"Strategic Innovation Promotion Program (SIP)
Automated Driving for Universal Service"
Analysis & research on future needs for automated driving and
issues arising from them
- For research & examination on issues regarding realization of
automated driving and the direction of their resolution

Report (Overview Version)

March 9, 2018

SC-Abeam Automotive Consulting

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# 1. Background and Objectives of Research

## Background

- FY2017 is considered the time when the research and development outcomes of SIP Automated Driving for Universal Service to date are finalized in order to ensure that they lead to practical applications and commercialization. SIP looks ahead at further advancement and development after SIP ends.
- Based on the above background, SIP focuses its budget on the following four areas:
    - (1) Promotion of research and development centered on large-scale demonstration experiments
    - (2) Development of commercialization and business models
    - (3) Local deployment and government-industry-academia collaboration
    - **(4) International collaboration and standardization activities**
- With regard to "(4) International collaboration and standardization activities", the international collaboration working group is working in the following areas to promote international corporation activities.
    - ① Information distribution
    - ② Organization of international conferences in Japan
    - ③ Establishment of research and development environment open to international communities
    - **④ Creation of social acceptance for automated driving systems**
- As for activity (4) above, it is essential to create social acceptance for automated driving systems in deploying them in society.
- To do so, SIP organized three Citizens' dialogues in FY2016 as a venue for interactive communication, where participants discussed and exchanged opinions on social needs for and the various constraints (technical limitations and legal aspects) of automated driving systems.
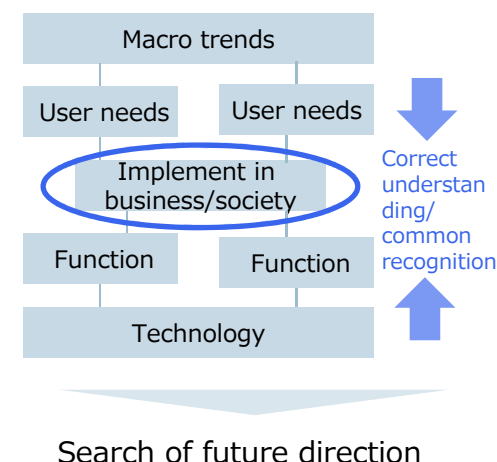
## Objectives

- Focusing on the benefits and potential risks of automated driving vehicles, continue to create opportunities for discussion between experts and parties such as the general public and businesses that are deeply related to automated driving.
- Envision future state of automated driving, and extract and analyze future needs based on problem consciousness and expectations.
- Build a correct understanding and common recognition.

- Allay misunderstanding caused by lack of knowledge
- Raise issues from the field's viewpoint
- Envision the future state and extract/analyze needs

⇒ Contribute to proper assessment of R&D of current automated driving systems and search of the future direction

