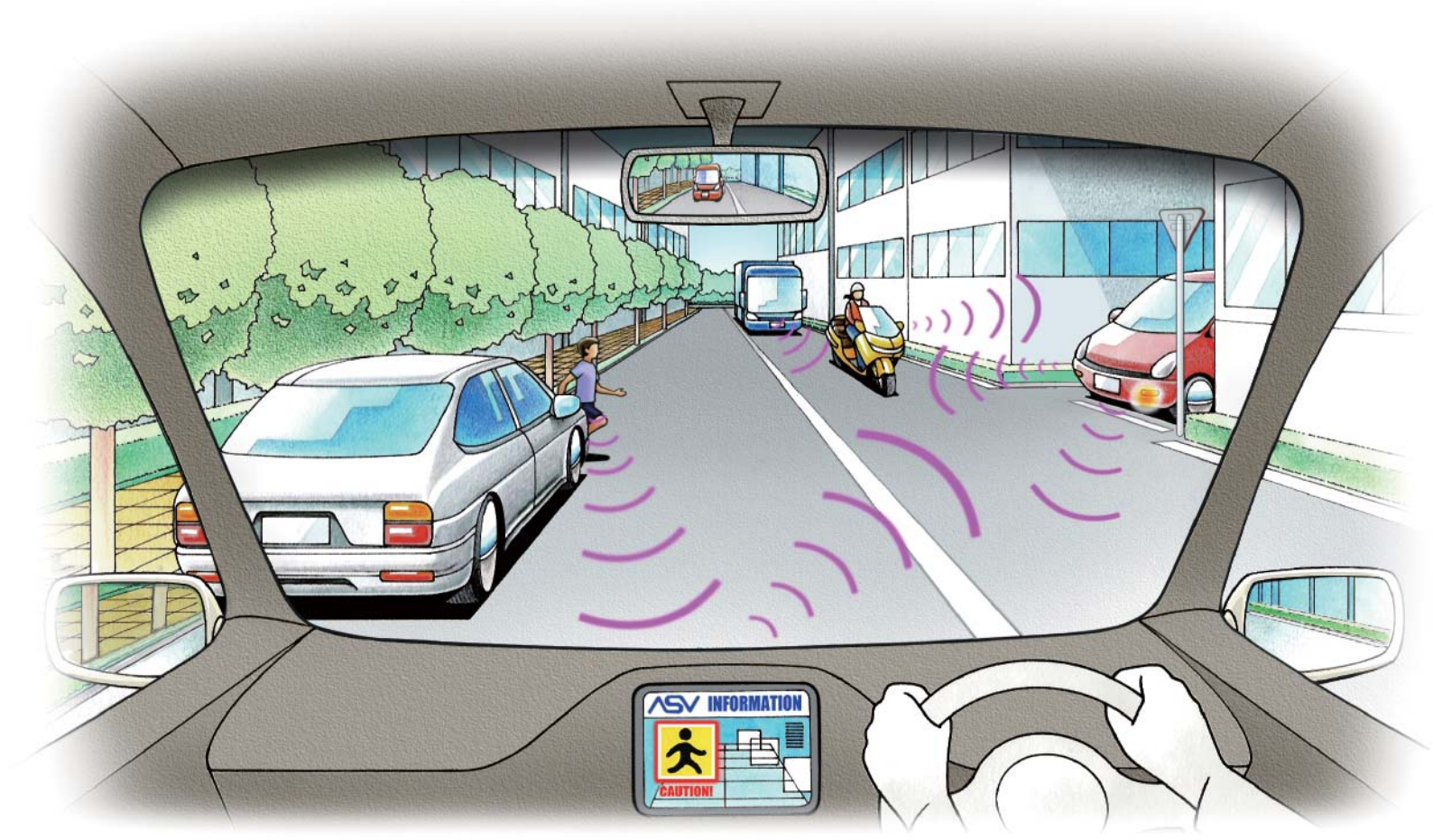
ADVANCED SAFETY VEHICLE

Realization of Secure and Safe Traffic Society by Harmonizing Humans and Vehicles



