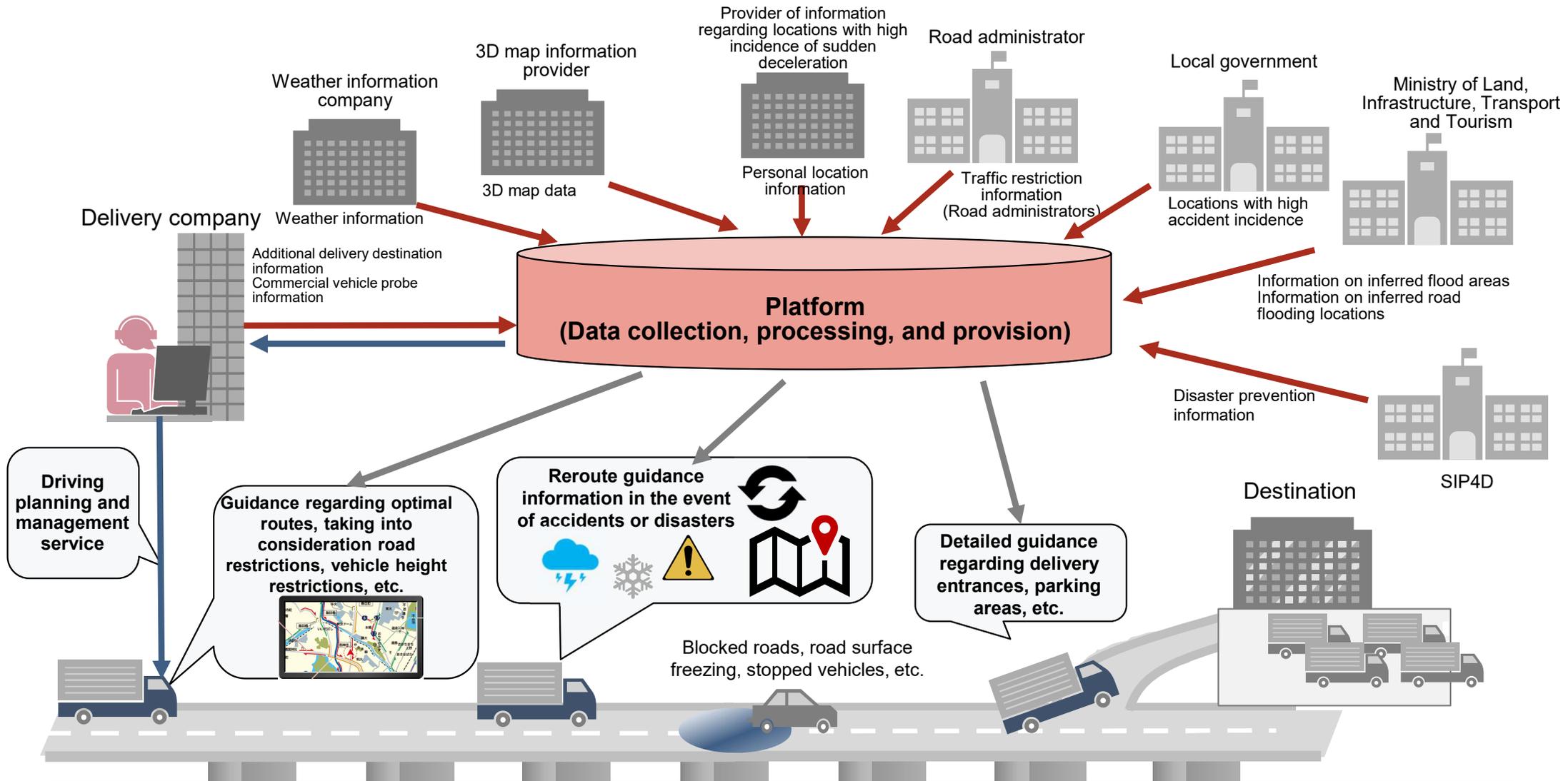
Field	No.	Use case
Motor vehicle	12	Provision of advanced information to vehicles (drivers)
Agriculture	13	Drone flight using map information
	14	Agricultural vehicle driving using map information
Power/Communication	15	Sharing of unique map information and diagrams
	16	Use of road 3D information to confirm the current status of road occupation
Construction	17	Construction vehicle driving route optimization
	18	Identification of road areas requiring reconstruction or repairs
	19	Notice creation support
	20	Waste management
Local governments	21	Emergency vehicle dispatching support
	22	Road surface defect repairs and roadside tree maintenance
Infrastructure/area management	23	Use of predictive information to support security operations

2-2. The three selected use cases

(1)-1 Use case for commercial vehicles

"Provision of information that contributes to safer and more secure driving environments for truck drivers"

- Route guidance and accident/disaster reroute guidance information based on collected data and vehicle size are provided to drivers. The objective is to achieve smooth driving and provide truck drivers with greater safety and security.

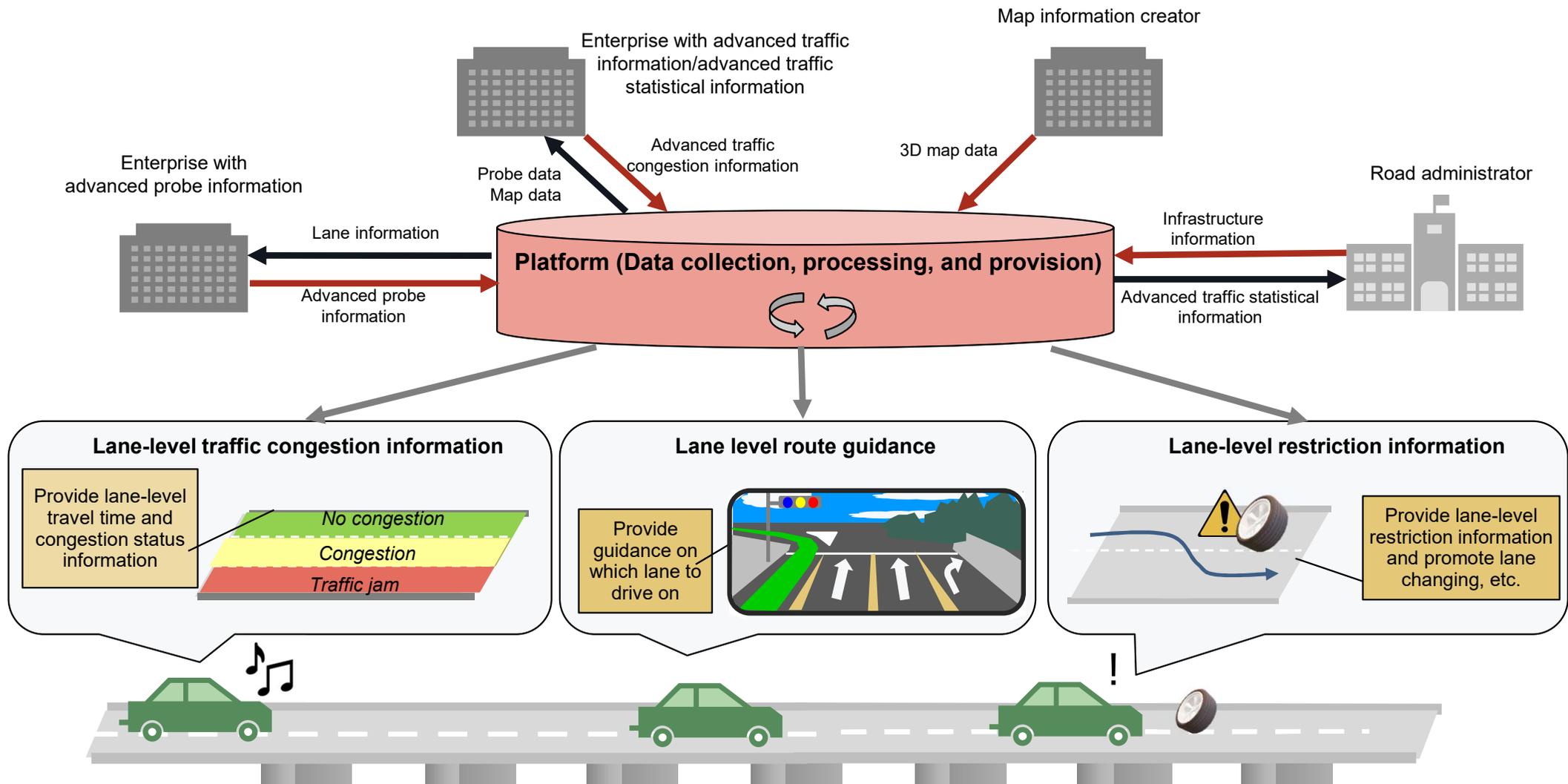


2-2. The three selected use cases

(2)-1 Use case for ordinary vehicles

"Provision of advanced information to vehicles (drivers)"

- Lane-level information based on collected data is provided.
- The objective is to contribute to smoother driving and achieve safe, secure navigation by providing detailed information.