Macro trends

User needs | User needs

Implement in business/society

Correct understanding/ common recognition

Function | Function

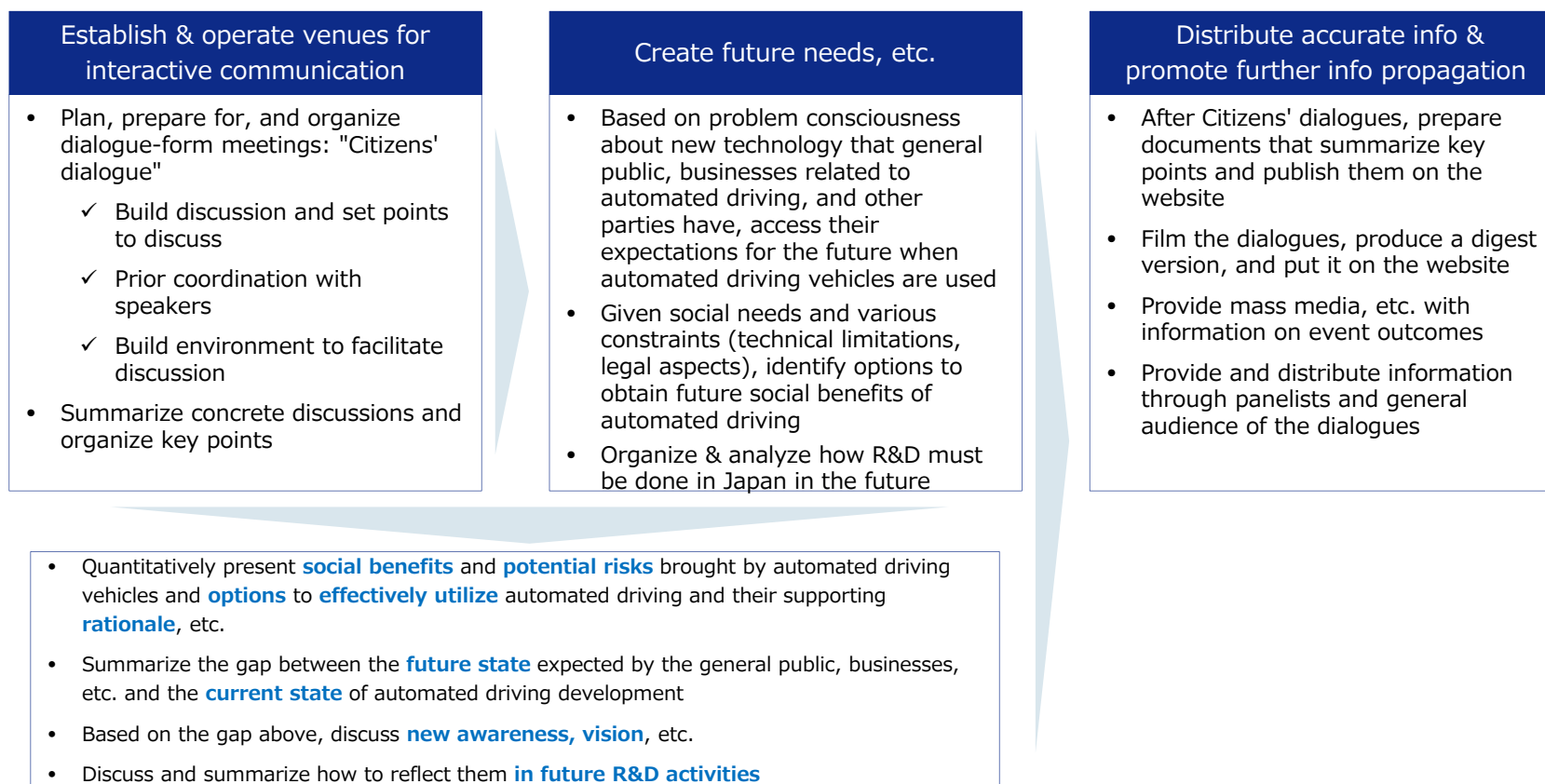Technology

Search of future direction

# 2. Research Structure

- SIP organized Citizens' dialogues as a venue for interactive communication to extract and analyze future needs, etc. and discussed new awareness, visions, and the like through dialogues with citizens.
- SIP distributed accurate information in effective ways through panelists, the general audience, and others who participated in the Citizens' dialogues; the outcomes were published on the SIP-adus website, and received media coverage.

Research & analysis | Information distribution

### Establish & operate venues for interactive communication

- Plan, prepare for, and organize dialogue-form meetings: "Citizens' dialogue"
  - ✓ Build discussion and set points to discuss
  - ✓ Prior coordination with speakers
  - ✓ Build environment to facilitate discussion
- Summarize concrete discussions and organize key points

### Create future needs, etc.

- Based on problem consciousness about new technology that general public, businesses related to automated driving, and other parties have, access their expectations for the future when automated driving vehicles are used
- Given social needs and various constraints (technical limitations, legal aspects), identify options to obtain future social benefits of automated driving
- Organize & analyze how R&D must be done in Japan in the future

### Distribute accurate info & promote further info propagation

- After Citizens' dialogues, prepare documents that summarize key points and publish them on the website
- Film the dialogues, produce a digest version, and put it on the website
- Provide mass media, etc. with information on event outcomes
- Provide and distribute information through panelists and general audience of the dialogues

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- Quantitatively present **social benefits** and **potential risks** brought by automated driving vehicles and **options** to **effectively utilize** automated driving and their supporting **rationale**, etc.
- Summarize the gap between the **future state** expected by the general public, businesses, etc. and the **current state** of automated driving development
- Based on the gap above, discuss **new awareness, vision**, etc.
- Discuss and summarize how to reflect them **in future R&D activities**