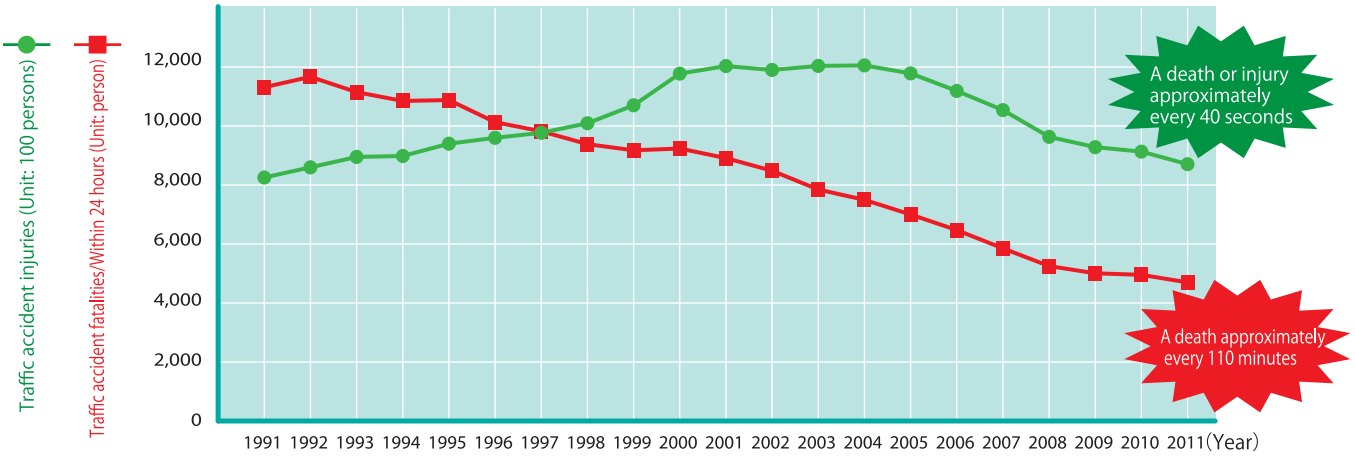
Phase 5 (FY 2011–2015)

Study Group for the Promotion of ASV
Ministry of Land, Infrastructure, Transport and Tourism

Advanced Safety Vehicles (ASV) are vehicles equipped with systems to assist a driver in safe driving via advanced technologies. The ASV Project aims to promote development, introduction, and popularization of ASV technologies.

Traffic Accidents and Targets for Achievement

Although traffic accident fatalities and injuries decreased in recent years, they still remain serious. For instance, around 4,600 people lost their lives and about 850,000 people got injured in 2011.



In order to improve the serious traffic accident situations, targets have been set for reducing fatalities and injuries, and safety measures are being introduced.

Reduce traffic accident fatalities to less than 3,000 by the year 2015. Ultimate goal is to build a safe society with no traffic accidents.

Target set by the 9th Traffic Safety Basic Plan in March 2011

Reduce traffic accident fatalities to below 2,500 by the year 2018

Target set by the Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society (IT Strategic Headquarters)

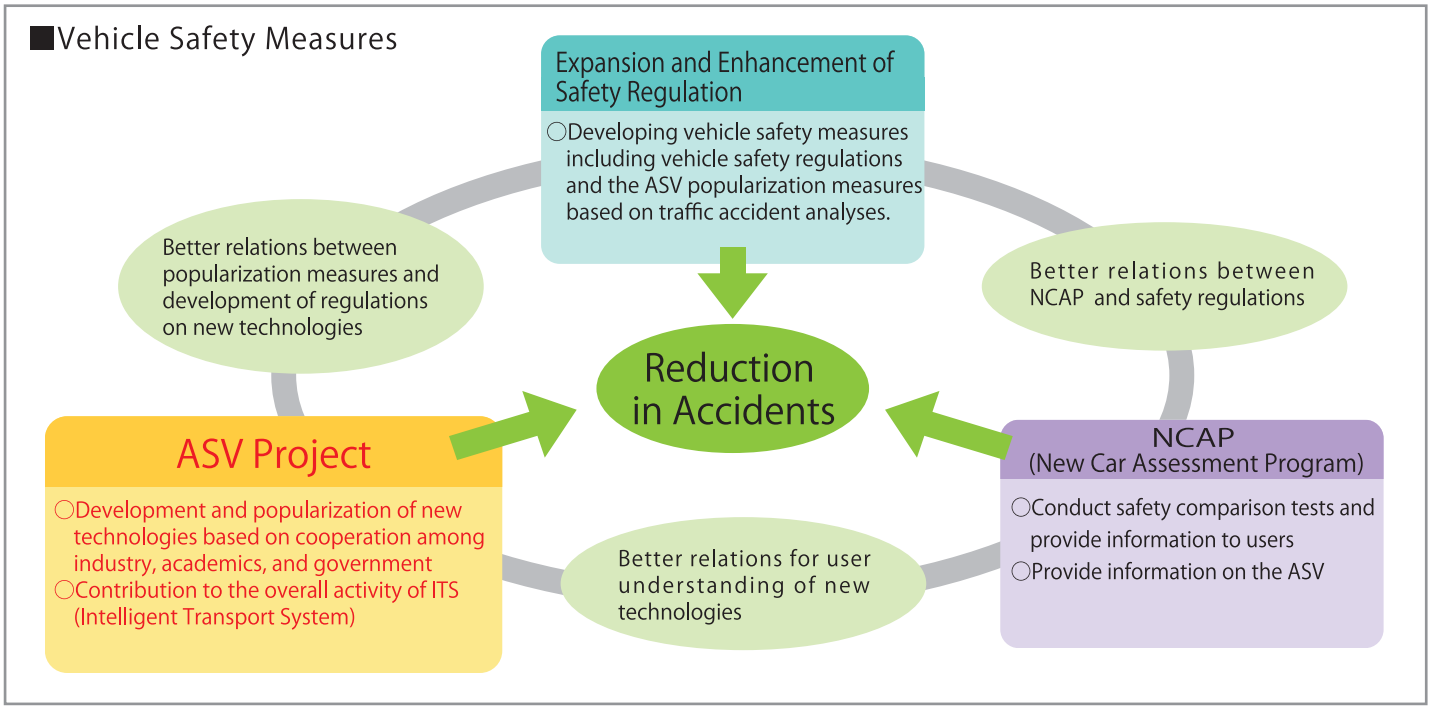
By the year 2020, reduce traffic accident fatalities (fatalities within 30 days) by 1,000 compared with those in the year 2010 via vehicle safety measures