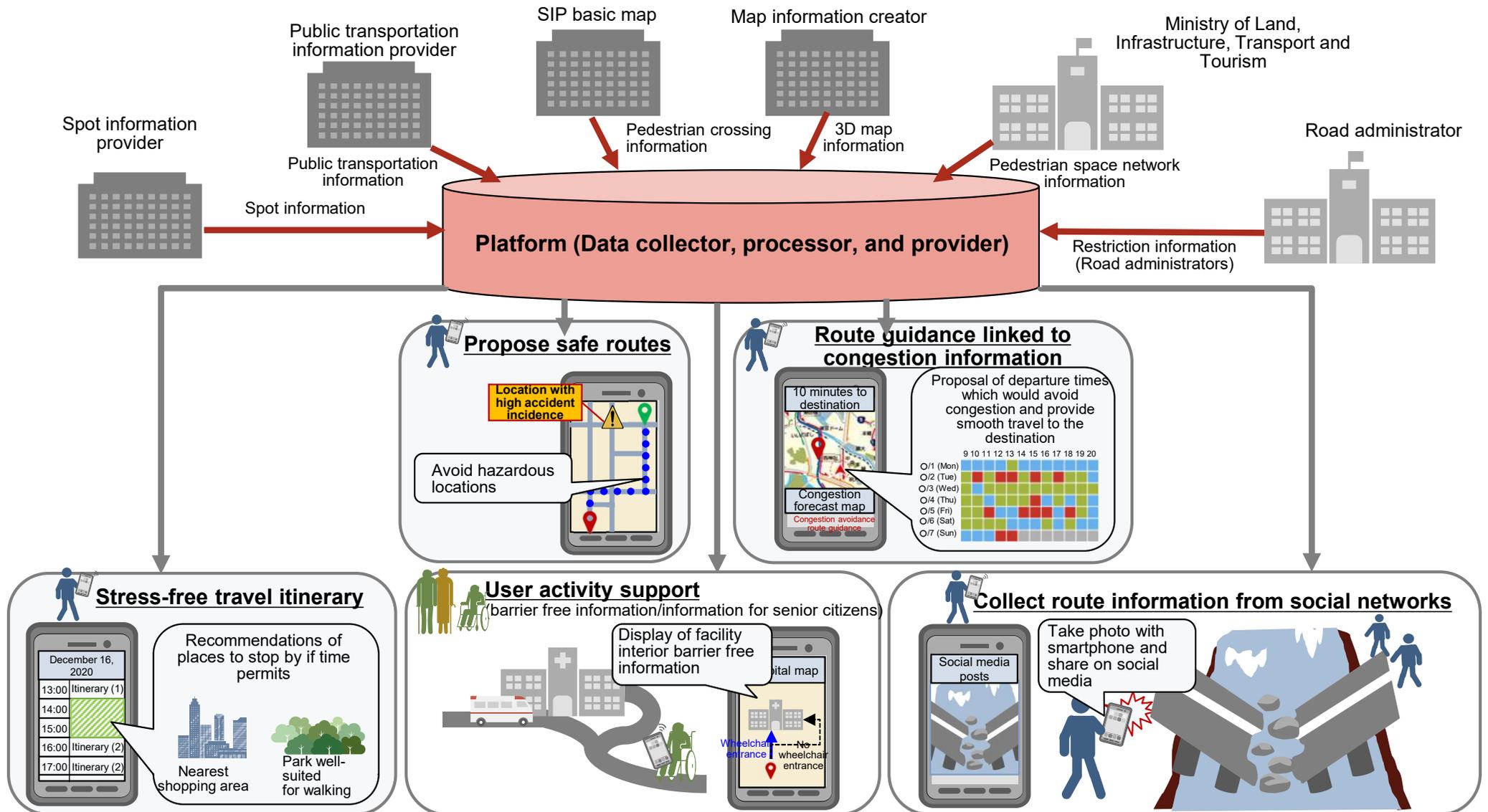


2-2. The three selected use cases

(3)-1 Use case for pedestrians

"Provision of easy to understand information for smooth movement"

- Route guidance is provided to users based on collected data and users' own attributes with the aim of achieving smooth mobility.



2-3. Visualization of use cases using the reference architecture

- We used the Society5.0 reference architecture to visualize the three selected use cases.
- Specifically, we used DoDAF, the architecture framework developed by the U.S. Department of Defense, and visualized use cases for each view defined by DoDAF.

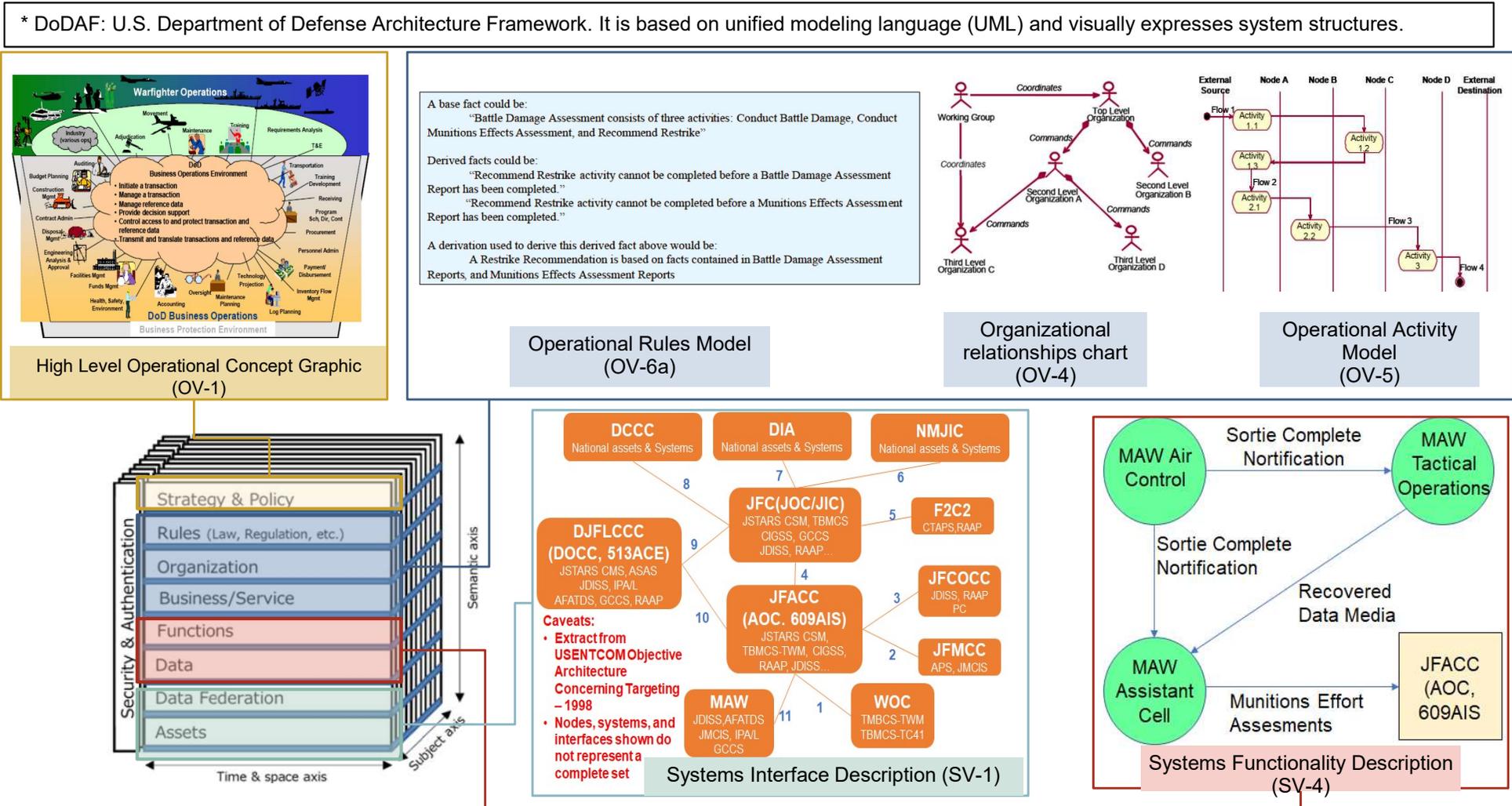
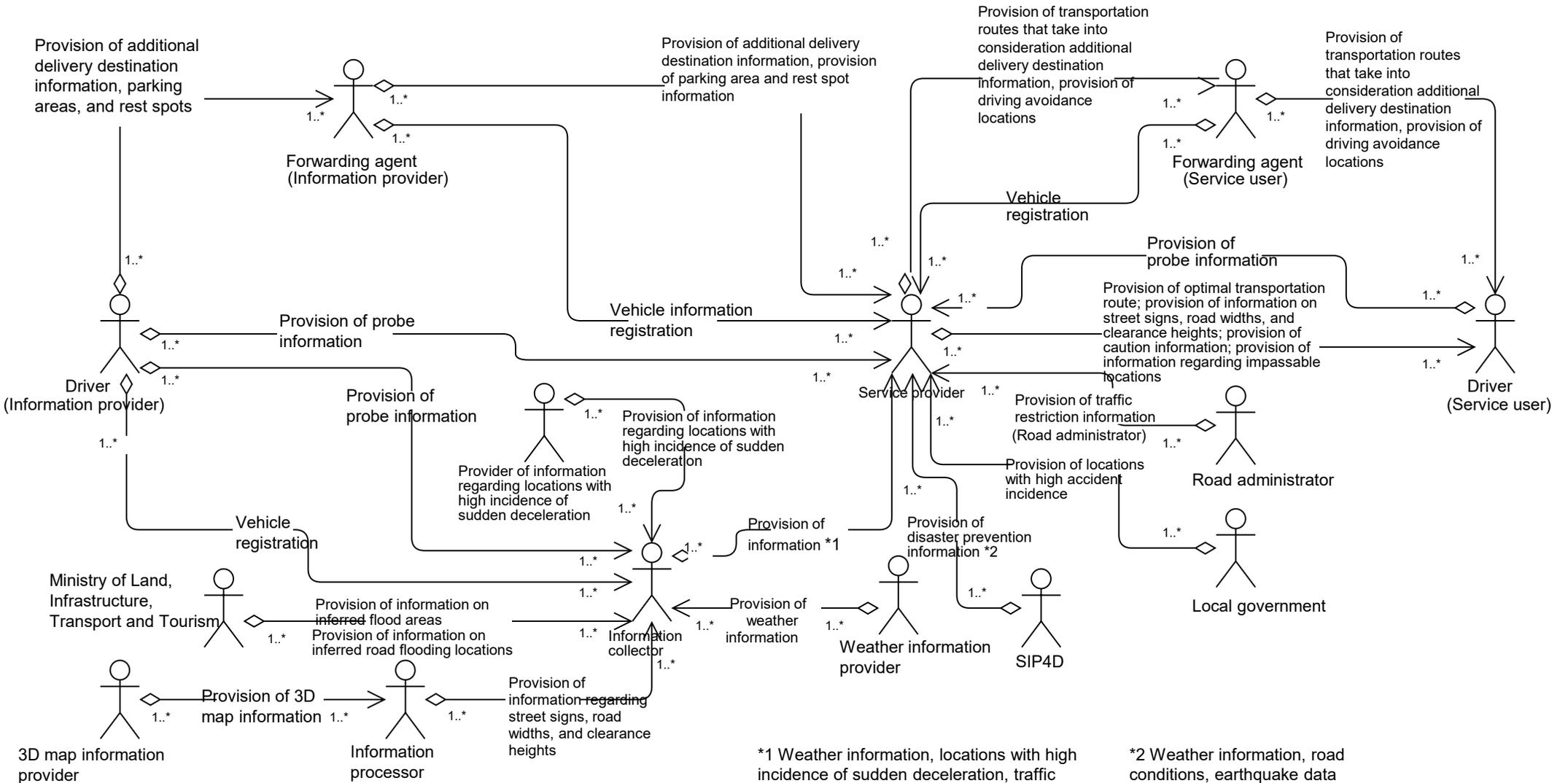