# 3. Citizens' Dialogues
## 3−1. Dialogues organized

| | 1st | 2nd |
|---|---|---|
| Date & Time | Friday, November 3, 2017<br>15:00-17:30 | Monday, February 5, 2018<br>14:00-16:00 |
| Venue | Conference Rooms 605-608, Conference Tower,<br>Tokyo Big Site | Presentation Room, Bldg. S, Institute of Industrial Science, The University of Tokyo |
| Theme | Mobility and urban design | Future society and MaaS |
| Moderators | Mr. Kazuo Shimizu: Promotion Committee member, SIP-adus<br>Ms. Rumiko Iwasada: Promotion Committee member, SIP-adus | Mr. Eitaro Suda: Postgraduate student, science & technology journalist<br>   - Supervisor  Mr. Kazuo Shimizu: Promotion Committee member, SIP-adus<br>   - Overall host  Ms. Rumiko Iwasada: Promotion Committee member, SIP-adus |
| Speakers | Mr. Takayuki Kishii:<br>   Professor, Dept. of Civil Engineering, College of Science and Technology, Nihon University<br>Mr. Seigo Kuzumaki:<br>   Program Director, SIP-adus<br>Mr. Tateo Arimoto :<br>   Sub-Program Director, SIP-adus<br>Mr. Masami Misaki:<br>   Japan Automobile Manufacturers Association, Inc. | Mr. Takashi Oguchi:<br>   Professor, Institute of Industrial Science, The University of Tokyo<br>Mr. Ryosuke Shibasaki:<br>   Professor, Center for Spatial Information Science, The University of Tokyo<br>Mr. Seigo Kuzumaki:<br>Mr. Takeo Arimoto: |
| Citizen panelists | **10 panelists**<br>Ms. Obinata: Media outlet employee, universal design consultant<br>Mr. Kamei: Postgraduate student, biomimetic designer<br>Mr. Suda: Postgraduate student, science & technology journalist<br>Ms. Takahashi: Construction consultant, urban mobility designer<br>Mr. Tanaka: University staff, AI researcher with financial background<br>Mr. Toriumi: Entrepreneur implementing IoT across city<br>Mr. Mibuchi: Railway company employee, city planner knowledgeable about child-rearing situations<br>Mr. Yabe: Property developer employee, developer of complex building<br>Mr. Yamanami: Postgraduate student, urban data analyst<br>Ms. Lebreton: Postgraduate student, criminal law researcher | **8 panelists**<br>Mr. Yamanami: Postgraduate student<br>Mr. Tanada: Consultancy employee<br>Ms. Yasutomi: Postgraduate student<br>Mr. Kinoshita: Adult postgraduate student<br>Mr. Moriya: General electric-appliance manufacturer employee<br>Ms. Takahashi: Construction consultancy employee<br>Mr. Maniwa: Agricultural business entrepreneur, university student<br>Mr. Hayashi: Transportation company employee<br><br>Note: Mr. Ichikawa (medical journalist) was absent due to sudden illness |
| Audience response | Preregistered visitors: 399 / Actual visitors : 311<br>Questionnaires collected: 216    Sli.do posts: 372 | Unpublished |
| Media coverage | **7 times** (45th Tokyo Motor Show official website, carview, Asahi Shimbun Digital, Response, Nikkan  Jidosha Shimbun, Kotsu Mainichi Shimbun, ReVision Auto&Mobility) | **4 times** (Response, Kotsu Mainichi Shimbun, ReVision Auto&Mobility, Car Graphic) |

# 3. Citizens' Dialogue
# 3-2. Characteristics of Citizens' Dialogue FY 2017

- **Cooperation with Tokyo Motor Show**
  - ✓ The 1st Citizens' Dialogue FY 2017 was held on November 3rd in the symposium session of the 45th Tokyo Motor Show (TMS). It was implemented based on cooperation with the Japan Automobile Manufacturers Association, Inc., the host of TMS.
  - ✓ This was the first time to work with an outside large event for SIP-adus Citizens' Dialogue. As a result of public solicitation, the number of audience reached a record high with 311 visitors out of 399 applicants. Besides, thanks to the posting of information on Citizens' Dialogue on TMS's website as well as the distribution media handed out on the day, many citizens were successfully informed about SIP-adus and Citizens' Dialogue.

- **Well-organized dialogue plan**
  - ✓ The first round was a good opportunity to make not only the audience but also many other people understand SIP-adus and Citizens' Dialogue thanks to the tie-up with the large event. However, in order to accommodate many audience in the hall, each panelist had to sit facing the audience, and so tended to talk to the audience rather than engage in dialogue among themselves.
  - ✓ In the second round, emphasis was put on activating dialogue among citizen panelists. Accordingly, fewer people from the public were solicited and the venue was arranged so that all panelists could see each other's face, which resulted in a dialogue with less segmented discussions and a rich exchange of opinions among the panelists.
  - ✓ Two dialogue venues with separate purposes were arranged: the first round was effective mainly for conveying information, and the second round was effective for facilitating much deeper conversation.