Target set by Road Transport Subcommittee of Land Transport Committee of Transport Policy Council (Report issued by the Subcommittee above mentioned)

Activities of Road Transport Bureau for Reducing Traffic Accidents

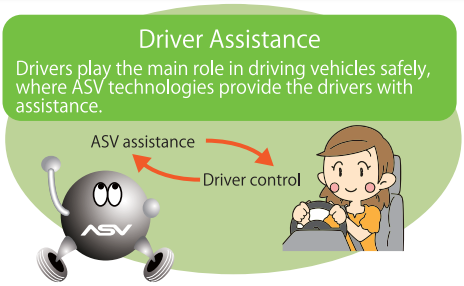
Ministry of Land, Infrastructure, Transport and Tourism implements the vehicle safety measures focused on three projects (Vehicle Safety Regulation, ASV Project, New Car Assessment Program)

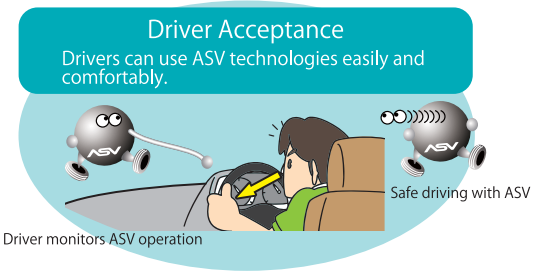
■Vehicle Safety Measures



ASV Design Philosophy

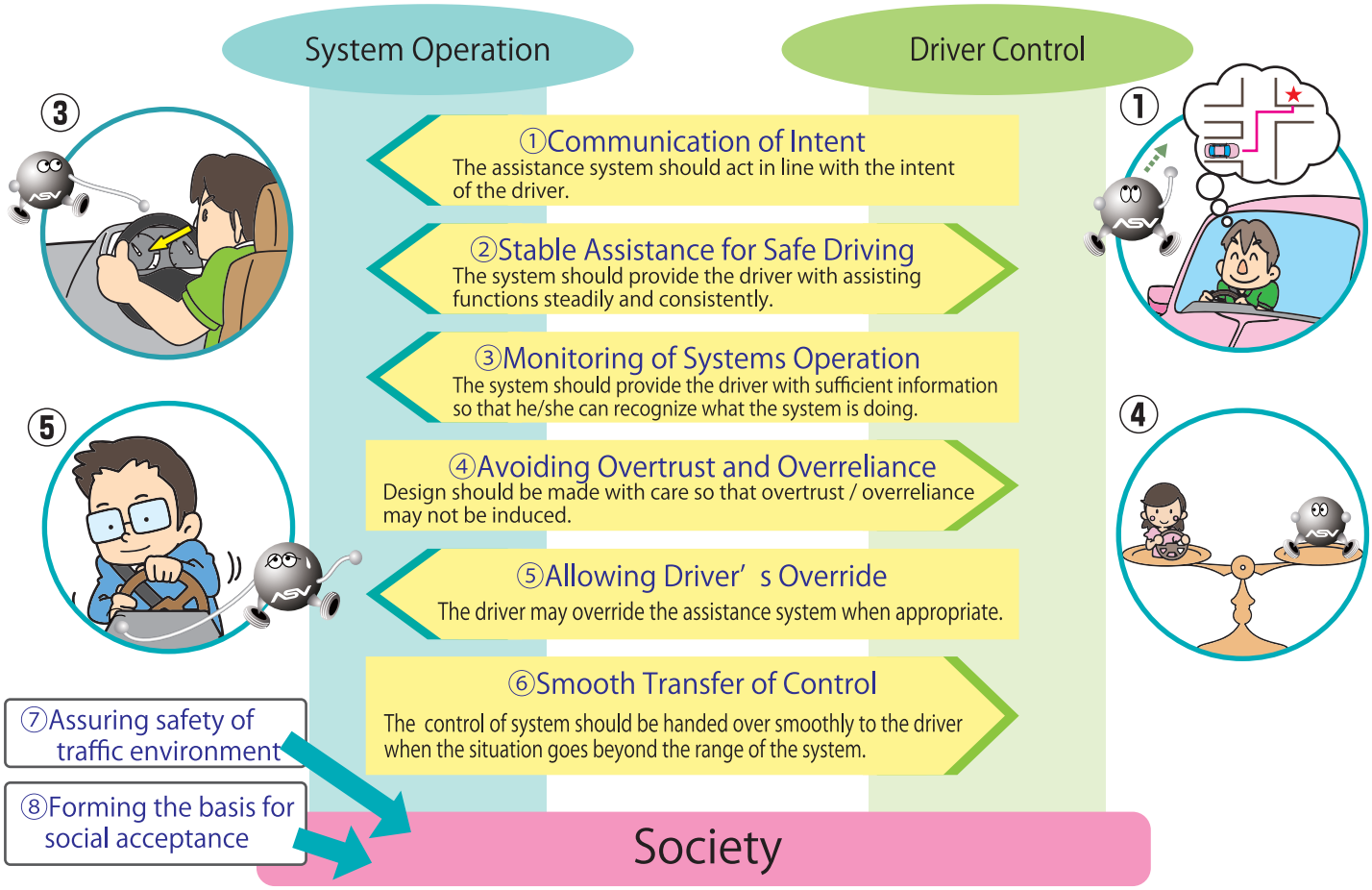
The ASV Design Philosophy state fundamental policies for design and development of ASV technologies.