Fig. Relationships between Society5.0 reference architecture layers and DoDAF views

Source: Created based on IPA "Reference Architecture Study Report" (<https://www.ipa.go.jp/files/000010248.pdf>)

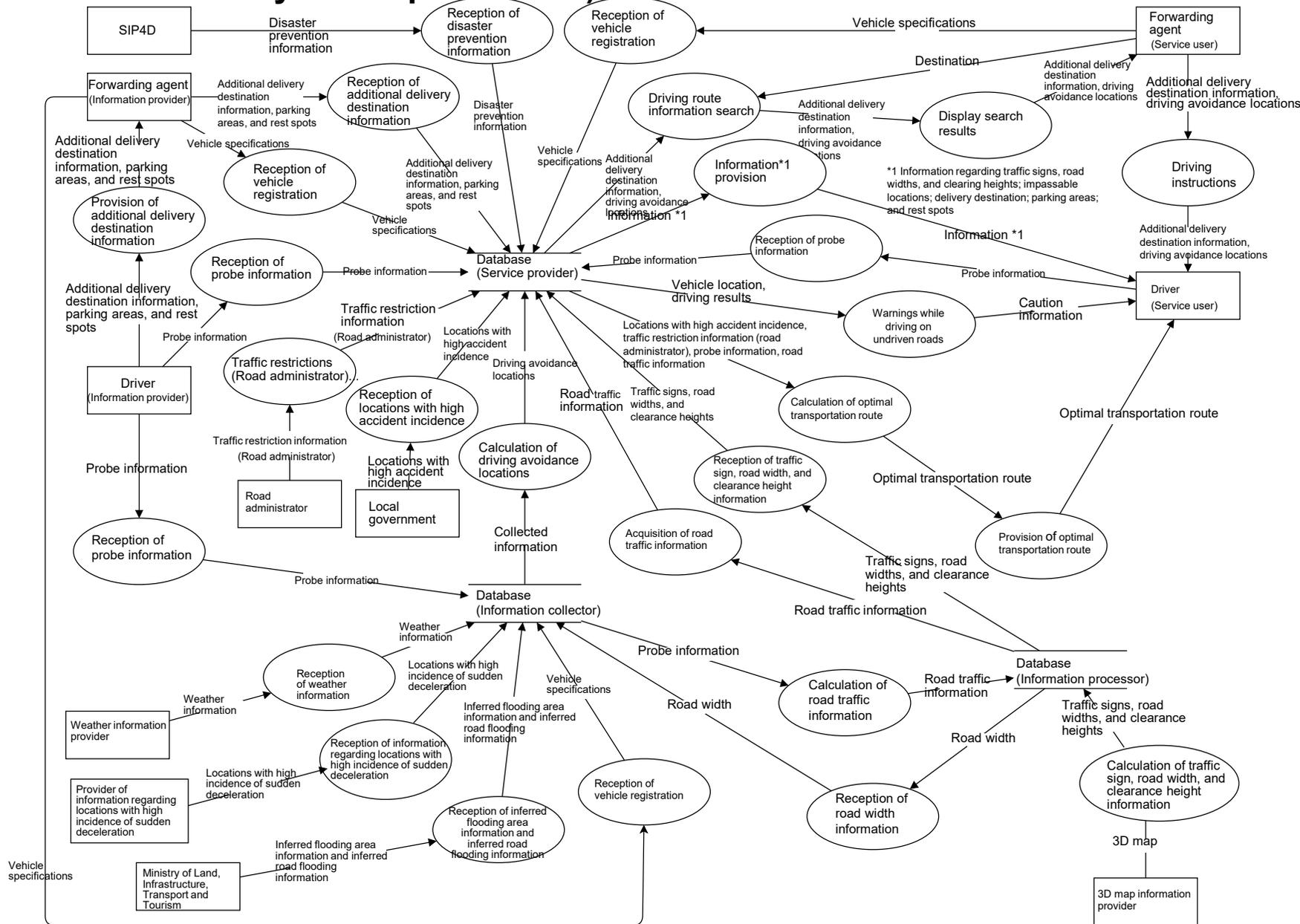
(Ref.) Operation view of "provision of information that contributes to safer and more secure driving environments for truck drivers"

(1) Organizational Relationships Chart (OV-4)



(Ref.) System view of "provision of information that contributes to safer and more secure driving environments for truck drivers"

(2) Systems Functionality Description (SV-4)



2-4. Interviews with related parties

- We conducted interviews with companies and organizations that actually handle mobility-related data regarding the contents of our analysis, performed using the architecture, and the issues that were identified. Through this, we confirmed the validity of our analysis results and identified issues affecting actual operation.
- In conducting these interviews, we selected interviewees in the positions of the three key type of mobility-related data handlers (data providers, information collectors, and service providers), as well as academic experts in order to perform overall opinion-gathering.

Table Overview of interviews

Interview date/time	Interviewee	Position	Corresponding use case
Dec. 23, 2020 (Wed) 11:00 a.m. to 12:00 p.m.	Company A	Service provider and data provider	All
Dec. 12, 2020 (Thu) 2:00 p.m. to 3:00 p.m.	Company B	Data provider	Commercial vehicle
Jan. 5, 2020 (Tue) 3:00 p.m. to 4:00 p.m.	Company C	Service provider	Pedestrian
Jan. 8, 2021 (Fri) 10:00 a.m. to 11:00 a.m.	Company D	Information collector	Pedestrian
Jan. 12, 2021 (Tue) 11:00 a.m. to 12:00 p.m.	Company E	Service provider	Commercial vehicle
Jan. 12, 2021 (Tue) 4:00 p.m. to 5:00 p.m.	Company F	Information collector	All
Jan. 13, 2021 (Wed) 1:00 p.m. to 2:00 p.m.	Company G	Information collector	Ordinary vehicle
Jan. 13, 2021 (Wed) 3:00 p.m. to 4:00 p.m.	Company H	Service provider	Ordinary vehicle
Jan. 18, 2021 (Mon) 2:30 p.m. to 3:30 p.m.	University I	Academic expert	All

3. Output of this project

3-1. Issue analysis method

Deliberation of approach to creating data federation/utilization rules

Based on our analysis results, we deliberated on the data federation vision, including the methods used to handle data and the division of roles between stakeholders, as well as the preparation of rules necessary for addressing issues. We then prepare Data Handling Guidelines and a proposal.