- **Introduction of a new method**
  - ✓ For the first round, an online opinion posting tool "Sli.do" was introduced. This tool enables visitors to easily post their opinions and questions via devices like smartphones, which can be checked by the panelists on the stage in real time. Some panelists actually answered questions from the audience during the session on that day.
  - ✓ For the second round, the "Graphic Recording" method, which facilitates recording by visual expressions, was introduced. A professional graphic recorder was set up in the hall to record the dialogue using drawings such as illustrations.

- **Active recruiting of young people who will lead the next generation**
  - ✓ Because SIP-adus is considering 2030 and beyond, dialogues should examine not only today and tomorrow but also issues 10 years or more ahead. In order to talk about the future, the unique perspectives and ideas of young people who will lead the next generation are needed. Therefore, even at the stage of planning this FY, we asked the student members who had participated in the Citizens' Dialogue last year to be involved.
  - ✓ From the viewpoint of social receptivity, which is one of the main aims of the Citizens' Dialogue, recruiting the younger generation is effective. Younger people actively share information using various tools such as SNS, and discuss matters by setting up study meetings. In a different way from last year, we successfully delivered information to the younger generation who are tending to turn away from driving.

- **Setting a theme where automated driving is understood from ecosystems**
  - ✓ SIP-adus develops technology with a focus on automated vehicles and considers the acceptance of society.  On the other hand, with the technology of automated vehicles expanding, its influence is expected to be widespread and the direction of the discussion is not ending with just vehicles but is extending to town planning and people's lifestyles, not to mention the infrastructure of roads and other facilities.
  - ✓ Accordingly the 2017 Citizens' Dialogue considered themes in light of the change in the discussion's focus from vehicles themselves to the things that are brought about by mobility.  In addition, concerning the plan of the dialogue sessions, instead of a "forecast" format where we think from the perspective of current issues and technological developments, we've adopted a "backcast" format where an image is first painted of a future that should exist and then we think about what is meant to be done now in order to realize that.

# 3. Citizens' Dialogue
## 3-3. Outcome of 1st Citizens' Dialogue –Opinions from the Dialogue-

**Theme (1): Current status of mobility and the city –challenges and needs of mobility**

- Poor wheelchair accessibility: Because I need help getting in/out of trains and buses, travel time is difficult to estimate. When driving to go skiing, even long trips of 300 km are not stressful because I drive myself, but I'm worried about mobility when I get old.

- Regularity and stability of communication management: In Paris, it's convenient that buses are available even after the trains stop running, but due to strikes about once every month, sometimes I have to go to school on foot early in the morning. Late-night transportation is not convenient in Japan, but there are no strikes. Both cities have good and bad points.

- Possibility of different needs from those for public communication: While Paris is famous for its street café culture, there are many other foreign cities where people can enjoy open-air stalls. The exciting mood generated by the street stalls of Yangon is a kind of fun not found in Japan.

- Peak rush hour: Because most people take holidays on Saturdays and Sundays, and go to work at 9 a.m. on weekdays, the roads and trains are packed.

- Employment: It is essential for a city. What kinds of jobs will be lost and what kinds of new jobs will be generated must be discussed. It is important to generate jobs in urban development.

- Employment: Employment uncertainty is often one-sidedly emphasized, but AI experts are always needed and there is a shortage of talent in many other areas in Japan. Automated driving will not necessarily reduce employment but will generate new kinds of jobs. Urban development should promote this trend.

**Theme (2): Mobility and cities "Beyond 2030" – Automated driving x City design**

- Need for flexible attitudes: It is necessary to think apart from vehicles so that we can avoid disturbing flexible attitudes. A city is a kind of life form. In the cells of a living system, many things move autonomously; for example, proteins move to read gene codes. Micro-level phenomena of the human body could provide hints for future cities and mobility. In that case, the term "automated driving" could be transformed into "autonomous driving".

- Sensor information: As for Google, a car is a mass of sensors. Because the data obtained is valuable, they can sell the hardware even at a loss.

- Sensor information: In traffic surveys, sensors installed at a height can provide more accurate figures than those by humans. Automated driving may be technically possible if the purpose is only to drive without colliding with humans. However, there will be barriers other than technical barriers for its social implementation.

Flexibility in operating the system is essential. For example, how about setting up sensors on the 210,000 traffic lights in cities? This idea is like the airplane system in which manual operation is possible, whereas autopilot can be used for landing which has a higher risk. How about implementing automated driving (coordination-type) utilizing various sensors in urban areas while implementing "autonomous driving" in suburban areas?

- Sensor information: Individual evaluation of the current conditions of a city is efficient. Sensors and cameras will increase the types of data used for planning and design. It will be necessary to study how to use such data.