Guiding Principles of ASV Technology Development

Some guiding principles are set to embody the ASV design philosophy. Various driver assistance systems of self-sensing type have been implemented based on the guiding principles. Moreover, communication technology-based assistance systems are under development.



Tasks in the ASV Phase 5

○The ASV Study Group continues to investigate more sophisticated driver assistance systems to reduce traffic accidents further. Especially, assistance systems for use in cases of driver's emergency situations (e.g., a system that can cope with the driver incapacitation) are under investigation.

History of ASV Project and Plan for Phase 5

ASV Project activities began in FY 1991 and have continued for more than 20 years, with the aim of contributing to traffic accident reduction. The project has also played a role in reducing traffic accidents thanks to the introduction of ASV technologies and has contributed to the actualization of the practical applications of communication-based technologies.

Phase 5 aims further reduction of traffic accidents. Our project promotes sophistication of ASV technologies and encourages the development of next-gen communication-based systems. This process focuses primarily on protection of pedestrians and development of support for elderly people.

Phase 5 FY 2011 - 2015

Sophistication of ASV Technologies

- Development of more sophisticated ASV technologies
- Development and promotion of the communication-based driver assistance system for safety
- Promotion of understanding and popularization of ASV technologies
- Providing information of the ASV activities for harmonization of the international regulations

Phase 4 FY 2006 - 2010

The Challenges and Further Contributions to Accident Reduction

- Review evaluation methods to measure traffic accident reduction effects and implement assessments
- Formulate basic design guidelines on the practical applications of the communication-based system
- ★ Comprehensive trial of the communications/technology -based systems in 30 ASVs on the public roads

Phase 3 FY 2001 - 2005

Promote Popularization and New Technology Development

- Develop concept of driver assistance
- Formulate ASV popularization strategy
- Promote development of communications-technology -based systems
- ★Trial of communications-technology-based systems in 17 ASVs

Phase 2 FY 1996 - 2000

Research and Development for Market Introduction

- Formulate ASV Design Principles
- Formulate guidelines for ASV technology development
- Verify accident reduction effects
- ★Demonstration by 35 ASVs

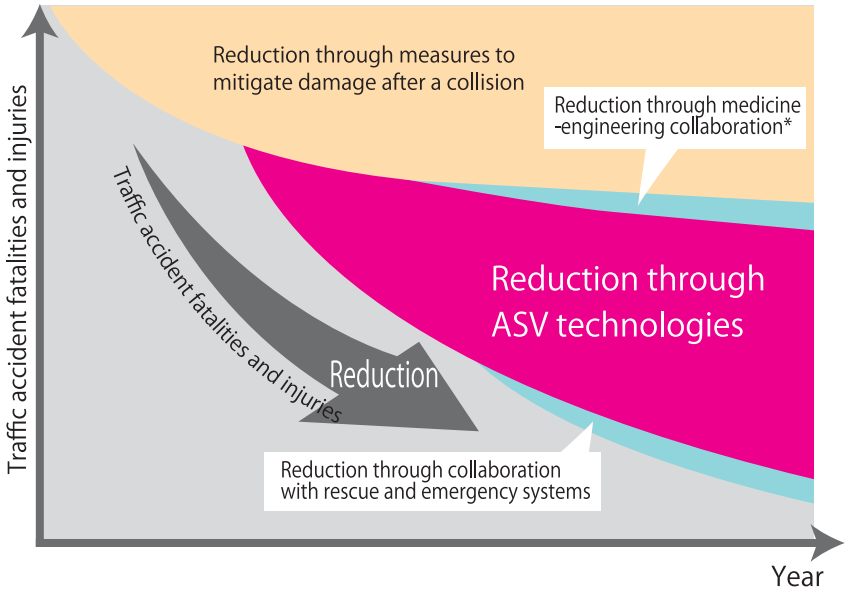
Phase 1 FY 1991- 1995

Study Technological Possibilities

- Set development goals
- Verify accident reduction effects
- ★Demonstration by 19 ASVs

Challenges and Further Contributions to Accident Reduction via ASV Technologies

The project aims to realize more sophisticated and wide-ranging safe driver assistance, and make a major contribution to traffic accident reduction.



