Report on SIP-adus Workshop 2019

Cross-Ministerial Strategic Innovation Promotion Program,
Council for Science, Technology and Innovation, Cabinet Office, Government of Japan

SIP

Cabinet Office

SIP-adus Workshop 2019

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1. Summary of SIP-adus Workshop 2019

◆ Objectives

- Invite Japanese and foreign policymakers and experts to accelerate discussions about international common issues.
- Improve Japan's initiatives in R&D of automated driving.
- Promote international standardization and cooperation.
- Develop human resources through active participation by young researchers.

◆ Results

- The workshop has been organized regularly as an international conference on automated driving, helping to increase the presence of Japan.
- The workshop has contributed to collecting information and building personal networks about automated driving projects overseas.

- Date: Tuesday, November 12 – Thursday, November 14, 2019
- Venue: Plaza Heisei, Tokyo International Exchange Center, Tokyo Academic Park, 2-2-1 Aomi, Koto-ku, Tokyo 135-8630, Japan
- Participants: 511 individuals from 23 countries (FY2018: 516 individuals from 17 countries)
- Speakers: 51 including 29 from overseas (FY2018: 64 including 36 from overseas)
- Website: http://en.sip-adus.go.jp/evt/workshop2019/

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2. Program

Plenary Session:	The plenary session, which was open to general participants, was held on Tuesday, November 12 and Wednesday, November 13.
Welcome Speech:	The welcome speech was given by the Minister of State for Science and Technology Policy, Cabinet Office.
Breakout Workshop:	On Thursday, November 14, subcommittee meetings were held by experts on respective themes, and the results were presented.
Poster Session:	Panels were displayed by the Cabinet Office, ministries and agencies, and business operators in the Media Hall.
Bilateral Meeting:	Bilateral meetings were held with stakeholders from Germany, France, the U.S., and China.
Test Ride Event:	Opportunities to test-drive automated driving vehicles were given as part of the FOT in the Tokyo waterfront area.

<table>
<tr><th></th><th>Tuesday, November 12</th><th>Wednesday, November 13</th><th>Thursday, November 14</th></tr>
<tr><td rowspan="2">AM</td><td>Opening Session
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<tr><td>Regional Activities
9:30 – 12:20</td><td>Safety Assurance
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<tr><td></td><td colspan="2">Poster Session</td></tr>
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14:05 – 15:45</td><td rowspan="2">Breakout Workshop Summary
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<tr><td>Human Factors
15:45 – 17:20</td><td>Connected Vehicle
16:00 – 17:40</td></tr>
</table>

3.1 Opening Session

- Welcome Speech

TAKEMOTO Naokazu: Minister of State for Science and Technology Policy, Cabinet Office, Japan

- Keynote Speech

SUDO Akira: Executive Director in charge of SIP/PRISM/ImPACT Council for Science, Technology and Innovation(CSTI), Cabinet Office, Japan

Harold W. Martin III: Director, National Coordination Office for Space-Based Positioning, Navigation, and Timing, USA

Ludger Rogge: European Commission, Belguim

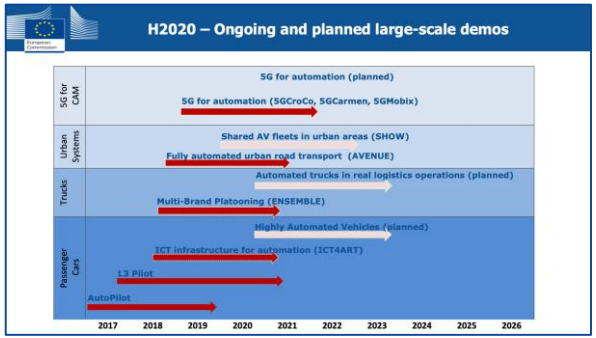
KUZUMAKI Seigo: SIP-adus Program Director, Japan

