



SIP-adus Workshop 2017

on Connected and Automated Driving Systems

Summary of Workshop

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SIP- adus



SIP-adus Workshop

on Connected and Automated Driving Systems

2017

Participants

International	75
Domestic	402
Total	477

Speakers / Moderators

International	35
Domestic	24
Total	59

Breakout Workshop

International	43
Domestic	105
Total	148

◆ Regional Activities and FOTs

- Scope has been extended:
 - vehicles and services (private cars, public transportation and freight)
 - areas (urban or rural, climate and cross border)
- Objectives are also diversified:
 - validation of technologies
 - collection of 'unexpected' instances
 - benefit / risk analysis and social acceptance evaluation
- Now we understand that deployment is dependent on both vehicle automation levels and level of driving environment.
- More and more emphasis is put on non-technical challenges to benefit from Connected and Automated Vehicle technologies.

◆ Dynamic Map

- Integration of static high-definition map database, vehicle sensor data and dynamic data obtained from other vehicles and infrastructure is the next step forward.
- Sustainable ecosystem to create and maintain Dynamic Map database among map suppliers, auto industries and telecommunication operators is to be established.
- Structure of large scale map database and vehicle data collection is proposed:
 - layers of map supplier backend and OEM specific backend
 - layers of service cloud and vehicle cloud
- We are reaching out to diverse potential users of both public sectors and private sectors.

◆ Connected Vehicles

- Connected Vehicle applications are in the process of evolution:
 - from information provision for human drivers
 - to safety critical applications for the control systems to act on it.
- Beyond Vehicle sensor range, a new set of requirements should be defined for real-time safety and further extended preview.
- Integrated communication technologies (DSRC and cellular) and innovative network structure (edge, vehicle cloud and service cloud) are expected.
- We are building common platform for localized services and scalability.
- A variety of field operational tests to verify real world use cases are conducted in all regions.
- Often cited example to demonstrate value of connected vehicles is that Cooperative-ACC performs much better than Autonomous-ACC.

◆ Cyber Security

- We are making efforts are to analyze vulnerability, develop protection and validate it.
 - They are effective to systematically protect from known threats.
 - However, there are no perfect protection technologies.
 - Attackers may be smarter.
- Auto ISAC is established to share information on cyber attacks and best practices
 - to minimize propagation of damages
 - to keep up with the maximum attainable level of protection.
- Standardization efforts are also being made at
 - SAE, ISO, IEC and NIST.

◆ Impact Assessment

- To assess safety benefit, human driving behavior is modeled.
 - observation, microscopic analysis and calibration based on field tests
- Modeling accident cases and simulating effects of CAVs is important.
 - Plausible evidence is obtained by quantitative analysis.
 - Holistic approach needs to be integrated to get entire picture.
- Euro-FOT and L3 Pilot are rich sources of field data.
 - Data from other field tests need to be shared.
- Penetration of CAVs along the timeline
 - affects traffic environment.
 - affects human behavior (both drivers and other road users).

◆ Next Generation Transport

- Connected and automated vehicles are component of integrated mobility services with existing or new public transportation.
- Environment dependent and user-centric solutions are anticipated.
 - Urban area: to support efficient functions of social activities
 - Rural area: to support daily life
 - Implementation varies depending on level of existing mobility services.
- Low Speed Automated Driving systems are popular target.
 - Field operational tests are actively conducted.
 - User acceptance and business feasibility are being investigated.
 - Framework for safety validation and certification needs to be established.
- High expectation of freight systems is seen.

◆ Human Factors

- There are three aspects of the research topics:
 - Basic knowledge of technologies for the drivers
 - Transition of driving tasks between human driver and control system
 - Communication between control system and other road users
- Observation of human behavior should be taken into account to design Connected and Automated Vehicles. Efforts are made in:
 - Naturalistic Driving Study
 - Adaptive
- We have a lot more research questions:
 - Drivers in-the-loop, out-of-the-loop or on-the-loop

5th SIP-adus Workshop

Date: **November 13 – 15, 2018**

Venue: **Tokyo International Exchange Center**