1) Public-private data federation vision

We deliberated and proposed a vision for organizing data in the possession of public and private sector parties, organizing the roles and measures of public and private sector parties with the aim of achieving data federation for use cases that create value through mutual data federation, and creating rules.

2) Data handling vision

We deliberated and proposed a vision for organizing data in the possession of public and private sector parties, organizing the roles and measures of public and private sector parties with the aim of achieving data federation for use cases that create value through mutual data federation, and creating rules.

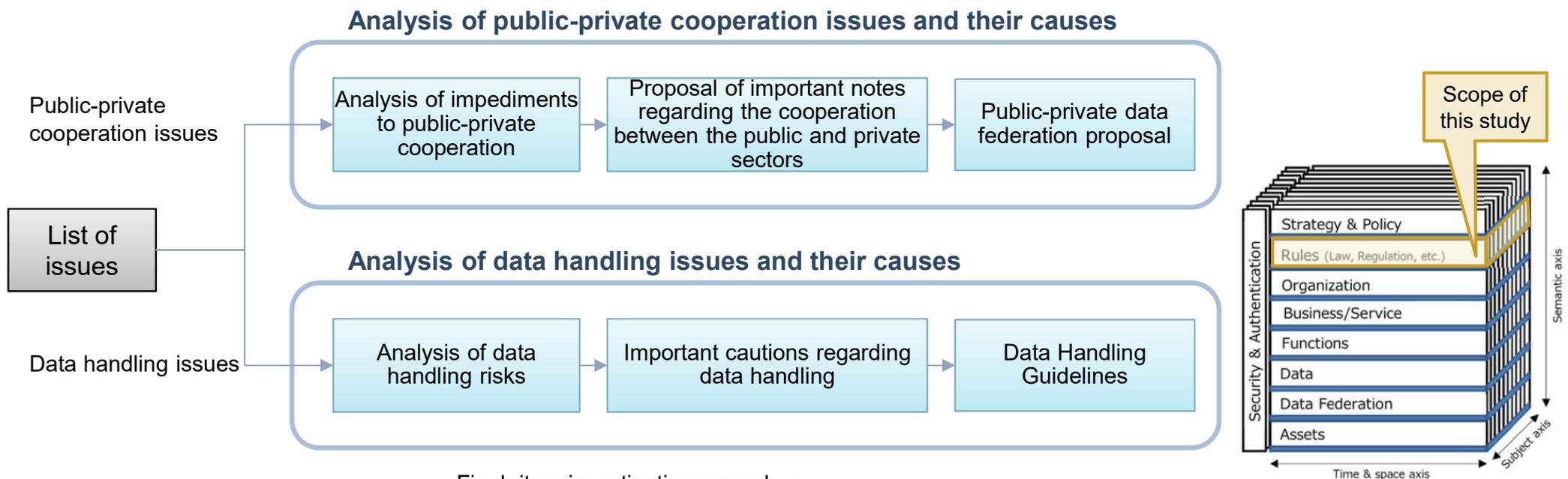
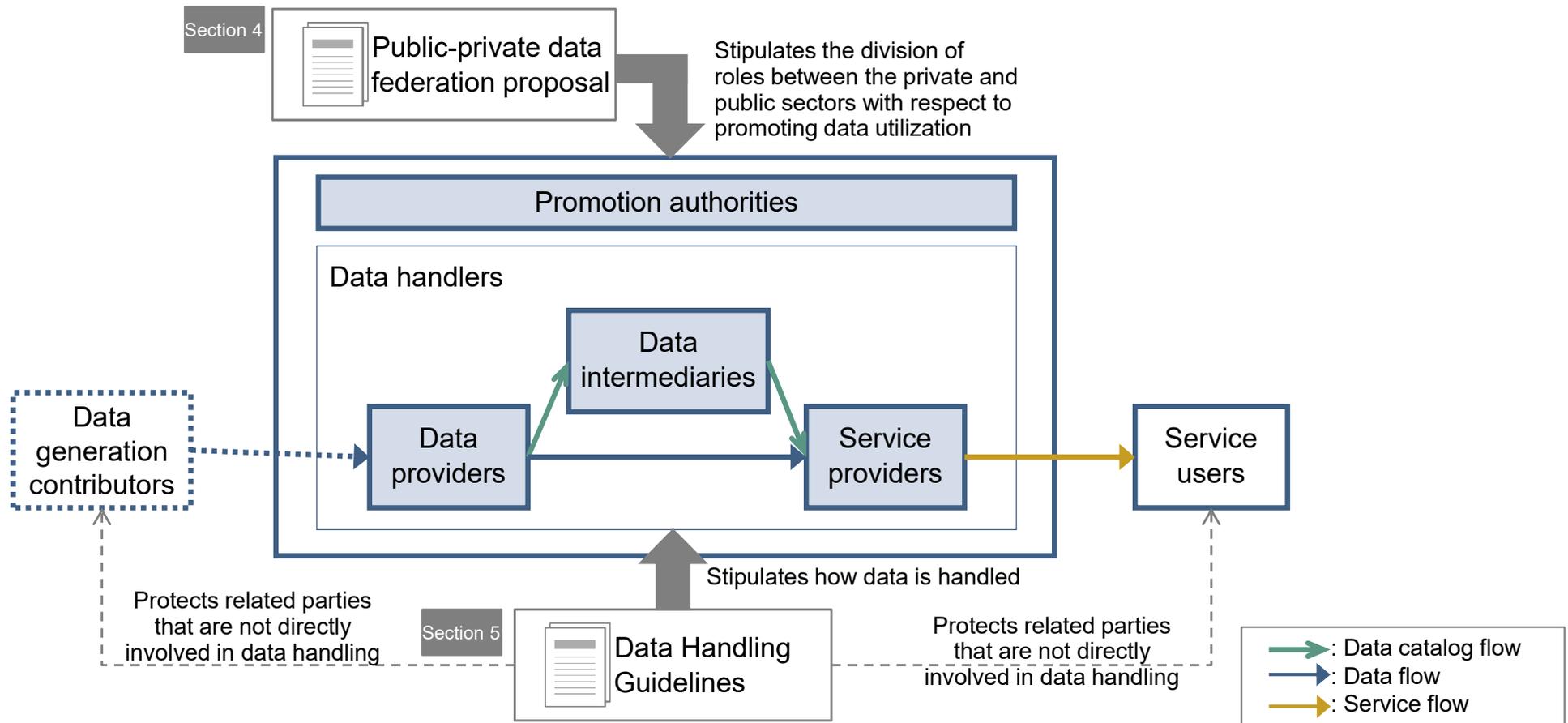


Fig. b item investigation procedure

3-2. Positioning of output

- The "public-private data federation proposal" is a document that stipulates measures to be carried out by public sector parties (and promotion authorities) and private sector parties that handle data in order to **further promote data utilization**.
- The Data Handling Guidelines is a document that stipulates matters to be complied with by parties that handle data in order to **protect related parties (data generation contributors and service users) that are not directly involved** in data handling.



3-3. Definition of parties involved in data utilization

Data providers

- This refers to parties that generate data through the course of their own operations, etc., and provide it for use by the public and private sectors.
- In some cases, data generation may be contributed to by parties other than data providers (these parties are referred to as "data generation contributors"). In this case, when providing data, consideration must be given to the data generation contributors.

Data intermediaries

- This refers to parties that provide systems for disclosing, in data catalog form, metadata collected from data providers and matching service provider needs with data providers.

Service providers

- This refers to parties that receive data from data providers matched via data intermediaries and provide services.

Promotion authorities(Public sector)