3.2 Regional Activities

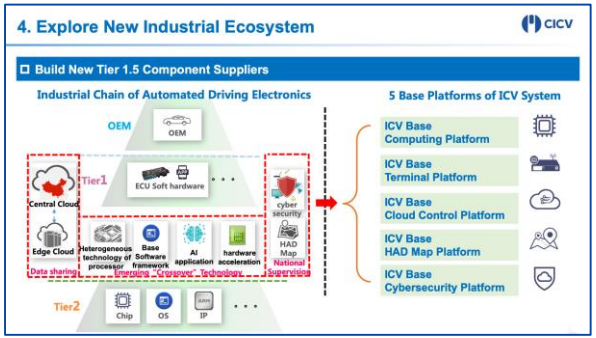
Summary

- Discussions were held on the status of efforts made in Japan, the U.S., and Europe toward the implementation of Level 4 mobility services and issues.
- A realistic approach will be to implement Level 4 in the public transport and logistics fields in a limited driving environment and to develop advanced driver assistance systems for privately owned vehicles.
- In FOTs conducted around the world, the focus has been shifting from demonstrating technologies to solving issues toward implementation.

  Issues toward implementation:
  - Ensure safety
  - Improve the driving environment (physical, digital)
  - Operate mobility and logistics services
  - Increase social acceptance
  - Improve the system
- To achieve the social implementation of Level 4 automated driving vehicles, it is also essential to cope with changes in urban planning, social utility, and industrial structure.



Presentation material prepared by Ludger Rogge: large-scale FOTs



Presentation material prepared by Keqiang Li: changes in the structure of the auto industry

3.2 Regional Activities

- Moderator

Hajime Amano: ITS Japan, Japan

- Keynote Speech

Anne-Marie Idrac: French Government, France
“French National Strategy for Automated Driving”

Ludger Rogge: European Commission, Belguim
“Automated Road Transport - R&I actions”

Reinhold Friedrich: Federal Ministry of Education and Research (BMBF), Germany
“Researching autonomous driving in Germany”

3.2 Regional Activities

Martin Russ: AustriaTech GmbH, Austria
“CCAM in Austria Strategies – Actions – Priorities”

Harri Santamala: Sensible 4, Finland
“ONGOING ACTIVITIES IN FINLAND”

Steven Shladover: University of California, Berkeley, USA
“Road Vehicle Automation in the U.S.”

Keqiang Li: Tsinghua University, China
“The Challenges and Development Strategies for Intelligent & Connected Vehicles in China”

3.2 Regional Activities

Yoshihiro Suda: The University of Tokyo, Japan
“Challenge to establish ecosystem of mobility innovation by automated driving — Academic collaboration and practice”

Hiroshi Kakidachi: National Strategy Office of Information and Communication Technology, Japan
“Progress based on Charter for Improvement of Legal System and Environment for Automated Driving Systems”

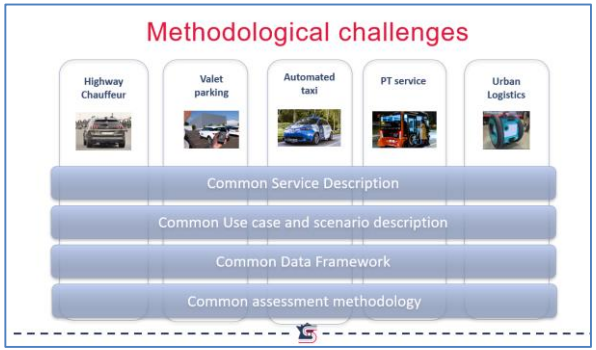
Takahiro Hirasawa: Ministry of Land, Infrastructure, Transport and Tourism, Japan
“Efforts of Road Transport Bureau, MLIT For Automated Driving”

Toshihiro Sugi: National Police Agency, Japan
“NPA Initiatives Regarding Automated Driving”