- Privacy: The borderline between public and private is blurring in urban spaces. It is important to find how to identify the things that urban people want to do. Though laws and regulations are important, it is important to understand the things that are lost in the process where citizens enjoy security and convenience.

- Securement of pliability: Do not wait until somebody else starts to think, but all people think together and go on producing. It should fit more to the modern age to secure pliability for the planner side to control things.

  Pliable thinking is favorable such as "movable buildings". Vehicles may ultimately be houses. I hope my house comes to pick me up after drinking!

**Theme (3): Future mobility and cities –Essential matters for realization-**

- Example of overseas: Singapore has no regulations on personal mobility. People bring various things into the country, which also comprises an ecosystem for carrying out social experiments. If it is not possible to do the same in Japan, it would be sufficient to set up a special district and/or conduct experiments in other countries. If it's not clear, it's something to try.

- Direction of future discussion: Utilization of big data. Opinions such as that walking and cycling are efficient would be favorable based on the notion that the productivity and happiness of the most active worker in the office are relatively high.

- Direction of future discussion: After automated driving is achieved, everyone will be able to move easily without operating vehicles, so suburban areas might become more valuable. Discussions should examine the meaning of people gathering, and whether people should gather or not.

- Purpose of transportation: People move in order to seek happiness and pleasure, which is important for everyone to enjoy. No one must be left out, so we should not downgrade diversity as a precondition of urban development.

- I completely agree with the comment "no one must be left out", and I believe that this is true for any area. This kind of discussion should be held in the future in various districts other than Tokyo where we have met today.

■ **Necessity of accurate information provision**

- ✓ **SIP-adus's activities are not well-recognized.**

  (Questionnaire results)
  - Q: Do you know about SIP-adus?
  - A: 42% answered "No".
  - Q: Do you know about SIP-adus Citizens' Dialogue?
  - A: 56% answered "Not before this time."

  (Sli.do/From the free descriptions of the questionnaire)
  - I'm surprised to know that 2.3 billion yen has been spent on the SIP project! What was it used for?
  - I want to know the details of SIP.
  - I'm concerned that detailed information on the SIP Automated Driving System Promotion Committee and/or WG are not widely disclosed. Shouldn't the details and results of discussion be posted on the website, etc.?

- ✓ **How to convey information on automated driving to the public**

  (Sli.do/From the free descriptions of the questionnaire)
  - I think the term "automated driving" is vague. It is important to create more occasions to explain it clearly such as not only dialogues but also YouTube, etc.
  - Regarding social receptivity, I hope you can arrange lectures by experts to inform accurately the current status of automated driving.
  - I would like information on the current technical status of automated driving (what can be done, what cannot be done, cost, reliability, etc.) to be shared. Based on such sharing, the meaning of happiness for each user should be discussed.

- ✓ **Necessity of accurate communication about what can be done and what cannot be done to avoid overestimation/ underestimation of automated driving**

  Concerns about mixed traffic:
  (Sli.do/From the free descriptions of the questionnaire)
  - The risk of mixing automated vehicles and conventional vehicles is high.
  - Mixing automated vehicles and non-automated ones could cause chaos.

  It is important to ensure the security and safety of vehicles.
  (Questionnaire results)
  - Q: What kind of automated-driving vehicle do you want to use? (Free description)
  - A: 25% of all comments (25 of 99 comments) referred to "safety".
  - Q: Do you want to use an automated-driving vehicle? (Multiple choice)
  - A: 42% of the total (first place) chose "Yes, if security is proven."
  - Q: What is your ideal mobility? (Multiple choice)
  - A: 24% of the total (second place) chose "Safety". (The first place was "Comfort".)

  (Sli.do/From the free descriptions of the questionnaire)
  - I think sessions should be arranged to study subjects such as how to secure the safety of automated driving, producer responsibility, and utilization method.

- ✓ **Sharing the future vision will help citizens to understand**

  (Sli.do/From the free descriptions of the questionnaire)
  - Some kind of common vision should be presented clearly, then everyone can comment on it.
  - I realize the importance of having a clear vision to change cities and encourage the spread of automated driving.

(Cont. from previous page)

■ **How to address diverse needs**

✓ **Necessity of grasping diverse needs**

(Sli.do/From the free descriptions of the questionnaire)

- Discussions should take local districts and elderly people into account.
- It is good to talk about Tokyo vs. local districts, but, even within Tokyo, many people will not be included in such discussions. How can we include such people?
- Japan has already become the world's oldest super-aged society. Why isn't there an elderly person using a walking stick among the panelists? I think the transportation needs of energetic young and middle aged people (greater need for working in industries, commuting to office/school) differ from the critical needs of elderly people (what about the living activities of people with physical weaknesses?). Diversity should be considered, which may lead to opinions on the spread of automated driving. Enhancing the mobility of vulnerable road users will be good for healthy people too.