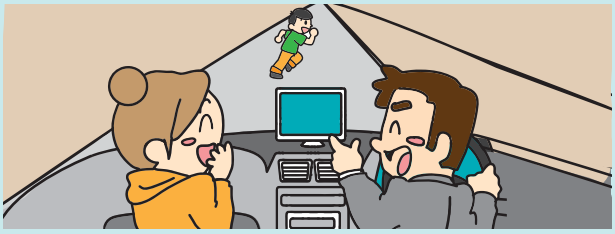
* Medicine-engineering collaboration: To consider more detailed vehicle safety measures by collecting and sharing injury and emergency medical data in the event of accidents

Phase 5 ASV Study Items

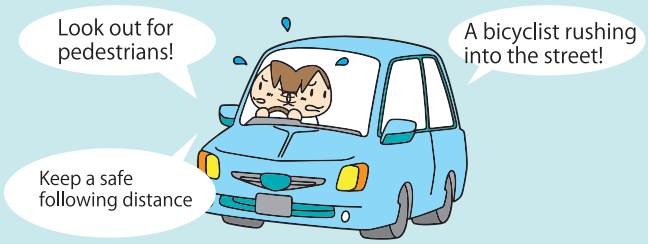
Study Item 1：Further sophistication of ASV technologies

①Driver assistance systems in a state of emergency

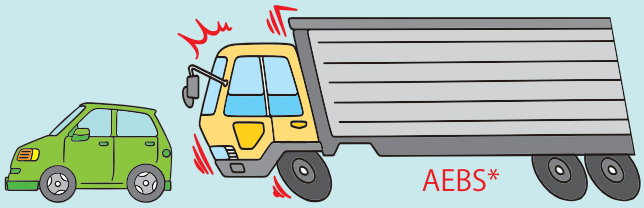
② Overtrust and overreliance by the driver



③Complexity induced by multiple assistance systems



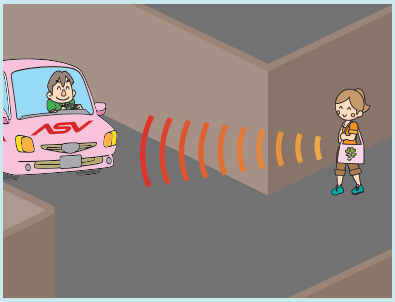
④Technologies for enhancing safety of large-sized vehicle



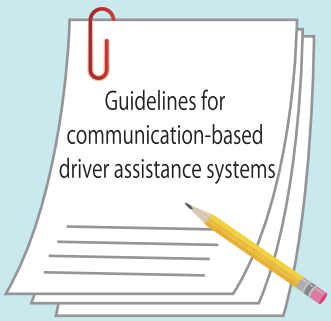
*AEBS :Advanced Emergency Braking Systems

Study Item 2：Development and promotion of communication-based driver assistance systems

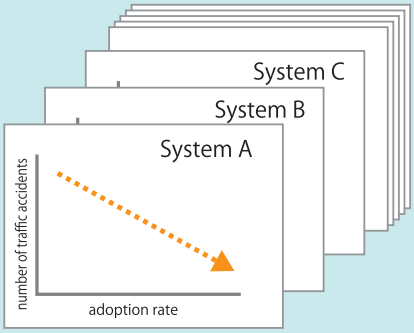
①Pedestrian-vehicle communication systems



②Communication-based next-gen driver assistance systems



③Efficacy evaluation of communication -based driver assistance systems



Study Item 3：Proper understanding and popularization of ASV technologies

Proper understanding and popularization of ASV technologies(for users)

Demonstrations of ASV technologies with real vehicles as well as simulators, and nationwide questionnaire surveys are planned.

Outcome of Phase 4 ASV Project

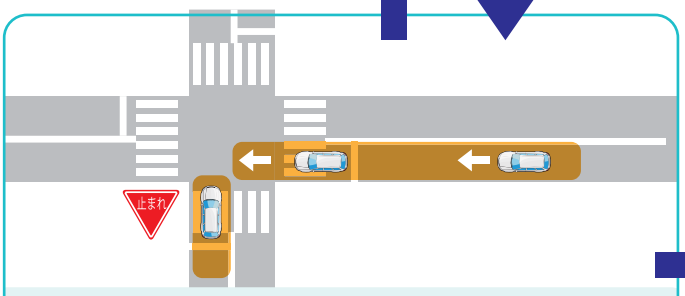
The following activities are outcomes of Phase 4 ASV project that has made further contributions to traffic accident reduction.