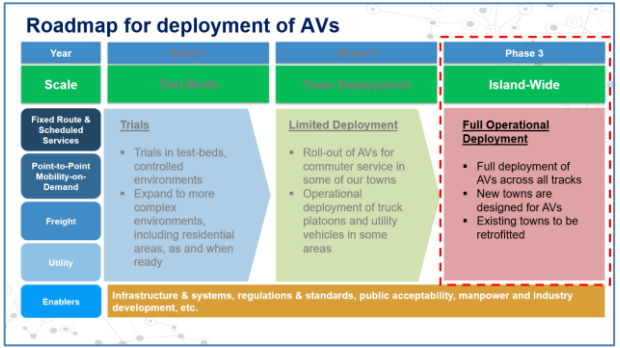
3.3 FOTs and Next Generation Transport

Summary

- The latest status of automated driving FOTs (mainly public transport) in Japan and overseas was confirmed.
- Based on an overall evaluation of automated driving for large buses, etc., USDOT reported that the environment for commercialization was still inadequate given the profitability of business operators and limited cases of use, etc.
- VEDECOM in France reported activities to standardize techniques, etc. related to safety evaluations and acceptance evaluations in FOTs.
- LTA in Singapore presented a grand plan for a smart city, which would eventually be expanded to the entire island.



VEDECOM: Efforts to establish common techniques for FOTs



Efforts in Singapore to promote large-scale demonstration

3.3 FOTs and Next Generation Transport

- Moderator

Masayuki Kawamoto: University of Tsukuba, Japan

- Keynote Speech

Nadège Faul: VEDECOM, France
“SAM PROJECT USE CASES AND SERVICES TESTED”

Elizabeth Machek: United States Department of Transportation, USA
“Bus Transit Automation Activity in the United States: Overview”

Chin Kian Keong: Land Transport Authority, Singapore
“Singapore’s Autonomous Vehicles Program – An Update”

3.3 FOTs and Next Generation Transport

Randell H. Iwasaki: Contra Costa Transportation Authority, USA
“State of the Art in Automated Shuttles”

Kenji Ueki: Ministry of Economy, Trade and Industry, Japan
“METI’s Actions Concerning Automated Driving”

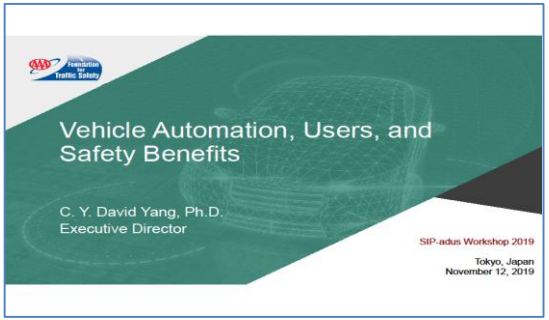
Katsuya Abe: Ministry of Land, Infrastructure, Transport and Tourism, Japan
“FOT in hilly and mountainous areas”

Masato Minakata: TOYOTA MOTOR CORPORATION, Japan
“SIP-adus FOT in Tokyo waterfront area”

3.4 Human Factors

Summary

- Efforts were made to share understanding about important issues related to human factors as well as strategies and FOT methods in Japan, Germany, the U.S., and Canada.
  - Klaus Bengler, Chair of Ergonomics, Technical University of Munich, Germany
    Overview of Japan-Germany cooperation and the research plan in Germany regarding human factors
  - Joanne Harbluk, Human Factors Specialist, Human Factors & Crash Avoidance Research, Transport Canada, Canada
    Method of evaluating human factors for automated driving and the results of the FOT on low-speed automated driving shuttles
  - David Yang, Executive Director, AAA Foundation for Traffic Safety, USA
    Research from the viewpoint of users (e.g., users' expectations, acceptance, and experience; value of safety for users)
  - Satoshi Kitazaki, Director, Automotive Human Factors Research Center, AIST, Japan; SIP-adus Phase 2
    Plan for research on human factors and Japan-Germany cooperation