✓ **"Pliability and agile development" are necessary for addressing diverse needs. It is necessary to consider separately how to ensure security and safety as a platform and how to address flexibly.**

(Sli.do/From the free descriptions of the questionnaire)

- It is important to accept much trial and error including validation tests in order to address diverse needs.
- Developing a system and/or a city is harder than I thought, so trial and error is inevitable. An environment that allows such trial and error is needed.
- Nobody denies the value of "security and safety", but I'm afraid that if we put too much emphasis on it, other valuable things will not be achieved.

■ **Necessity of considering industries other than the auto industry, and the necessity of total planning**

✓ **Influence on urban development**

(Sli.do/From the free descriptions of the questionnaire)

- The proportional relationship between distance and time may disappear if automated driving allows people to move without having to act. In that case, the meaning of building "compact cities" may weaken.
- I feel that automated-driving technology is important especially for local districts, so I think urban design for underpopulated regions will be important.
- I've heard that, compared to the U.S. and Europe, automated-driving technology is harder to apply to the streets in Japan as there is more information such as advertisements. If that is true, not only automation technology but also the infrastructure and urban structure to implement such technology may have to be considered.

✓ **Changing the way of working**

(Sli.do/From the free descriptions of the questionnaire)

- Regarding commuting, I've heard that people no longer need to gather in one small space to work. If asked whether Tokyo is suitable for innovation, I would answer "not at all". Isn't it worth creating a lifestyle to ease overcrowding?
- As for the commuter rush hour, can't we produce a low-cost solution such as widespread cycle-sharing instead of having excessive expectations for automated driving?

✓ **Problems of logistics and parking-lot management should be solved by automated driving**

(Questionnaire results)

- Q: Do you feel that life styles might change with automated driving?
- A: 14% of all comments (4 of 29 comments) referred to "logistics".
- Q: Do you feel that the city landscape will be changed by automated driving?
- A: 24% (first place) of those who think the landscape will change chose "Parking lots will disappear."

(Sli.do/From the free descriptions of the questionnaire)

- Currently, people mainly use trains for commuting to and from the city center except a limited number of people and those with exceptional circumstances. If people use vehicles for daily commuting, major traffic jams will occur, which will affect essential logistics and transportation for emergencies.

# 3. Citizens' Dialogue
## 3-3. Outcome of 1st Citizens' Dialogue –Sli.do and analysis of questionnaire results- (3/4)

(Cont. from previous page)

- ✓ **Necessity of autonomous distributed service tailored to regionality and attribution**

  (Sli.do/From the free descriptions of the questionnaire)
  - It's not that people can move only virtually, nor that people can move only under control by disciplined movement conditions such as prepared infrastructure and/or rules (= constraint), so conversely, autonomous mobility by automated driving as a base for autonomous-distributional mobility may change and regulate the social system and infrastructure, which can be expressed as "the reverse is realized to help society change into a distribution model".
  - Can't it be said that the infrastructure/physical city that is changing in an autonomous-distributional way on a connected base is the interface between humans and data?

- ■ **Dialogue design**
  - ✓ **Method of collecting opinions from the audience**

    (Sli.do/From the free descriptions of the questionnaire)
    - It was disappointing that the discussion was mainly among the panelists, as I had expected an audience-participatory session (though questions and live voting were arranged).
    - I felt that future sessions should be organized so that everyone can participate. This session should be expanded by setting up a website to collect feedback from citizens, visualizing the efforts (broadcasting and net distribution), social penetration and problem presentation, etc.
    - Is this a dialogue? Of course, the panelists' opinions are important, but I think that spending so much time on them went against the aim of the event. It's not easy to have so many people gather in one place, so the discussion should be deepened by collecting various opinions.
    - If you carry out this session with this purpose and procedure, you should consider live broadcasting via Niconico Live Streaming.
    - It would be better to have a deeper dialogue with fewer panelists. Today was not a dialogue but a random chat.

      ⇒ **Although many opinions were collected by**

using Sli.do, there were also many comments, revealing expectations for more interactive arrangement.

