SIP-adus Update

June 19, 2017
Takahiko Uchimura
SIP-adus International Cooperation WG
Contents

- SIP, SIP-adus
- Development Structure
- Government Structure
- Technologies for Automated driving systems
- Development Focus Areas
- FOT from FY2017
- International Cooperation
- SIP-adus Workshop
Cross-Ministerial Strategic Innovation Promotion Program

SIP Structure

- CSTI: Council for Science, Technology and Innovation
- Governing Board
- Program Director
- Promoting committee:
  - Program Director (Chair)
  - Related Ministries
  - Management agencies
  - Experts from academia and public sector
- Management Agency: Funding Agencies
- Research Organizations:
  - Universities
  - Private companies
  - Research institutes, etc.

11 Programs
SIP- adus

■ SIP
➢ Cross-Ministerial Strategic Innovation Promotion Program

■ SIP-adus: One of eleven SIP projects
➢ Innovation of Automated Driving for Universal Services

“SIP- adus”
- Mobility Bringing Everyone a Smile -

http://en.sip-adus.jp/
Development Structure

- Three WGs under SIP-adus

Promoting Committee

- Large Scale FOT TF

- System Implementation WG
  - Technology development

- Next Generation Urban Transportation WG
  - Development and Deployment of NGUT

- International Cooperation WG
  - Communication and Cooperation
  - Social acceptance

- Dynamic Map Structuring TF
  - HMI TF
Government Structure

Governments structures for SIP-adus

- Cabinet Secretariat
  - IT Strategic Headquarters

- National Police Agency (NPA)
  - Road Traffic Safety

- Ministry of Internal Affairs and Communications (MIC)
  - Communication Technology

- Ministry of Economy, Trade and Industry (METI)
  - Economy and Industry

- Cabinet Office
  - Council for Science, Technology and Innovation

- Ministry of Land, Infrastructure, Transportation and Tourism (MLIT)
  - Road Bureau
    - Road and Infrastructure
    - Road Transport Bureau
    - Standards
Technologies for Automated driving systems

- SIP-ADUS focuses on the R&D in Cooperative area with Industry, Academia and Government

**Vehicle**
- Recognition
- Judgment
- Operation

**HMI**
- HMI: Human Machine Interface
- Cooperation with Human

**Dynamic Map**
- A highly self-position estimation
- Neighboring environmental cognition

**Basic Tech.**
- Security, Simulation, Database, etc.

**Sensor, Map, ITS info.**
**Artificial intelligence**
**Actuator**

**Onboard sensor**
- Camera
- Radar

**GSP**

**ITS Anticipative Information**

These are important for Automated Driving System

⇒ Main Area of SIP

In red: Area of Cooperation
Activities

- Development to FOT

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td>[I]</td>
<td>Technology Development for Automated Driving System</td>
<td></td>
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<tr>
<td>[II]</td>
<td>Basic Technology Development for Automated Driving System</td>
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<tr>
<td>[IV]</td>
<td>Deployment for Next Generation Transport</td>
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<tr>
<td>[III]</td>
<td>International Cooperation</td>
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</tbody>
</table>

Output

- Business model
- Test Procedure
- Standard
- Guideline
- Criteria
- etc.
- Standard
- Acceptance

- Integrated into five major Topics
- Large Scale FOT for Implementation

1. Dynamic Map
2. Information Security
3. HMI
4. Pedestrian Accident reduction
5. Next Generation Transport
Technology Developments

- 20 to 30 projects per year

Promoting Committee

System Implementation WG

Next Generation Urban Transportation WG

International Cooperation WG

Budget \$100/\$
- FY 2014 : $25 M
- FY 2015 : $23 M
- FY 2016 : $26 M
- FY 2017 : $33 M

SIP-adas's Project (FY2015)