David Yang, AAA Foundation, USA

Joanne Harbluk, Transport Canada, Canada

3.4 Human Factors

- Moderator

Satoshi Kitazaki: AIST, Japan

- Keynote Speech

Klaus Bengler: Technical University of Munich, Germany
“Japanese-German Research Cooperation on Connected and Automated Driving”

Joanne Harbluk: Transport Canada, Canada
“Human Factors: The Necessity of a User-Centred Approach for Automated Vehicles”

David Yang: AAA Foundation for Traffic Safety, USA
“Vehicle Automation, Users, and Safety Benefits”

3.5 Cybersecurity

Summary

- Cybersecurity experts in the auto industry, IT industry, and academia delivered presentations about efforts to ensure cybersecurity for connected & automated driving vehicles.
- Discussions were held about the goal of meeting the cybersecurity requirements in the post-production phase of vehicles (e.g., installation of IDS) and the importance of cooperation across countries and industries to achieve cybersafe automated driving systems.

Paul Wooderson, HORIBA MIRA

Robert Shein, PwC

3.5 Cybersecurity

- Moderator

Shigeru Uehara: TOYOTA MOTOR CORPORATION, Japan

- Keynote Speech

Chris Clark: Synopsys, USA
“Road Vehicle Management”

Ingo Dassow: Deloitte, Germany
“Awareness training for cybersecurity of vehicles”

Paul Wooderson: HORIBA MIRA, UK
“Cybersecurity Resilience for Connected and Automated Vehicles”

3.5 Cybersecurity

Rob Shein: PwC, USA
“Approaches to Vehicle Security Monitoring"

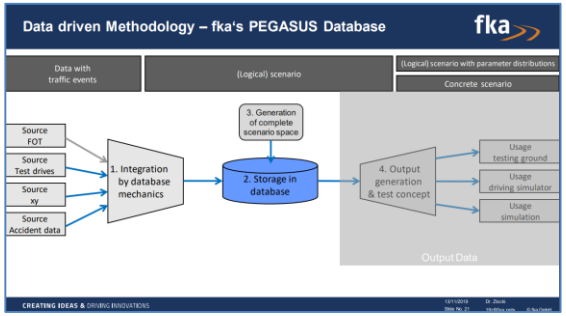
Tsutomu Matsumoto: Yokohama National University, Japan
“Automotive Cyber-Physical Security Issues with respect to Anomaly Detection”

Masashi Yamasaki: Mazda Motor Corporation, Japan
“SIP-adus2019 Cybersecurity Plenary Session”

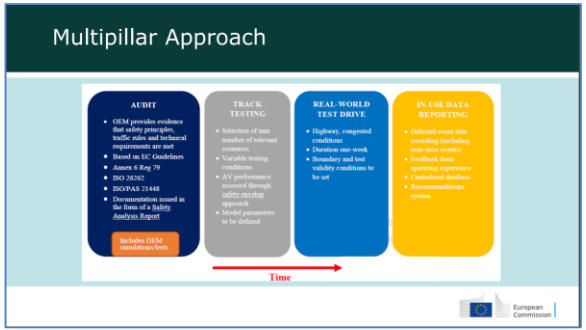
3.6 Safety Assurance

Summary

- Efforts by respective countries for assuring the safety of automated driving technologies were introduced.
- International acceptance is the key. Efforts have been made to formulate international regulations and standards at WP29 and ISO, etc.
- Methods of obtaining traffic flow data and methodologies for deriving scenarios and safety standards based on analysis have been developed in respective countries.
- Efforts have also been made to continuously improve safety after manufacture of vehicles and to improve the mechanism of management.
- Regarding audit, further discussions will be held in UNR.