- ✓ **Panelist-nomination method**
  - Are the people who come to TMS citizens? How do you reflect the opinions of those people who are now at Disney Land or enjoying gateball?
  - It would be better to gather more ordinary people, or to increase the number of experts. I felt there were too many panelists and the purpose was vague.
  - Too many panelists. An interactive session with fewer panelists would be more interesting. At least the session should permit interruptions.
  - Persons from the auto industry, general manufacturers and city planning should participate. It is also necessary to get opinions from homemakers, vulnerable road users and the elderly.
  - Actual vulnerable road users (including the elderly and those who can't live without a car in rural areas) should participate, or the discussion will be merely words on paper. The discussion also needs to include automated driving not as a purpose but as a tool to solve social problems, what is the best way to enhance living standards, and what the ideal form is.
  - ⇒ **Regarding background and number of panelists, having too many participants will lead to a general conversation. As for citizen participants, how to include a broad range of the population? A future challenge is to set up a dialogue session different from an explanatory meeting, given that the participants have different levels of understanding.**

(Cont. from previous page)

- ✓ **Other comments about organization of the session (theme setting, session management, etc.)**
  - The discussion was so general that I couldn't see the conclusion.
  - Although every story of the panelists was interesting, it was disappointing that every panelist spoke briefly as they liked in an uncoordinated manner, some of which were interesting but there was no chance to go deeper, only to be swept away.
  - The theme was not clear. Too many panelists → how about sharing roles among them? Even some of the panelists didn't understand the theme. The subjects should have been divided more finely such as "Privacy and security", "Easy communication for the elderly and handicapped", "Decreasing the number of accidents and traffic jams", "Regulation and social experiments", etc. The session would hold the attention of the audience if it was based on their questions.
  - The introductory remarks were lengthy. I thought the session was going to a presentation contest.
  - Is this a dialogue? Of course, the panelists' opinions are important, but I think that spending so much time on them went against the aim of the event. It's not easy to have so many people gather in one place, so the discussion should be deepened by collecting various opinions.
- ✓ ⇒ **The range of subjects was too broad. Though the intention was to obtain diverse opinions, there were comments that the session was difficult to understand.**
- ✓ **The first half of the session was intentionally allocated to conveying information to the audience, but some people commented that it fell short of their expectations as a dialogue.**

- ✓ **According to differences in direction between the theme setting and information transmission, it might be more effective to arrange separate occasions such as a larger one for conveying information and a smaller one for grasping needs.**

# 3. Citizens' Dialogue
## 3-4. Outcome of 2<sup>nd</sup> Citizens' Dialogue –Obtained opinions and awareness-

**General theme: Future society and MaaS**

**Theme (1): Need for MaaS**

■ **Diversification of "purpose of movement"**

✓ There are purposes of movement other than "to go to a target place" and "to move itself" such as "preparation time" for refreshing the mind and/or for preparation work, or as "a place for communication" between other people who happen to ride in the same vehicle.

✓ Future transportation may become complicated due to changes in the concept of commuting and/or increase of sideline businesses, etc. caused by changes in the way of working.

■ **Necessity for communities**

✓ Communication is also essential for people to live a healthy life. Movement is needed for social relationships.

✓ Even groups of persons who can't drive should be able to move together. The demand for various services such as "driving [business]" will be generated by the realization of MaaS and automated driving.

**Theme (2): Idea to realize needs**

■ **Utilization of data**

✓ Interaction of data is essential for the development of services. Though individual companies have valuable data, most of them are reluctant to share it due to the risk of violating privacy even if it is not illegal. To enhance the level of service, companies and individuals need to make efforts with purpose.

■ **Penetration of services**

✓ Added value may be appreciated by providing package round trips tailored to the destination. One example is for a theme park, in which economic rationality can be pursued by staging as early as from the transportation hour. The penetration of such services will increase people's understanding and lead to expansion of the services.

**Theme (3): Toward realization of services**

■ **Necessity of "content-creation" of services**

✓ Because no service has been realized yet, it's difficult for people to imagine an attractive lifestyle. In order to grasp people's need for automated driving, "contentization" is necessary.

■ **Collection and utilization of data**

✓ The concept of "public" may change. Public communication may be re-examined based on "autonomous distribution" tailored to each district.

✓ A platform which enables the collection of data related to movement is needed. Using such a platform, open data will be combined, utilized for public services, and processed in the private sector to provide customized services. Service design that also takes economic rationality into account is necessary.

■ **Importance of "interaction"**

✓ Though existing route navigation systems are convenient in daily life, people can't access necessary information in case of an emergency such as heavy snowfall. Data interaction is needed in order to provide information on the optimal means of transportation in such cases.

✓ Although public services should be formed based on consensus and sharing by citizens, the government should also play an important role by enabling the private sector to take action easily. Moreover, because there are many transportation operators, a top-down approach may be effective in some cases for quick action.