Activities on the Promotion of Popularization

- Developed evaluation methods to measure traffic accident reduction effects through ASV technologies and conducted assessments
- Provided subsidies to heavy-duty trucks
- Distributed information materials on ASV technologies, developed trial systems, and conducted user questionnaires
- Took part in PR activities, such as exhibiting at various events and using DVDs for PR purposes and radio PR campaigns

Activities on Technological Development

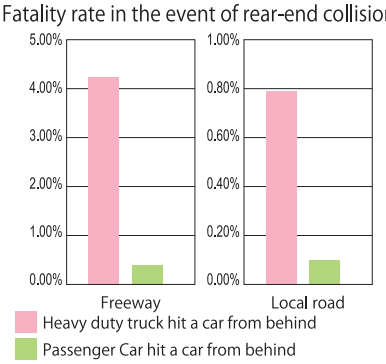
○ ITS-Safety 2010: A large-scale demonstration in FY 2008

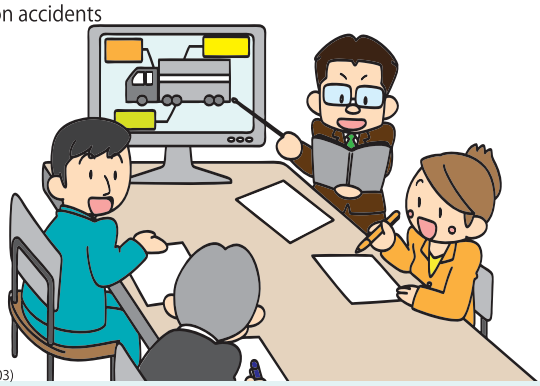


○ Traffic Accident Analysis
Studied the effectiveness of communication-based systems and conducted demonstration

○ Made the basic design guidelines for practical use of communication-based systems

Fatality rate in the event of rear-end collision accidents





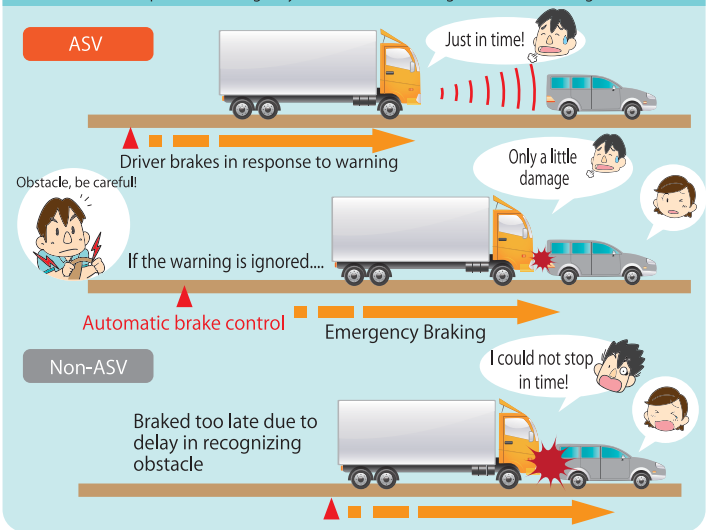
○To improve the safety level for large-size vehicles, the project conducted traffic accident analyses and studied safety measures.

Typical ASV Technologies

In the Phase 4 ASV, the following ASV technologies have been realized.Vehicles equipped with these technologies are already available in the market from each vehicle manufacturer.
These ASV technologies provide drivers with assistance for safety. Drivers are required not to overely on these systems in order to drive safely.

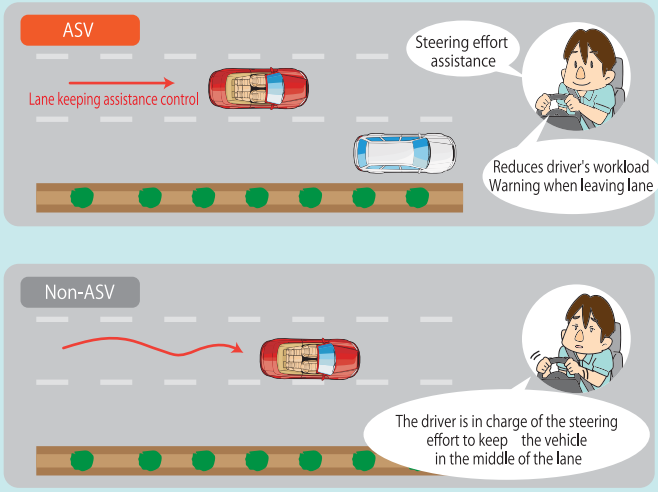
AEBS(Advanced Emergency Braking System)

A device that warns the driver by predicting a collision with obstacles ahead and then provides emergency brake control to mitigate collision damage.