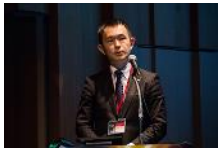


Adrian Zlocki, fka GmbH



Fabrizio Minarini, European Commission

3.6 Safety Assurance



- Moderator

Satoshi Taniguchi: TOYOTA MOTOR CORPORATION, Japan

- Keynote Speech

Emmanuel Arnoux: PFA (French Automotive Platform), France
“FRENCH AUTOMOTIVE INDUSTRY SAFETY ARGUMENTATION FOR AUTOMATED VEHICLE SAE LEVEL OF AUTOMATION 3 AND 4"

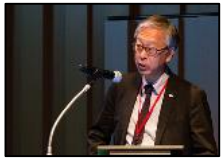
Adrian Zlocki: fka GmbH, Germany
“Data driven Safety Assurance for Automated Driving”

Fabrizio Minarini: European Commission Joint Research Centre, Italy
“Type Approval and Compliance Testing of vehicle safety advanced functionalities From conventional vehicles to AVs”

3.6 Safety Assurance

Michelle Chaka: VTTI, USA
“Development of Safety Testing for Automated Driving Systems(ADS) Equipped Vehicles”

Chen Zhenyu: CATARC, China
“Standards Guarantee the Safety of the Intelligent & Connected Vehicle (Connected & Autonomous Vehicle)”

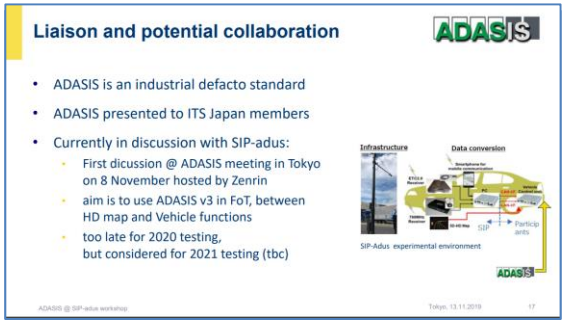


Hideo Inoue: Kanagawa Institute of Technology, Japan
“DIVPTM Driving Intelligence Validation Platform”

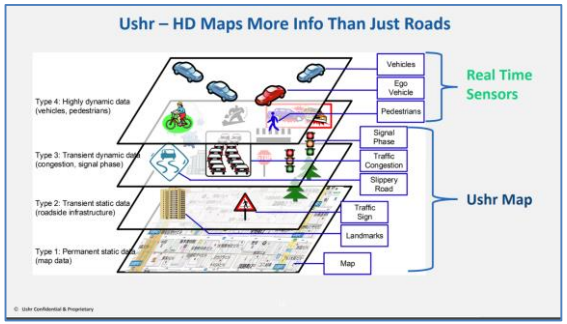
3.7 Dynamic Map

◆ Summary

- Presentations were given to share information about the status in Japan and overseas.
  - Results and status of SIP-adus
  - Summary of efforts made by the Ministry of Land, Infrastructure, Transport and Tourism
  - Status of Dynamic Map Platform Co., Ltd.
  - Summary of ADASIS and SENSORIS
  - Summary of Ushr, Inc.
  - Summary of OADF



Report by ERTICO about cooperation with SIP-adus



Christopher Thibodeau, Ushr

3.7 Dynamic Map

- Moderator

Satoru Nakajo: The Univrsity of Tokyo, Japan

- Keynote Speech

Katsuya Abe: Ministry of Land, Infrastructure, Transport and Tourism, Japan

Hiroyuki Inahata: Dynamic Map Platform Co., Ltd., Japan
“High Definition 3D Map Activities for Data Maintenance Solution”

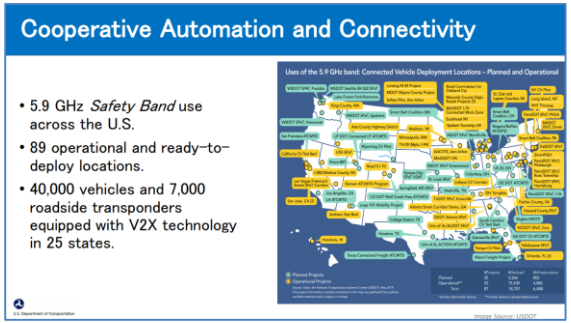
Jean-Charles Pandazis: ERTICO, Belgium
“ADASIS and SENSORIS”

