Automated Driving System
up to date information from Japan

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Chairman, ITS Japan

April 23, 2014
Great success
Thank you
A lot of participants
A Typhoon joined us

【Countries】 69
【Registrants】 3,935
【Participants】 21,029
【Press】 494
Automated Vehicle Development

Histories in three regions

Automated Vehicle

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<tbody>
<tr>
<td>Europe</td>
<td>Chauffeur / Promote Chauffeur II</td>
<td>KONVOI</td>
<td>HAVE-it</td>
<td>CYMOBIL</td>
<td>SARTRE</td>
<td>ULTRA</td>
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</tbody>
</table>
Automated Vehicle Showcase

- Participated Automakers: 11
- Attendees: 2700

Main site Aomi parking near Tokyo Big site

Parking area

CACC/ACC demonstration

Crash Avoidance demonstration

Public road (2 Japanese OEMs, BMW, Volvo)

Parking area (8 Japanese OEM and BMW)
Automated Vehicle Showcase

- Advanced driver assistant system showcases on public roads and Tokyo Metropolitan Expressway

VOLVO

GM

ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY @ parking

Toyota

Honda

BMW
Automated Vehicle Showcase

- Crash avoidance system demonstration

- BMW
- Honda
- Toyota
- Nissan
- Mazda
- Subaru
- Daihatsu
- Mitsubishi
- Suzuki
Smartway with ACC/CACC (I2V, V2V)

- Lane Utilization Optimization Service

- Vehicle-to-Vehicle gap Optimization Service using ACC

- Vehicle-to-Vehicle gap Optimization Service using CACC

ACC : Adaptive Cruise Control
CACC : Cooperative Adaptive Cruise Control
Smartway with ACC/CACC (I2V, V2V)
Smartway with ACC/CACC (I2V, V2V)
ITS World Congress Tokyo 2013

Panel discussion: Automated and Connected vehicles

Mr. Kunio Nakaguro
NISSAN

Mr. Moritaka Yoshida
TOYOTA

Mr. Jan Hellåker
Volvo Group

Mr. Klaus Kompass
BMW Group

Mr. John Capp
General Motors

Mr. Peter Hardigan
Ford Asia Pacific

Dr. Peter Sweatman
University of Michigan

Ms. Kaori Iida
NHK
Major discussions

- Automated and Connected vehicles:
  - will significantly contribute to safety, efficiency and driver’s load reduction
  - will be integrated into available build-in safety features and prove user values
  - will be implemented with maintaining driver’s responsibility under certain conditions such as highways or parking lot by 2020
  - will be realized by gradual penetration and enhanced by user appreciations

- We still have a lot of issues to resolve
Increasing social interest

- 3 major tied events
  - CEATEC JAPAN
  - ITS WORLD CONGRESS TOKYO
  - TOKYO MOTOR SHOW

CEATEC : Combined Exhibition of Advanced Technologies

- Prime Minister test ride around the House of Parliament
Traffic fatalities in Japan

- Fatality Reduction rate during driving has been saturated
- Pedestrian fatalities have been flat

⇒ Pedestrian accidents are the largest

Number of fatalities
Traffic fatalities in Japan

- Fatalities in age 65 and over in pedestrians and cars are standing out
## Cross-Ministerial Strategic Innovation Promotion Program (SIP)

### 10 projects for FY2014

<table>
<thead>
<tr>
<th>Priority policy issues</th>
<th>Prospective subject</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Energy</strong></td>
<td>Innovative combustion technology</td>
<td>Improving fuel efficiency of automobile engines</td>
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<td></td>
<td>Next-generation power electronics</td>
<td>Integrating new semiconductor materials into highly efficient power electronics system</td>
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<td></td>
<td>Innovative structural materials</td>
<td>Developing ultra-strong and -light materials such as magnesium-, titanium-alloys and carbon fibers</td>
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<td>Energy carrier</td>
<td>Promoting R&amp;D to contribute to the efficient and cost-effective technologies for utilizing hydrogen</td>
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<td>Next-generation ocean resources development technologies</td>
<td>Establishing technologies for efficiently exploring submarine hydrothermal polymetallic ore</td>
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<tr>
<td><strong>Next-generation infrastructures</strong></td>
<td>Automated Driving System</td>
<td>Developing new transportation system including technologies for avoidance accidents and alleviating congestion</td>
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<td>Technologies for maintenance/upgrading/management of infrastructures</td>
<td>Developing low-cost operation &amp; maintenance system and long life materials for infrastructures</td>
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<td>Reinforcement of resilient function for preventing and mitigating disasters</td>
<td>Developing technologies for observation, forecast and prediction of natural disasters</td>
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<tr>
<td><strong>Local resources</strong></td>
<td>Technologies for creating next-generation agriculture, forestry and fisheries</td>
<td>Realizing evolutionary high-yield and high-profit models by utilization of advanced IT etc.</td>
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<td>Innovative design/manufacturing technologies</td>
<td>Establishing new styles of innovations arising from regions using new technologies such as Additive Manufacturing</td>
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SIP Automated Driving System

Social benefits
- Drastic reduction of traffic fatality
- Enhanced mobility for the aged
- Reduction of traffic congestion
- Reduction of driving workload
- Field validation
- Social acceptance

Technology innovation
- Highly advanced driving assistance
- Innovative transportation systems with information and communication technologies
- Integrated approach (hardware, software, human factors)
- Cross disciplinary collaboration
- Regulatory reform
- Public-private collaboration

Automated Driving System (built-in and connected)

Business incubation
- Auto and electronic industries
- Creation of new industrial sectors
- International harmonization

SIP Automated Driving System
Research themes

[Ⅰ] Development and verification of automated driving

Road Transport system

Driver

Recognition | Judgment | Operation

Area of cooperation

⑤ System Security

Area of cooperation

Traffic environment

Vehicle

Recognition

① Global Dynamic Map
② Predicting information by ITS
③ Sensing capability enhancement

Area of Competition

[Ⅱ] Preparation of basic technologies to reduce traffic fatalities and

① Traffic fatality reduction effect estimation method & national shared data base
② Micro and Micro data analysis and simulation technology
③ Local traffic CO₂ emission visualization technology

[Ⅲ] International cooperation

① Shared research facility
② Social acceptance
③ Package export organization

[Ⅳ] Deployment for next generation urban transport

① Local traffic management enhancement
② Next generation transport system
International Cooperation

2015 BORDEAUX

2013 TOKYO

2014 DETROIT
See you in Detroit