<table>
<thead>
<tr>
<th>Dynamic Map</th>
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<tbody>
<tr>
<td>Activity Plan of Dynamic Map Study</td>
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<tr>
<td>Research for the advancement of driving support by utilizing traffic regulation information</td>
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<tr>
<td>Development of Vehicle-to-pedestrian Communication Technology</td>
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</table>

<table>
<thead>
<tr>
<th>Connected Vehicle</th>
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<tbody>
<tr>
<td>Research for advanced Traffic Signal Prediction Systems</td>
</tr>
<tr>
<td>Research for the advancement of DSSS, Driving Safety Support Systems, which utilize ITS radio communication</td>
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<tr>
<td>Creation of an internationally open research and development environment</td>
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<tr>
<td>Development of V2V,V2I Communication Technology Toward the Automated Driving Systems</td>
</tr>
<tr>
<td>Development of Infrastructure Radar System Technology</td>
</tr>
<tr>
<td>Development and FOT of Traffic Signal Prediction Systems</td>
</tr>
<tr>
<td>Next-Generation Intelligent Transport Systems (ITS) utilizing Information and Communication Technology (ICT)</td>
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</table>

<table>
<thead>
<tr>
<th>Human Factors</th>
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</thead>
<tbody>
<tr>
<td>Basic Research on Requirements for Safety and Reliability of Automated Driving System</td>
</tr>
<tr>
<td>Research on Technical Requirements for Human Machine Interface (HMI) Related to Safety of Automated Driving System</td>
</tr>
</tbody>
</table>

Research project for Promoting International Cooperation on Automated and Connected Driving Systems.

Development and verification of construction technology of driving video recognition database.

Development and Verification of Lane Marker Detection System in All-weather Condition.

Survey on basic evaluation for effective utilization of satellite positioning technology.
Field Operational Test

- **Objective**
  - Provides an open forum for discussions and promote international standardization and R & D with 5 priority developments and social acceptability events

- **Expected Participants**
  - OEMs/Suppliers
  - Universities/Research organizations
  - Ministries, government officers
  - Foreign OEMs/Suppliers
  - Journalists

- **Duration**
  - 2017/9 – 2019/3

- **Test Sites**
  - Expressway
  - Arterial Roads
  - Test Facility

(*JARI: Japan Automotive Research Institute*).
Field Operational Test Plan understudy

- **Dynamic Map**
  - Validate 3D high-resolution digital map data
  - Validate data collection and distribution method
  - Verify the utility of semi dynamic information

- **The map data is provided by SIP-adus**
Field Operational Test Plan understudy

- **Human Factors**
  - Collect and analyze the driver state data
  - Define driving readiness status
  - Verify HMI and devices

- **Cyber Security**
  - Validate the evaluation method
  - Inspect defense functions of ADV

**Layer 1: Communication of Out Car**
**Layer 2: E/E Architecture**
**Layer 3: In Car Bus Protocol**
**Layer 4: ECU Software Structure**
Field Operational Test Plan under study

- **Pedestrian Accident Reduction**
  - Verification of suppression effect of unnecessary warning by high accuracy positioning technology
  - Verification of pedestrian positioning information through V2P
  - Verification of 79GHz radar detection accuracy in actual traffic environment

![Diagram of 79GHz radar, Wireless communication device, Control Unit, and V2P with mobile device]
International Cooperation activities

Experts assigned in Focused areas

➢ Actively Participate Technical discussions

1. Dynamic Map
2. Connected Vehicle
3. Human Factors
4. Impact Assessment
5. Next Generation Transport
6. Security
# SIP-adus Workshop 2016 Program