Christopher T. Thibodeau: Ushr, USA
“The Future of Autonomous Driving”

3.8 Connected Vehicle

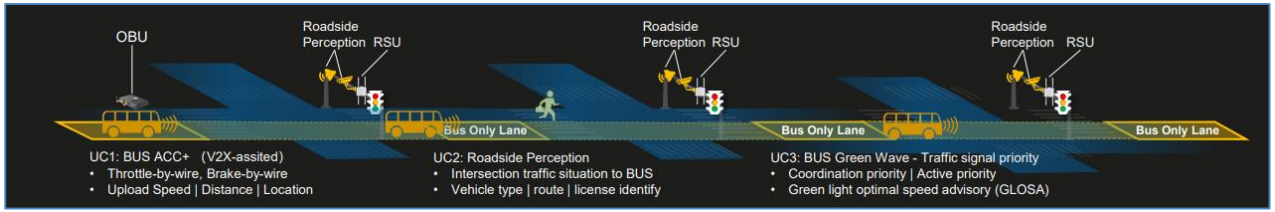
Summary

- USDOT introduced CARMA, a cooperative automated driving project.
- China introduced a large-scale FOT in Wu-xi.



Cooperative Automation Connectivity FOT

Usage case in CARMA



FOT of automated driving buses in Wu-xi, China

3.8 Connected Vehicle

- Moderator

Norifumi Ogawa: Mazda Motor Corporation, Japan

- Keynote Speech

Kevin P. Dopart: United States Department of Transportation, USA
“Cooperative Automation Research in the United States”

Kodo Shu: Huawei Technologies Japan K.K, Japan
“Cellular-V2X overall development in China and Wu-xi C-V2X Project”

4.1 Regional Activities (Breakout Workshop)

◆ Summary

- Experts in various fields from Japan, the U.S., and Europe participated in the breakout workshop. Specifically, the workshop was attended by stakeholders of governments and universities, experts in law and urban planning, think-tanks, and startups, including young participants.
- Efforts made in respective regions and knowledge obtained were shared toward the implementation of Level 4 mobility services.
- Issues and actions to be taken for the next step were discussed toward the social implementation of Level 4 automated driving vehicles.

  Main points:
  - Participants shared understanding that there are still many issues for the general implementation of Level 4.
  - It is necessary to define feasible Operational Design Domains (ODDs) and determine methodologies.
  - It is important to gain trust from consumers, identify the level of their expectations, and ensure management involving consumers.

◆ Future efforts

- Stakeholders will maintain the international cooperation system toward the implementation of Level 4 mobility services.
- At TRA to be held in Helsinki next April, workshops will be held with the participation of Japanese experts. Subsequently, discussions will be held in the U.S. and at SIP-adus Workshop 2020.

4.2 FOTs & Next Generation Transport (Breakout Workshop)

◆ Summary

- Discussions were held about the need and measures to create an environment that ensures mobility even for persons with disabilities prior to the Olympic and Paralympic Games Tokyo 2020 and other large-scale events.
- It is necessary to manage traffic such as roads and public transport to provide reasonable care for persons with disabilities and enhance physical and information accessibility.
- In the discussions about the next-generation buses designed for persons with disabilities, significant future issues were identified in terms of education for drivers and wheelchair tiedown.

◆ Future efforts

- Topics in Japan were presented by following the examples of Europe and the U.S. Next year, participants and topics will be solicited widely from the entire Asian region including South Korea, Taiwan, China, Southeast Asia, and Oceania.
- Surveys will be conducted about unique FOT efforts in South Korea and Taiwan in particular.
- Information will be collected toward the workshop next year to discuss smart cities as well.