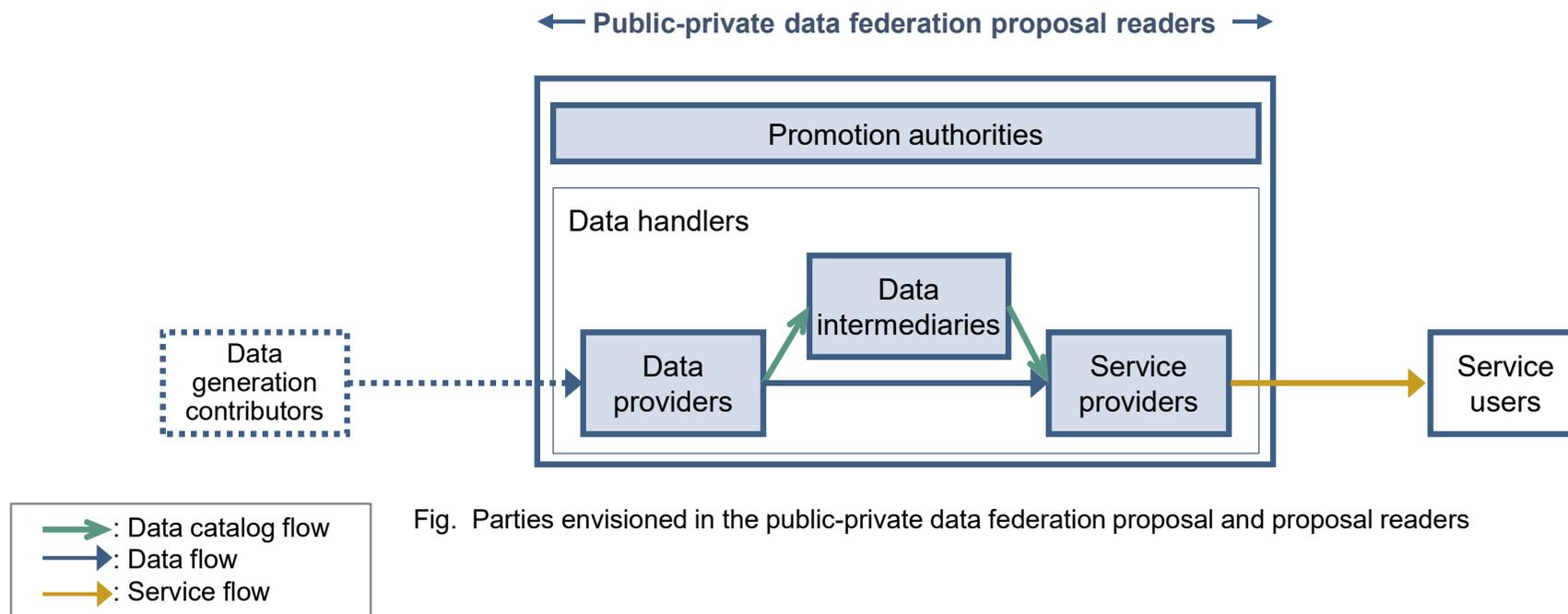
- This refers to parties that do not directly utilize data, but that design laws and systems that contribute to the creation of environments that facilitate the data distribution and utilization by data providers, data intermediaries, and service providers.

4. Public-private data federation vision

4-1. Division of roles and vision for public-private data federation

(1) Parties envisioned in the public-private data federation proposal and proposal readers

- We organized the division of rules between the public and private sectors with respect to public-private data federation and created a proposal based on this information.
- We deliberated and proposed a vision for organizing data in the possession of public and private sector parties, organizing the roles and measures of public and private sector parties with the aim of achieving data federation for use cases that create value through mutual data federation, and creating rules.



4-1. Division of roles and vision for public-private data federation

(2) Public and private sector roles with respect to data utilization

Vision for public-private data federation

- Able to collect even more data
- Able to engage in continuous system operation
- Able to utilize data easily



Roles of the public sector

- As a data providers, help promote the active disclosure and utilization of data.
- As a service provider, actively utilize data.
- As a promotion authority, create measures for promoting data utilization and related systems and rules, producing an environment that facilitates public-private data federation. Furthermore, the public sector should strive to monitor related systems and rules after their creation and make ongoing improvements.



Roles of the private sector

- As a data provider, provide as much data in their possession as possible, to the extent that this can be done without interfering with their business.
- Data intermediaries provide data from a neutral vantage.
- Service providers provide services which utilize data, thereby expanding business value, and strive create value that contributes to the solving of social issues.

Are there currently any issues which present obstacles to achieving the responsibilities contained in this vision?

4-2. Issues involved in public-private cooperation

(1) Issues involved in public-private cooperation

- We organized information regarding issues involved in public-private cooperation by performing architecture analysis using the DoDAF and conducting interviews with related business operators and organizations.

There are no incentives to provide data. An approach to providing incentives for providing data must be developed.	There are no incentives to provide data	(1) Data providers do not see the benefits of providing data
Rights and compensation related to generated lane information must be organized.		
Preparation is costly, so open data cannot be relied on for all the information.		
Decisions must be made regarding the value of data.		
The dividing line between collaborative areas and competitive areas must be defined when providing a map as an information provider.	(Parties believe that) there is no demand for data provision	
There are limited situations in which information can be effectively used.		
The data that service users require must be identified and collected.		
Submitting data alone does not lead to its future use.	Consensus cannot be reached with data generation contributors	
Consensus must be reached with users regarding using road traffic data collected from users as cooperative area data.		
Even if data is processed and used in a way that presents no legal issues, it may still not be possible to reach a consensus with customers regarding the provision of data to third parties.	Data generation contributors do not issue data.	(2) Data providers cannot make the investments necessary for data provision
Additional delivery destination information involves proprietary know-how, so whether or not this information can be provided is an issue.		
Even when driver know-how is aggregated, it is often in the form of management using physical ledgers. Implicit knowledge and non-digitized information needs to be converted into data.		
Creating maps for commercial facilities involves coordination with land owners, which can develop into business model discussions, so consistent nationwide deployment will require rules to be defined in advance.	Maps necessary for providing service must be created through field work	
If station interior maps could be obtained from transportation operators, there would be no problem, but terminal stations often involve numerous transportation operators with land rights, so no integrated data is available.		
Inconsistencies between diagrams present major problems.		

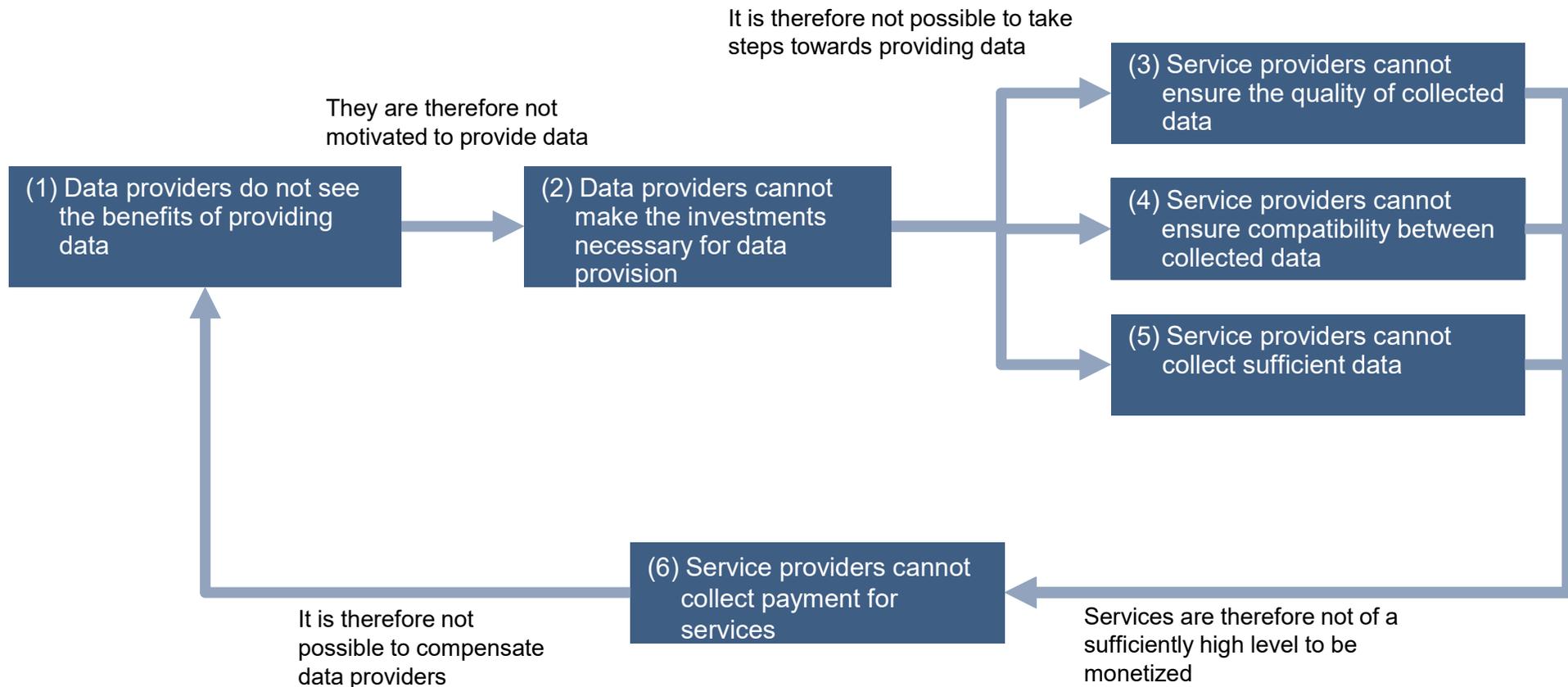
4-2. Issues involved in public-private cooperation

