

Workshop on Connected and Automated Driving Systems

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

Date: November 17-18, 2014

Venue: To be decided in Tokyo, Japan

Language: English

Description:

Built-in driver assistance features will be integrated with connected vehicle technologies for safety and efficiency. Evolutionary process will continue toward higher level of automated driving. Experts from Europe, Americas, and Asia-Pacific will share progress of related projects and discuss technical and non-technical challenges for deployment. Scope of the discussion will include technologies, human factors, legal issues, and integrated applications of automated driving technologies, such as reduction of traffic injuries and next generation transportation services.

Japanese government initiated a research project on automated driving systems under Cross-Ministerial Strategic Innovation Promotion Program (SIP). Details of research plan will be unveiled during the workshop. Preliminary results of the project will also be demonstrated.

Program:

Sessions will be organized under the following assertions, inviting international experts from academia, government agencies and industries. Detailed plan and intermediate results of the SIP Automated Driving Project will be presented from each facet of the sessions.

Dynamic and integrated database of road network and surroundings

Digital map database with layered structure built on graph network representation of road will be expanded to include much detailed description of road structure and surrounding environment. The database will be dynamically linked to real-time data from integrated sensing system on board the vehicle and semi-real-time data from VtoX communications. Such a database will only be developed and maintained under collaboration across the industry sectors and public agencies.

Perception of driving environment through communication

As the level of automation becomes higher, larger range of observation of driving environment becomes necessary. Deployment of connected vehicle technology will give advantages to automated driving systems. Proximity will be sensed by integrated sensors onboard the vehicle. Physically shielded vehicles will notify each other by VtoV communication. Beyond the horizon of sensing systems, VtoI communication will provide the automated vehicles with additional information.

Sharing roles between driver and vehicle system

Level of automation will shift from one level to another depending on the driving environment and driver's condition along the trip. It is important to design automated vehicle system to effectively communicate with the driver so that situation awareness of the driver is maintained and transient between the levels of automation is properly performed.

Integrated approach to reduce traffic fatality and injury

Enhanced safety is the highest priority objective for vehicle automation. However, automated vehicle technology is only a part of measures to avoid traffic accidents. Field research of vehicle crash, modeling vehicle behavior, and evaluation of variety of measures are foundation to take integrated and most effective approach with new technologies.

Next generation transportation systems with automated driving technologies

In central district of large cities with high-density travel demand, pedestrian-centered multimodal transportation network is anticipated for efficient and sustainable mobility. Innovative transit system with automated driving technologies and on-demand operation will reduce travel time with comfort for passengers and enhance efficiency for operators. On the other hand, small sized vehicles with enhanced driver assistance for personal use are also anticipated to provide aged or handicapped users with the level of mobility, which encourages those people to actively engage in social activities.

At Tokyo Olympic and Paralympic Games in 2020, these systems will be deployed and put into real operation.

Ancillary events will also be organized on related issues by government agencies, academic societies, standardization bodies and industrial organizations.