4.3 Human Factor (Breakout Workshop)

◆ Summary

- Discussions were held about the need and scope, etc. of standardization in connection with the driver monitoring standardization project in ISO TC22/SC39/WG8.
- Participants showed support for standardization, and expressed some expectations for standardization.
- Some ideas were proposed to keep the driver monitoring and the driver's status in an ideal condition.

◆ Future efforts

- Ongoing efforts will be made to share information about strategies and priority issues in respective regions.
- Information will be shared with the ISO TC22/SC39/WG8 project.

4.4 Cybersecurity (Breakout Workshop)

Summary

- Participants viewed the demonstration of the actual equipment of the Intrusion Detecting System (IDS) test bed.
- The IDS has the necessary functions and equipment for OEMs to ensure cybersecurity performance.
- The IDS specifications should be constantly updated in terms of unknown attack techniques by hackers and system integrity check techniques, etc.
- Given that OTA/SUMS is indispensable for the IDS equipment, security vendors should also participate in the system development from the initial phase of the vehicle development at OEMs.

Future efforts

- Guidelines will be established on the IDS evaluation items, techniques, and judgment standards.
- The basic configuration and formulation of specifications will be proposed for the AI IDPS system. (After the IDS detects intrusion, AI on the cloud works with the system on the vehicle side to request OEMs to take emergency action.)

4.5 Safety Assurance (Breakout Workshop)

Summary

- Japanese and foreign experts (from Germany, France, and other countries) discussed the following three topics:
  - (1) Socially acceptable criteria and safety argumentation
  - (2) Scenario derivation harmonization towards international database
  - (3) Simulation platform harmonization for safety validation

Future efforts

- Further discussions will be held on each topic with respective countries at regular international conferences through the arrangements for collaboration (e.g., SIP Japan-Germany cooperation, ISO, JAMA-Pegasus, JAMA-PFA).
- Regarding (3), relevant organizations in Japan will also be asked to cooperate in studying the verification system and operation toward implementation.

4.6 Dynamic Map (Breakout Workshop)

Summary

- Regarding the SIP-adus FOT, participants showed expectations for matters related to the sharing of dynamic information and signal information and the improvement in the merging lane assistance services, etc.
- The possibility of utilizing ADASIS and SENSORIS was presented, with a view toward international cooperation.

Future efforts

- Opinions will be exchanged with ADASIS and SENSORIS on an ongoing basis through OADF, etc.
- Cooperation with ERTICO will be maintained.

4.7 Connected Vehicle (Breakout Workshop)

Summary

- Activities in Japan, the U.S., and China were introduced to share information about connectivity.
- The U.S. gave detailed explanations of the communication protocol and system in the CARMA project.
- China gave detailed explanations of the FOT in Wu-xi and helped deepen understanding toward implementation.
- Japan explained the status of efforts made by the National Police Agency, Ministry of Internal Affairs and Communications, SIP-adus FOTs, automakers, etc.

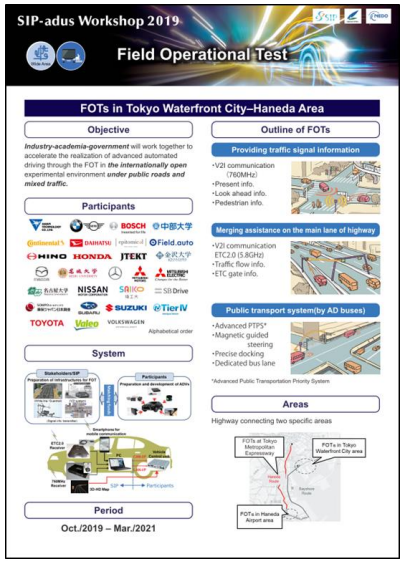
Future efforts

- The information about the project in China was useful. In the next fiscal year, presenters from Europe should be included to hold discussions among members from Japan, the U.S., Europe, and China.