Continuous data provision.	Continuity-related issues	(3) Service providers cannot ensure the quality of collected data
Ensuring the credibility of information.	Credibility-related issues	
Fresh dynamic information must be collected and the accuracy of proposals of methods of transportation that are currently available for use must be ensured.	Freshness-related issues	
The information that is provided must be appropriately fresh for the services in which it will be used.		
The freshness of information must be ensured by performing updated as necessary when there are changes to the contents or periods of traffic restrictions, etc.	Coverage issues	(4) Service providers cannot ensure compatibility between collected data
Sufficient information coverage must be provided.	Issues with compatibility of locations on maps	
Environments must be created in which basic map can be used for purposes other than automated driving.		
Basic map formats must be defined		
Several map vendors are used by car navigation systems in Japan, and there is the road link IDs used by map vendors are not compatible with those used by other map vendors.		
Rules must be defined regarding how to aggregate figures and data, as well as the data itself, so that there are no major differences in data accuracy, and data must be collected in accordance with these rules.		
Compatibility between road link IDs is an issue that affects data accuracy and formats.		
Consideration must be given to how to link data to dynamic maps.		
Consideration must be given to how to link information to smartphone map apps, etc.		
If map vendors that possess basic map information provide services on their own, this will make data sharing difficult.		
Advanced probe information processing methods and accuracy may differ between data providers, so the characteristics of all data must be explicitly indicated.		Issues with probe compatibility
The types, acquisition timing, and data formats, etc., of probe information differ by company, so industry-wide aggregation presents a challenge.	Probe information cannot be collected	
Consideration must be given to how to display and deliver lane-specific information.		
It essential to prepare environments in which advanced probe information and advanced traffic congestion information can be used.		
When it is not possible to aggregate a large amount of probe information, it is not possible to improve the accuracy of generated advanced traffic congestion information, making it difficult to provide high value service.	Users do not pay	(6) Service providers cannot collect payment for services
Consideration must be given to how to commercialize the information value of barrier free information.		
The idea of collecting and providing public and private sector information is a good one, but monetization is a difficult challenge.		
If received data could be used to raise the quality of offered services to a level where compensation is received, there would be no problem, but if it is not possible to offset the costs with user usage fees, consideration must be given to how to cover these costs.		
Ensuring the accuracy of service contents so that services can be provided as paid services to end users.		
If data costs money from the deliberation stage, using the data will be costly, so service providers will not consider utilizing the data.		

4-2. Issues involved in public-private cooperation

(2) Public-private data federation issues

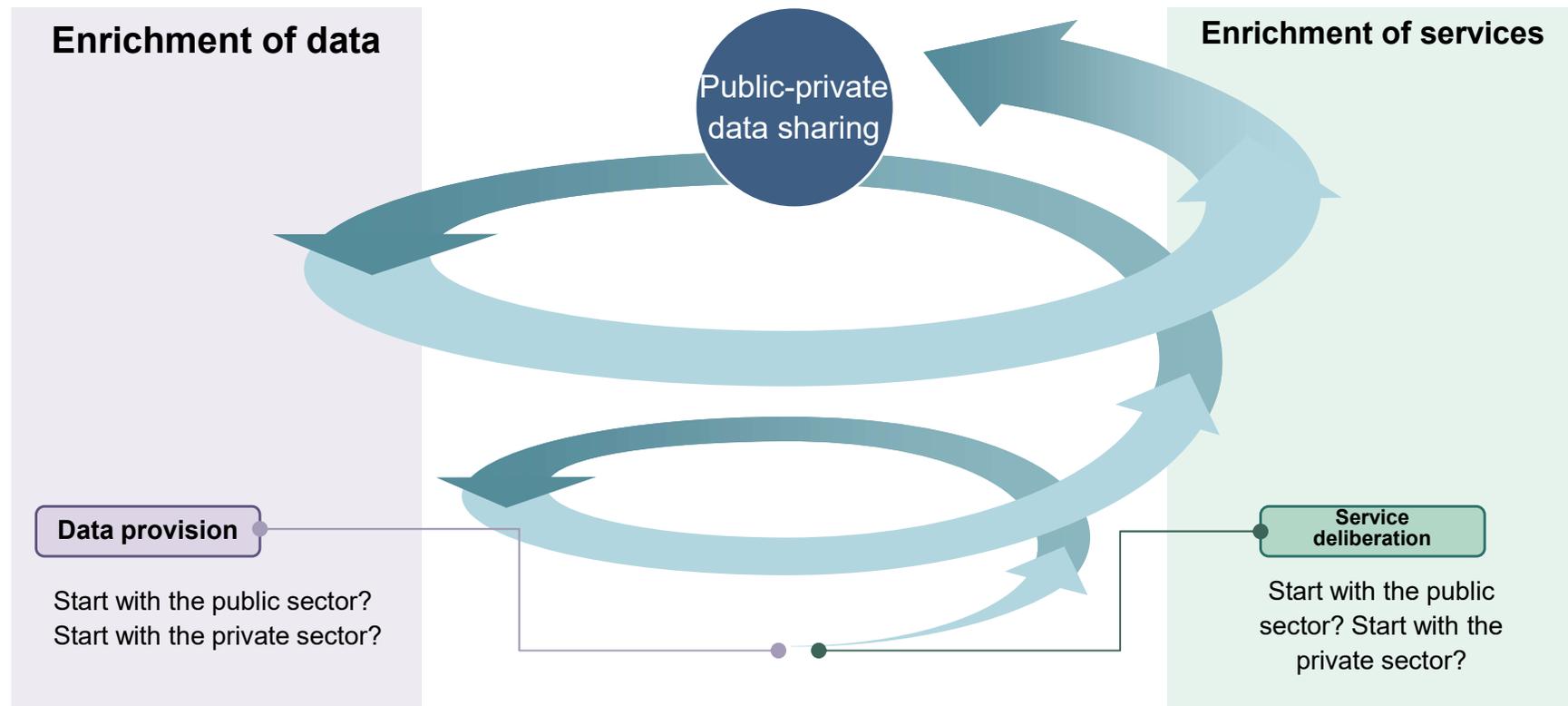
- Organizing the information we collected regarding the relationships between these issues, we discovered that there are few prospects for maintaining the business viability of services that utilize data or collecting payment for the use of services. This has created a downward spiral in which data providers are unable to work toward providing data of sufficient quality or in sufficient amounts, which prevents the growth of distribution. We believe the key point of public-private data federation will be discovering breakthroughs that end this spiral by making it possible to ensure business viability for both data and service providers.



4-2. Issues involved in public-private cooperation

(3) Conceptual image of service and data enrichment aimed at public-private data sharing

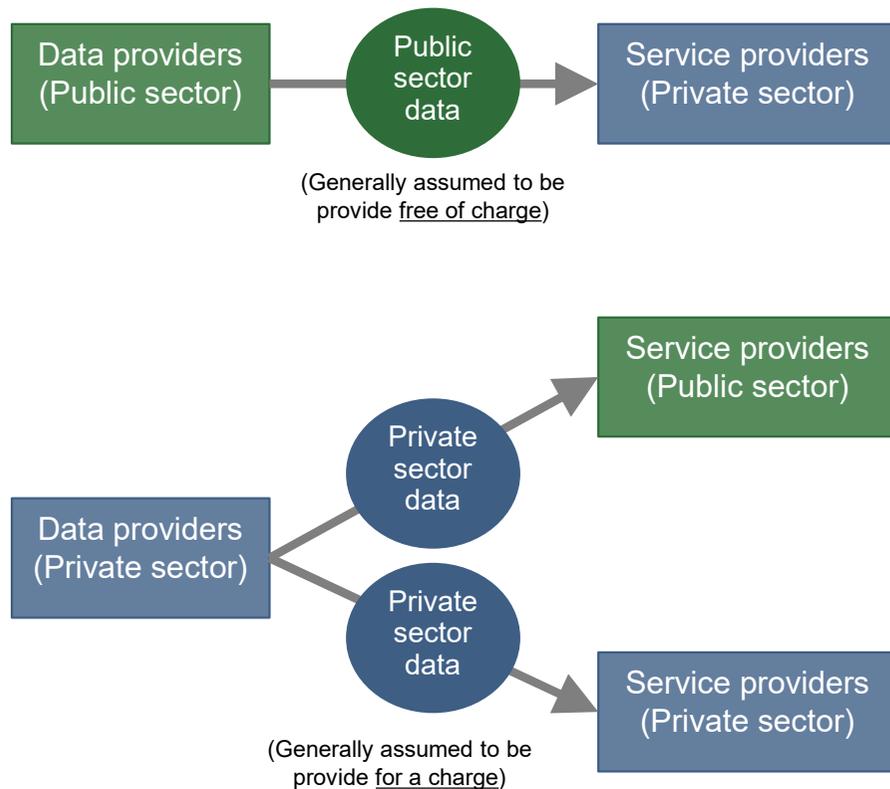
- No progress is being made in discussions regarding whether work should begin on the data provision or service provision ends. The procedures used in public-private data federation should therefore be considered from the perspective of which should go first, the private sector or the public sector.



(Ref.) Envisioned hurdles to public and private sector data provision

- If no data is provided, it isn't possible to provide services that use data. The first question, then, is "Which should be provided first, public sector data or private sector data?"
- Providing private sector data first involves greater hurdles than providing public sector data first, as private sector data provision involves hard decisions regarding business viability.
- We have therefore assumed a basic approach of providing data from the public sector first, and created the promotion procedure shown below.