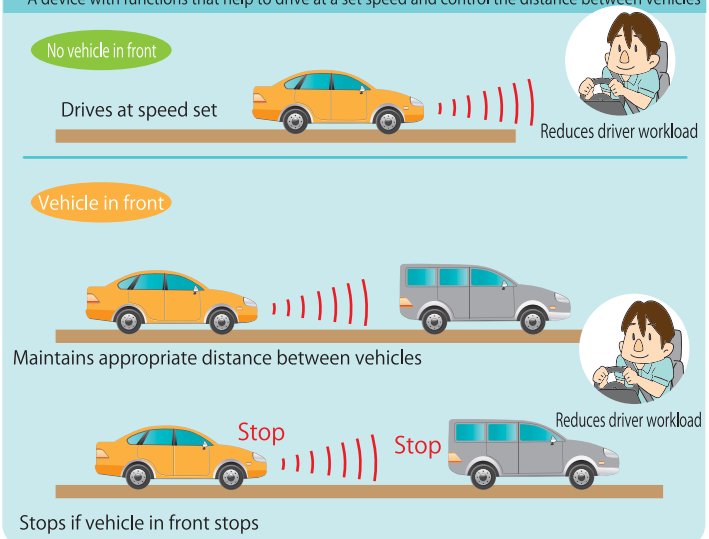
Lane Keeping Assistance System

A device that helps to control the steering operation to keep the vehicle in the middle of the lane.



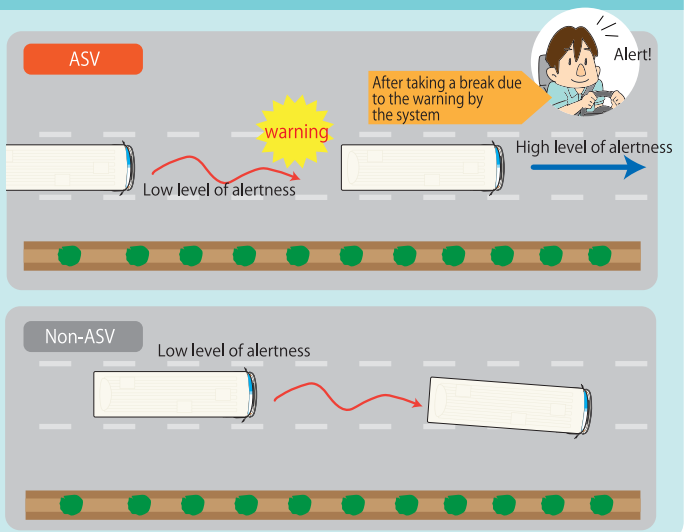
ACC (Adaptive Cruise Control)

A device with functions that help to drive at a set speed and control the distance between vehicles



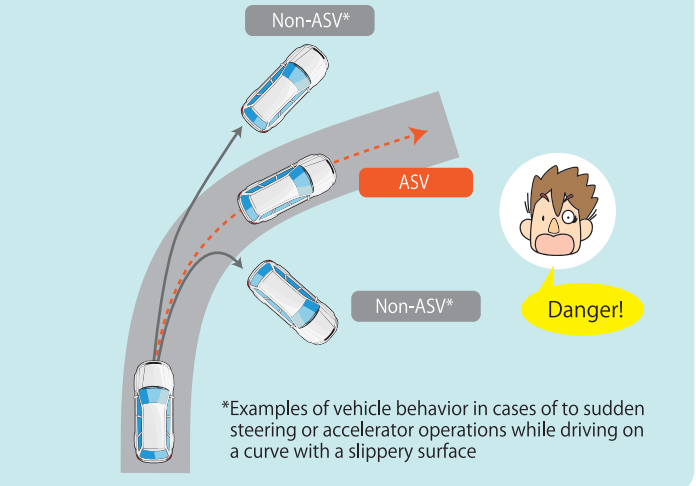
Zigzag Warning

A device that warns the driver of a low level of alertness



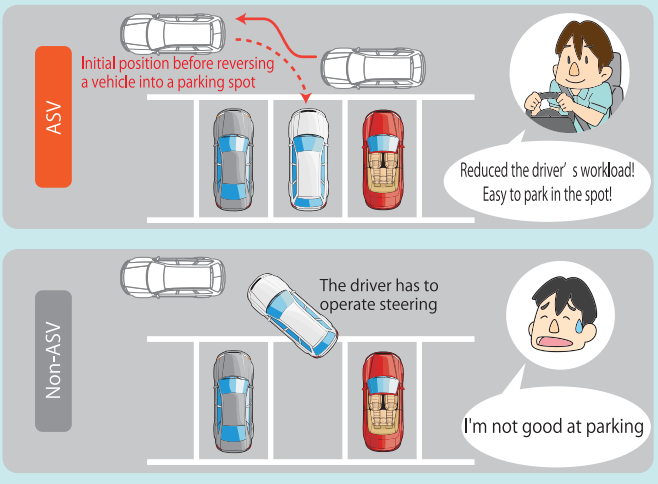
ESC (Electronic Stability Control)

A device that controls braking force and driven torque, depending on the side slip angle