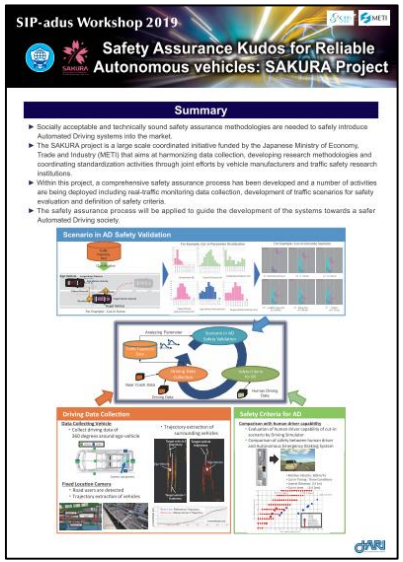
5. SIP-adus Exhibition

- Thirty-three panels were displayed and videos were shown.
- The exhibition was visited by 497 persons in total. The visitors actively exchanged opinions with the personnel of the ministries and agencies who were there to give explanations.
- All the panels are posted on the website.

FOT1: Field Operational Test



SA4: SAKURA Project



Exhibition panel

[Overview]

Overview 01 (Cabinet Secretariat)
Overview 02 (Cabinet Office)
Overview 03 (Cabinet Office)
Overview 04 (Cabinet Office)
Overview 05 (Cabinet Secretariat)
Overview 06 (Ministry of Land, Infrastructure, Transport and Touris / Cabinet Office)
Overview 07 (Ministry of Land, Infrastructure, Transport and Touris / Cabinet Office)
Overview 08 (Ministry of Land, Infrastructure, Transport and Touris / Cabinet Office)
Overview 09 (National Police Agency / Cabinet Office)

[International cooperation]

International cooperation 01 (Cabinet Office)

[Regional Activities]

Regional Activities 01 (Ministry of Economy, Trade and Industry)

[FOTs and Next Generation Transport]

FOTs and Next Generation Transport 01 (Cabinet Office / NEDO)
FOTs and Next Generation Transport 02 (National Police Agency / Cabinet Office)
FOTs and Next Generation Transport 03 (Ministry of Land, Infrastructure, Transport and Touris / Cabinet Office)
FOTs and Next Generation Transport 04 (Ministry of Economy, Trade and Industry / Cabinet Office / NEDO)
FOTs and Next Generation Transport 05 (Ministry of Economy, Trade and Industry)
FOTs and Next Generation Transport 06 (Ministry of Economy, Trade and Industry)

[Human Factors]

Human Factors 01 (Cabinet Office / NEDO)

[Cybersecurity]

Cybersecurity 01 (Cabinet Office / NEDO)
Cybersecurity 02 (Cabinet Office / NEDO)

[Safety Assurance]

Safety Assurance 01 (Cabinet Office / NEDO)
Safety Assurance 02 (Cabinet Office / NEDO)
Safety Assurance 03 (Cabinet Office / NEDO)
Safety Assurance 04 (Ministry of Economy, Trade and Industry)

[Dynamic Map]

Dynamic Map 01 (Cabinet Office / NEDO)
Dynamic Map 02 (Cabinet Office / NEDO)
Dynamic Map 03 (Ministry of Land, Infrastructure, Transport and Touris / Cabinet Office / NEDO)

[Impact Assessment]

Impact Assessment 01 (NEDO)
Impact Assessment 02 (National Police Agency / Cabinet Office)
Impact Assessment 03 (Cabinet Office / NEDO)

[Connected Vehicle]

Connected Vehicle 01 (National Police Agency / Cabinet Office)
Connected Vehicle 02 (National Institute for Land and Infrastructure Management / Cabinet Office)
Connected Vehicle 03 (Ministry of Internal Affairs and Communications / Cabinet Office)


SIP-adus Workshop 2020
Date: November 10-12, 2020
Venue: Tokyo International Exchange Center


SIP-adus
Workshop
2019
Thank you