Types of data provision



Envisioned hurdles

- If there are no estimates of when data will, for certain, be used, it could make it difficult provide the explanations needed in order to secure a budget for providing data
- It may not be possible to gain the consensus of the general public with regard to data collected through the use of taxes being supplied to partner companies for commercial use
- There have been few previous examples of the use of private sector data provided for a fee, which could make it difficult provide the explanations needed in order to secure a budget
- For the private sector, providing data for free is difficult, even if it is for public sector services, except in specific cases such as in the event of a disaster
- There are few partners that would be willing to pay for the data
- Data recipients are, in some cases, competitors, which makes it difficult to provide them with data
- Data that is provided for a fee is held to high quality, continuity, and other standards
- Private sector companies are varied and diverse, so there are concerns about how the data could be used by recipients

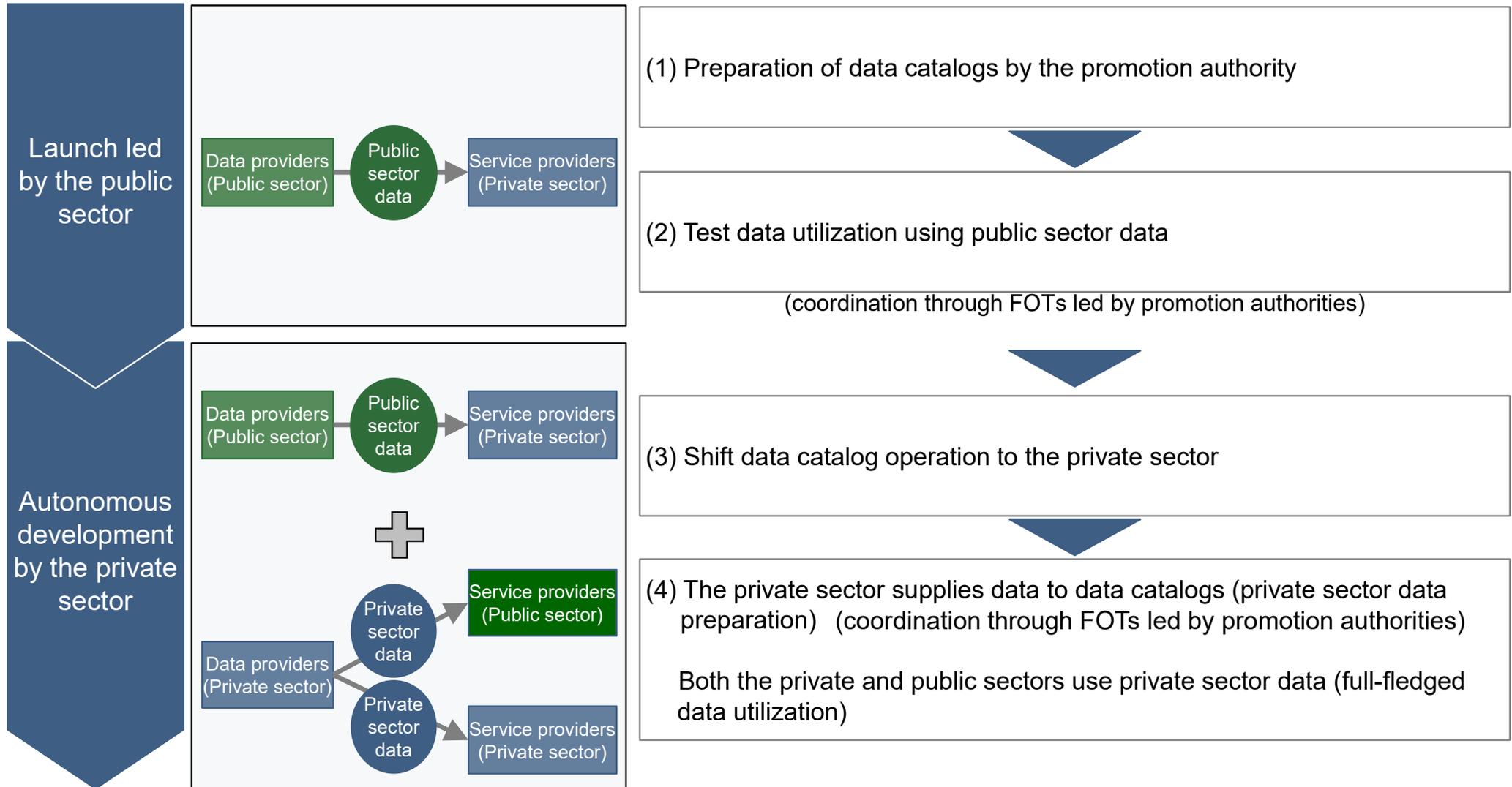
The hurdles to business viability may be comparatively low
⇒ Begin by having data provided by the public sector

Foster a data utilization movement

Then have data provided by the private sector, as well

4-3 . Promotion procedure and handling approach

- Business viability is a major obstacle to public-private data federation.
- Data utilization should therefore begin with public sector data utilization, and then the private sector should be gradually drawn in with the ultimate aim of full-fledged public-private data federation.



5. Data handling vision

5-1. Approach used in this section

(1) What is "data handling"?

- "Data handling" generally refers to all operations performed on data (collection, storage, processing, provision, and disposal).

(2) Importance of Data Handling Guidelines

- Parties that handle data (that is, data providers, data intermediaries, and service providers) are expected to handle data autonomously. Private sector parties handle it with the aim of generating profits, while public sector parties handle it as appropriate for the projects within their jurisdiction.
- However, **parties outside of this framework** (that is, data generation contributors and service users) cannot directly handle data, so inappropriate handling of data can **violate their rights or otherwise work to their detriment**.
- In order to prevent other parties from having their rights violated or otherwise being harmed by the inappropriate handling of data, the guidelines explicitly state the fundamental data handling methods that must be complied with by parties that handle data.



(3) How issues are identified

- Risk is analyzed for the data used in each of the use cases from the perspective of the potential for data generation contributors or service users to have their rights violated*1 or otherwise be harmed*2 as the result of inappropriate data handling (collection, storage, processing, provision, or disposal).

Risk analysis-based approach

*1 For example, violations of rights protected by the Personal Information Protection Act, Copyright Act, etc.

*2 Leakage of information being kept confidential for business, security, or other purposes, damage to the quality or reliability of services used by service users, etc.

5-2. Issue analysis

Data handling issues identified using the three usage cases

Collection of additional delivery destination information without the permission of the facility manager, leaving the facility manager with an unfavorable impression (commercial)
Collecting commercial vehicle probe information without first gaining the understanding of delivery companies, thereby leaving the delivery companies with an unfavorable impression (commercial)
Leakage of information regarding the customers of delivery companies that generate additional delivery destination information (commercial)
Additional delivery destination information makes it possible to determine the interior structure of facilities, negatively affecting their security (commercial)
Congestion in parking areas/rest spots prevents delivery company personnel from parking/resting (commercial)
Commercial vehicle probe data can be analyzed to expose the customers of delivery companies (commercial)
Data from digital tachometers can sometimes be used to identify commercial vehicles and expose their activities to competitors (commercial)
Reselling purchased weather information negatively affects business opportunities of the provider of said weather information (commercial)
Shared cycle information can be used to determine the business conditions of shared bicycle operators, putting them at a competitive disadvantage (pedestrian)
Negligence by data handlers, cyber-attacks by third parties, etc., negatively affect the usability or integrity of data, making it impossible to provide the intended level of service quality (shared)
Negligence by data handlers, cyber-attacks by third parties, etc., negatively resulting in data leakage, leaving the data generation contributors with an unfavorable impression, or harming their business (shared)
Collecting advanced probe information without disclosing their usage purposes to drivers, etc., may be a violation of the Personal Information Protection Act (ordinary)
Providing advanced probe information without the consent of drivers, etc., may be a violation of the Personal Information Protection Act (ordinary)
When advanced probe information includes images or video taken by a drive recorder, providing images or video in which individuals are visible without their consent is a violation of the Personal Information Protection Act (ordinary)
When information includes images or video in which individuals are visible, providing those images or video without the consent of the individuals in question is a violation of the Personal Information Protection Act (pedestrian)
There are various advanced probe information formats with different information types and acquisition frequencies. Aggregating and integrating this information is difficult (ordinary)
When different navigation systems have different maps, there may be differences in locations (latitude and longitude) included in the advanced probe information collected from each. This may affect service accuracy and quality (ordinary)
Information is primarily collected via the website, so compliance with regulations regarding information usage conditions is essential (pedestrian)
Permission must be obtained from copyright holders before using or processing images or video (pedestrian)
Processing delays can cause delays in inferring the locations of floods, affecting the safety of commercial vehicles (commercial)
Processing delays can cause users to be late to shared bicycle, public transportation, or ART connections (pedestrian)
The accuracy of submitted content is not guaranteed, so it may not be possible to ensure the quality of services that are based on submitted information (pedestrian)

Aggregated issues

- (1) Inappropriate collection of data leaving data generation contributors with an unfavorable impression
- (2) Inappropriate provision harming the business profitability of data generation contributors
- (3) Unintended data security issues making it impossible to guarantee service quality, leaving the data generation contributors with an unfavorable impression, or harming their business
- (4) Inappropriate collection and provision of data violating rights protected by the Personal Information Protection Act
- (5) Collecting and using data from various sources making it impossible to guarantee service quality
- (6) Inappropriate usage of data violating data copyright
- (7) Data processing delays (reduced data freshness) detrimentally affecting service users, such as preventing them from travelling as planned
- (8) Using data from sources whose reliability is unknown making it impossible to guarantee service quality

5-3. Approach to issue countermeasures

- Data handling issues were broadly grouped into eight general issues. The following approaches can be used to address these general issues.
- We created Data Handling Guidelines with details regarding how these issues are dealt with.