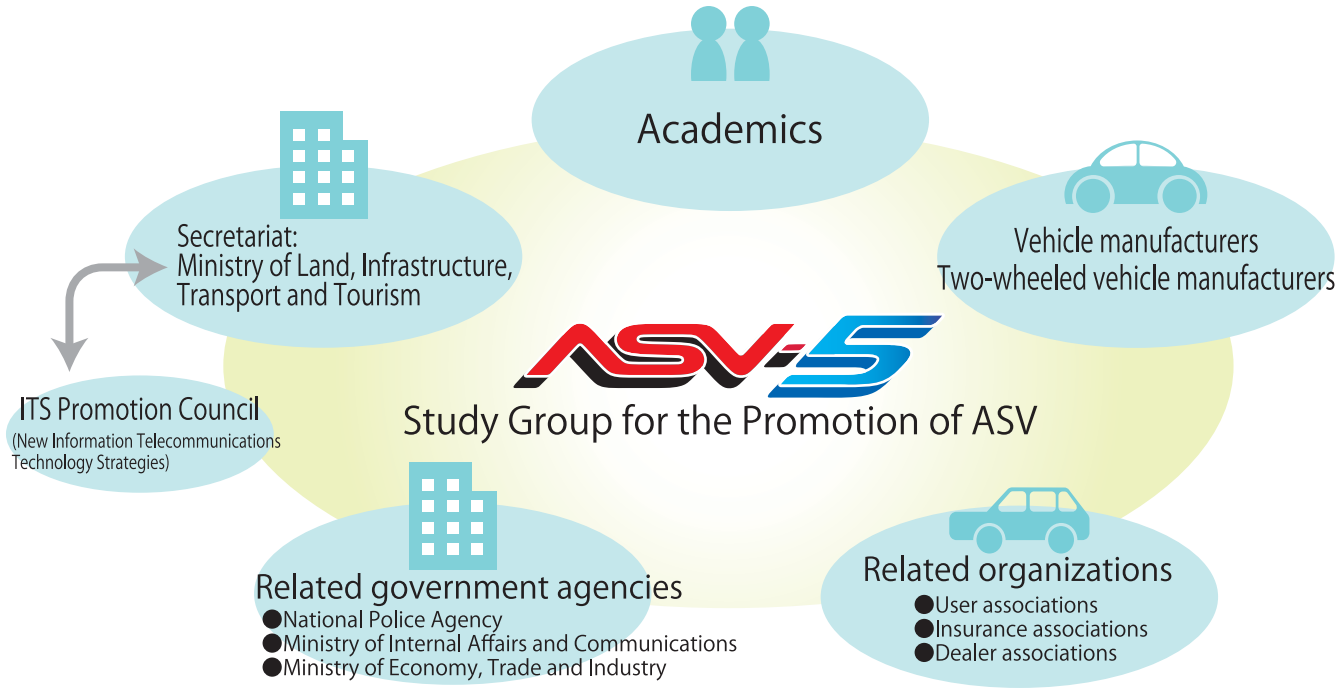
Parking Assistance System

A device that assists backward parking via automated steering control when reversing a vehicle into a parking spot



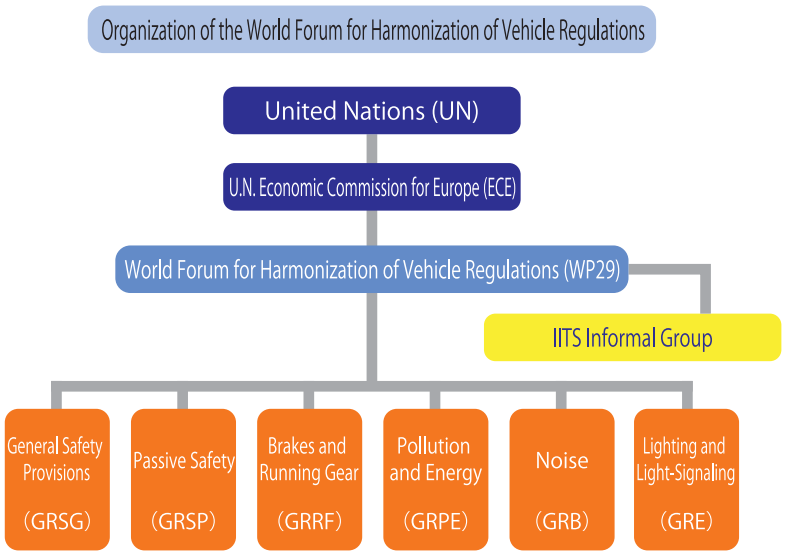
ASV Project Framework

To ensure effective promotion of the development, introduction, and popularization of ASV technologies, the ASV project is carried out under the auspices of the Study Group for Promotion of ASV, a joint initiative involving industry, academics, and government.



International Cooperation

We contribute to in various activities, such as the UN World Forum for Harmonization of Vehicle Regulations (WP29) and the ITS World Congress.



Secretariat of Study Group for Promotion of ASV

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