- **Plenary Sessions and Breakout Workshops**

<table>
<thead>
<tr>
<th></th>
<th>Tuesday November 15</th>
<th>Wednesday November 16</th>
<th>Thursday November 17 (Breakout Workshop)</th>
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<tr>
<td><strong>AM</strong></td>
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<tr>
<td>9:00 ~ 10:15</td>
<td>Opening &amp; Keynote Session</td>
<td>9:00 ~ 10:30 SIP-adus Report Session</td>
<td>9:00 ~ 12:00 Breakout Workshop-1</td>
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<td>10:30 ~ 12:30</td>
<td>Special Session</td>
<td>10:45 ~ 12:30 Impact Assessment</td>
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<td>Regional Activities and FOTs</td>
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<tr>
<td><strong>PM</strong></td>
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<tr>
<td>13:30 ~ 15:00</td>
<td>Dynamic Map</td>
<td>13:30 ~ 15:15 Next Generation Transport</td>
<td>13:00 ~ 15:00 Breakout Workshop-2</td>
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<tr>
<td>15:20 ~ 16:35</td>
<td>Connected Vehicles</td>
<td>15:30 ~ 17:30 Human Factors</td>
<td>15:30 ~ 17:00 Breakout Workshop Summary</td>
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<tr>
<td>16:50 ~ 18:05</td>
<td>Security</td>
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<td>17:00 ~ 17:30 Closing Session</td>
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<td></td>
<td>Preparatory meeting for Breakout Workshop</td>
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SIP-adus Workshop 2016

Recognized as a specialized international conference on Connected and Automated Driving in Japan
➢ Sharing latest information
➢ Intense discussion among experts
➢ building friendship among experts

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

Date : November 15-17, 2016
Venue : Tokyo International Exchange Center
http://www.jasso.go.jp/tiec/index_e.html

Attendees : 425 from 17 countries
Speakers : 61 includes 34 speakers and moderators from overseas

Snapshot with speakers from overseas after Minister Tsuruho made a welcome speech
SIP-adus Home Page

http://en.sip-adus.jp/

SIP-adus Workshop 2016

Event outline
SIP-adus Workshop 2017

Date: November 14-16, 2017
Venue: Tokyo International Exchange Center
        http://www.jasso.go.jp/tiec/index_e.html
        Tokyo Academic Park
        2-2-1 Aomi, Koto-ku, Tokyo 135-8630 Japan

Special Event: AV Test Ride

Snapshots from SIP-adus Workshop 2015 Test Ride
## SIP-adus Workshop 2017 Draft Program

<table>
<thead>
<tr>
<th>Day</th>
<th>11/14</th>
<th>11/15</th>
<th>11/16</th>
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<tbody>
<tr>
<td>AM</td>
<td>Opening Session</td>
<td>SIP-adus Report Session</td>
<td>9:00～12:00 Breakout Workshop (BW)</td>
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<td>Regional Activities and FOTs</td>
<td>Impact Assessment</td>
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<tr>
<td>Lunch</td>
<td>Poster Session</td>
<td>Lunch</td>
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<td>PM</td>
<td>Dynamic Map</td>
<td>Next Generation Transport</td>
<td>13:00～15:00 Breakout Workshop (BW)</td>
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<td>Connected Vehicles</td>
<td>Human Factors</td>
<td>15:30～17:00 BW Presentation</td>
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<td>Security</td>
<td>18:00～20:00 Guest Reception</td>
<td>17:00～17:30 Closing Session</td>
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<td>18:00～20:00 Guest Reception</td>
<td>17:30～19:30 BW Reception</td>
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**Additional Activities:**
- **Regional Activities and FOTs**
- **Poster Session**
- **Lunch**
- **Guest Reception**
Breakout Workshop

- Small Expert Group discussions on selected Topics

- **New Topic from 2017**
  - Field Operational Testing (FOT)

- **Focused six Topics**
  - Dynamic Map
  - Connected Vehicles
  - Security
  - Impact Assessment
  - Next Generation Transport
  - Human Factors

- **Breakout Workshop Presentation**
  - Share the results from each Breakout Workshop

Leaders report the result of discussion for Breakout Workshop participants

Snapshots from SIP-adus Workshop 2016
SIP-adus Workshop 2017
November 14-16

http://en.sip-adus.jp/

See you in Tokyo

END