Aggregated issues	Response approach
(1) Inappropriate collection of data leaving data generation contributors with an unfavorable impression	<ul style="list-style-type: none"> • Data providers provide explanations to data generation contributors and reach a consensus with them • In some cases, rules regarding data utilization rights are created with parties that contribute to data collection
(2) Inappropriate provision harming the business profitability of data generation contributors	<ul style="list-style-type: none"> • Data providers do not provide data to parties other than those agreed upon by data generation contributors, and data is not used for usage purposes other than those agreed upon
(3) Unintended data security issues making it impossible to guarantee service quality, leaving the data generation contributors with an unfavorable impression, or harming their business	<ul style="list-style-type: none"> • Parties that use data create and implement security management processes in accordance with appropriate security standards
(4) Inappropriate collection and provision of data violating rights protected by the Personal Information Protection Act	<ul style="list-style-type: none"> • Parties that handle data handle personal information in accordance with the Personal Information Protection Act • Alternatively, they appropriately anonymized personal information before using it
(5) Collecting and using data from various sources making it impossible to guarantee service quality	<ul style="list-style-type: none"> • Data providers and service providers use standardized formats and location referencing methods for data envisioned as being collected from various parties
(6) Inappropriate usage of data violating data copyright	<ul style="list-style-type: none"> • Copyrighted data is handled in accordance with copyright laws
(7) Data processing delays (reduced data freshness) detrimentally affecting service users, such as preventing them from travelling as planned	<ul style="list-style-type: none"> • Data providers and service providers confirm and agree in advance to matters such as the quality (accuracy, integrity, and validity), freshness, continuity, etc., of provided data
(8) Using data from sources whose reliability is unknown making it impossible to guarantee service quality	<ul style="list-style-type: none"> • Only in cases in which services do not require high quality data, service providers develop methods for using or improving the reliability of data whose reliability is unknown

5-3. Approach to issue countermeasures

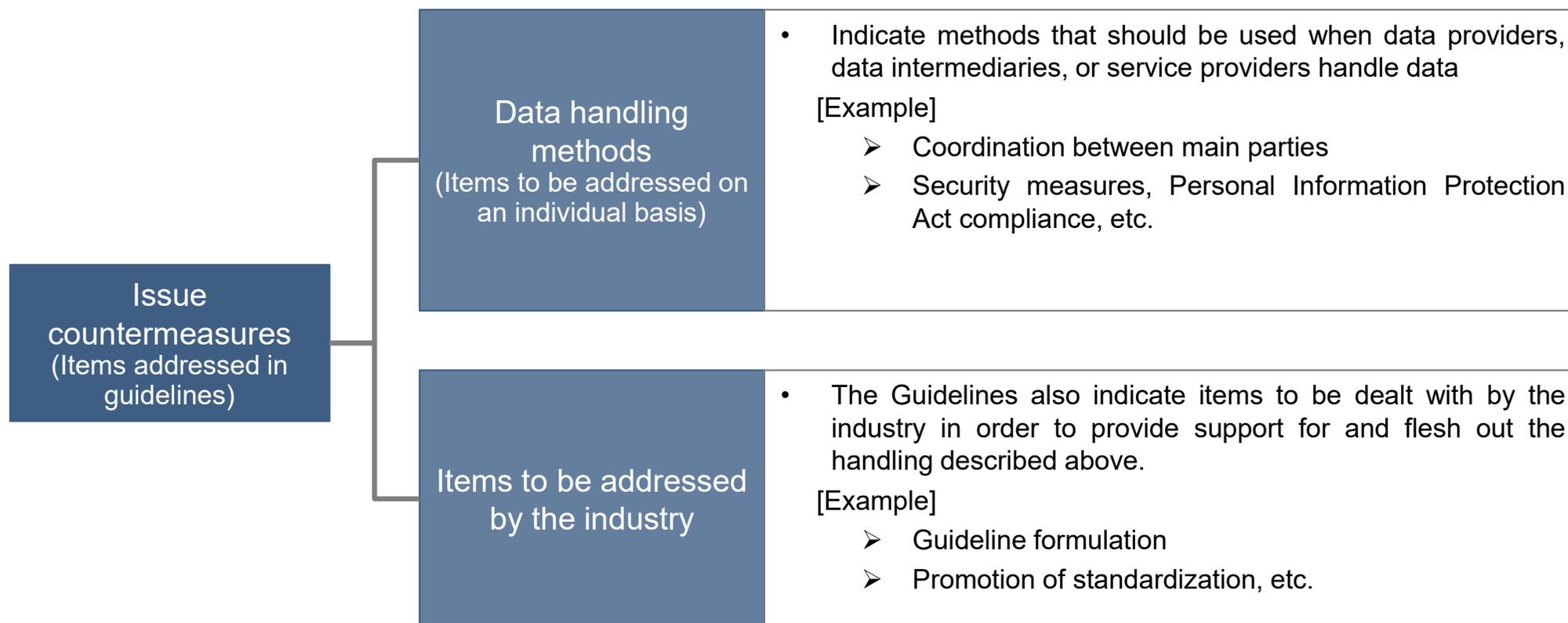
- Issue countermeasures can be divided into the following two types.
 - A.** Measures aimed at protecting data generation contributors
 - B.** Measures aimed at improving service quality
- Type A countermeasures are those that we believe should be implemented even if services are provided free of charge. Type B countermeasures are countermeasures which we believe can be optionally implemented for services which are charged for and which require a high level of quality, etc.

	Response approach	Type A.	Type B.
(1) Measures related to the impressions of data generation contributors	<ul style="list-style-type: none"> Data providers provide explanations to data generation contributors and reach a consensus with them. In some cases, rules regarding data utilization rights are created. 	✓	
(2) Protecting the business profitability of data generation contributors	<ul style="list-style-type: none"> Data providers do not provide data to parties other than those agreed upon by data generation contributors, and data is not used for usage purposes other than those agreed upon 	✓	
(3) Protecting data	<ul style="list-style-type: none"> Parties that use data create and implement security management processes in accordance with appropriate security standards 	✓	✓
(4) Protecting personal information	<ul style="list-style-type: none"> Parties that handle data handle personal information in accordance with the Personal Information Protection Act 	✓	
(5) Data standardization	<ul style="list-style-type: none"> Data providers and service providers use standardized formats and location referencing methods for data envisioned as being collected from various parties 		✓
(6) Protecting copyright	<ul style="list-style-type: none"> Copyrighted data is handled in accordance with copyright laws 	✓	
(7) Guaranteeing data quality	<ul style="list-style-type: none"> Data providers and service providers confirm and agree in advance to matters such as the quality (accuracy, integrity, and validity), freshness, continuity, etc., of provided data 		✓
(8) Guaranteeing data reliability	<ul style="list-style-type: none"> Only in cases in which services do not require high quality data, service providers develop methods for using or improving the reliability of data whose reliability is unknown 		✓

5-3. Approach to issue countermeasures

Approach to issue countermeasures

- There are two types of issue countermeasures (that is, items included in the Guidelines), as indicated below: Data handling methods and items to be addressed by the industry.
- The Guidelines are not intended to place constraints on related parties, but instead to serve as a reference when handling data.
- As data utilization advances are made, the parties that handle data, the key parties outside this framework, and the environment that surrounds them are all expected to change, so this document is envisioned as being constantly updated.



6. Deliberation council meeting and reporting

6-1. Overview of test

A deliberation committee was established, consisting of experts in the mobility field, SIP members, related government ministries, etc. This committee met three times to deliberate regarding mobility-related data utilization. Progress in deliberations regarding the items in this report was reported as appropriate at working group meetings, etc.

(1) Holding of deliberation council meetings

Deliberation Committee	Agenda	Date/time
1st meeting	<ul style="list-style-type: none"> Purpose of meeting Analysis of mobility-related data utilization use cases Identification of data utilization issues and problems 	January 26, 2021 (Tue) 1:00 p.m. to 3:00 p.m.
2nd meeting	<ul style="list-style-type: none"> Deliberations regarding data handling vision Deliberations regarding public-private data federation vision 	February 10, 2021 (Wed) 09:00 a.m. to 10:30 a.m.
3rd meeting	<ul style="list-style-type: none"> Final summarization 	March 1, 2021 (Mon) 10:00 a.m. to 12:00 p.m.

(2) Reporting to Transport System Working Group

1st report Date/time: December 7, 2020 (Mon)

We explained the objectives, contents, and process of this study and our analysis of use cases using the architecture.

2nd report Date/time: March 4, 2021 (Wed)

Based on the items pointed out by committee members by the 3rd deliberation council meeting, as well as our proposals for dealing with them, we provided an explanation of the outline of our proposal for public-private coordination and countermeasures for data handling-related issues.