# ３－４．Results of the Second Citizens' Dialogue, Graphic Recording

■ By visualizing the dialogue content in drawings, it can help in the dialogue itself and in deepening participant's understanding.  It's for this reason that this method, called "graphic recording", was introduced.  (The red and yellow circular stickers are opinions that left an impression on participants.)

# ４．Summary（1/2）

■ The information gained through both of the two dialogue sessions has been organized as below.  These indicate courses to take in future research and development efforts.

## 1. Think with an autonomous decentralized model in line with regional characteristics

In the dialogue the needs and issues concerning mobility were approached by the citizen panelists.  A wheelchair-using citizen said that "I can drive by myself now, but as I get older I'm worried whether I'll be able to still move like I can now", and an exchange student from Paris told how "in Japan it's inconvenient to travel around in the middle of the night".  Also while there were unique perspectives such as "I want to move while in the bath" and "ultimately I'd love for my house to move", it was also indicated that "in disaster hit areas there's movement that would be very important to one person although others might think it unreasonable".  From the individual environments and backgrounds of the citizen panelists it became clear once again that diverse needs and issues of mobility are being perceived.

Also in the metropolitan area, particularly in the center of the city, the public transportation net is well developed, and although there are issues, such as with work commuting, in terms of regular transport it's the non-urban areas that tend to have the most deep-rooted issues.  This was reflected in the opinions from the citizen panelists and also the many comments from the survey and Sli.do.

Many people also sounded their expectations that automated driving systems could be able to respond to more diverse needs.

A nationally unified infrastructure environment should probably be somehow secured, also from a public notion.  However instead of simply expanding a standardized service, an autonomous decentralized model that matches different traits and regions, while also securing a fixed platform for the whole of society, will probably be accepted by each regional area as something sustainable.

## 2. Perceiving automated driving systems not as a singular thing but as a common foundation and ecosystem of society

In the first session about cities, and the second one about MaaS, it was understood that in order to create better services a common platform, as well as a variety of players being perceived as an ecosystem, are needed.

Professor Shibasaki from The University of Tokyo, who talked in the second session, explained about the "necessity of a platform that can smoothly and also seamlessly match the users who want to move with the suppliers who offer that mobility that includes trains and buses".  Also from citizens who were affected by the heavy snowfall in January, the problem was raised that information on public transport operation is fragmentary and is not really responding to true mobility needs.  For this reason as a platform it needs to surpass the barriers between businesses and be collaborative in the utilization of data.  Though in order to actually build and run this, there are many issues that need to be solved.

Also in order to realize an automated driving service, an ecosystem needs to be formed, and by governmental and private enterprises fulfilling their individual roles in that ecosystem, sustainable socioeconomics can be preserved.

# ４．Summary （2/2）

**3. Offering a place to convey information**

For the Citizens' dialogue, which has a mission to bring about social acceptability, the conveying of information is an important function.

While information related to automated driving systems is increasing in recent years, if information isn't actively attained out of interest, accurate information is not conveyed to citizens.  This is reflected in how in the first session's survey around half of the participants didn't know about SIP-adus's activities.  There's a need to convey correct information on automated driving systems to those passive to it and avoid overestimations and fallacies.

The Citizens' dialogue was planned as an occasion where experts that include SIP-adus members, intellectuals, and general citizens can talk together in the same place.  We think that properly offering accurate information to general citizens through this occasion is greatly significant in bringing about social acceptability.

There was also the opinion that by actualizing the service it's possible to deepen understanding and absorb the needs of automated driving systems even more, and this will allow for them to be seen as something attractive.


**4. Future possibilities of the Citizens' dialogue**

The first session gathered a wide general audience by collaborating with the Tokyo Motor Show, however we felt the difficulty of accommodating both the sides of conveying information and needs in the one project.  On the other hand we held the second session just with interested parties and, in terms of the dialogue with citizens and the needs that were pointed out, we felt the benefits of how a smaller scale event can make deeper conversations possible.  This year a total of 18 panelists participated (1 was absent on the day due to sickness), and also it was held in Tokyo so it was hard to extract the issues and needs related to non-urban areas.

Through the second session's dialogue this year, the opinion came up that transport should match the separate issues of individual regions.  Those issues are understood best by the citizens living in those particular regions.  By holding Citizens' dialogues in a diverse number of regions, and with the participation of people from a wide variety of social stratums, such as the elderly and people currently engaged with child rearing, perhaps the needs and issues of mobility that could not be understood just in Tokyo will start to come forth.