ITS Contribution to Safety and Security in Japan

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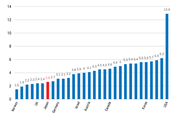
Japan's ITS Future and Measures to Reduce Traffic Accidents

Traffic Accident Situation in Japan

The number of traffic fatalities per 100,000 population



Traffic Accident Trends

Vehicle ownership in Japan: 1.7 times
1992: **37** → 2022: **62 million**
Number of fatalities in traffic accidents: Decreased by 1/4
1992: **11,000** → 2022: **2,600** people
Number of Serious Illnesses: Decreased by 1/3
1992: **79,000** → 2022: **26,200** people

Road Safety Goals
(The 11th Basic Plan for Road Safety, 2021-2025)

■ **Targets**

(1) Reduce the number of fatalities and aiming to realize the world's safest road traffic and reduce the number of fatalities to less than 2,000(*) in 24 hours.
(*: Number of fatalities within 30 days: 2,400)
(2) Reduce the number of seriously injured people to 22,000 or less.

■ **Points of Countermeasures**

(1) Ensure the safety of the elderly and children
(2) Ensure the safety of pedestrians and cyclists and raise their awareness of legal compliance
(3) Ensure safety on roads for daily life
(4) Promote the use of advanced technology
(5) Promote detailed measures based on traffic conditions, etc.
(6) Promote community-based traffic safety measures

■ **Pillars of Measures**

(1) Improvement of the road traffic environment
(2) Spread the concept of traffic safety
(3) Ensure safe driving
(4) Ensure vehicle safety
(5) Maintain road traffic order
(6) Promote community-based traffic safety measures
(7) Enhancement and promotion of victim support

Japan's Infrastructure Development Plan... The Japanese Government Initiatives

Accelerating Infrastructure Development for Automated Driving and AI Implementation

Digital Lifeline National Development Plan
[Ministry of Economy, Trade and Industry (METI)]

A comprehensive 10-year national digital lifeline development plan is formulated to spread the benefits of digital technology to every corner of the country, even amid a declining population.
The public and private sectors will make intensive, large-scale investments to hasten **social implementation of innovations in automated driving and AI**, solve social issues such as labor shortages, and contribute to the formation of regional living areas that integrate the digital and real worlds.

Physical space

Creating a framework in which automated driving and AI can be effective
Examples of digital lifelines

- **Drone routes** — Routes that drones use to deliver goods and conduct inspections. Both in normal times and in times of disaster.
- **Automated driving support roads** — Roads that support automated vehicles for the transportation of people and goods.
- **Terminal 2.0t** — Places where people can get on/off, board/unload, park, and recharge various ground and air mobility vehicles.
- **Community Center 2.0** — Places where everyone, from the elderly to the young, can interact and engage in activities while using digital technologies.

Connecting physical and cyber spaces

Creating a framework for projecting the real world into virtual space
Examples of digital lifelines

- **Smart interface hubs** — Freely combine and jointly use various sensors, etc., as needed. (LiDAR, weather sensors, cameras, RTK, etc.)
- **Communications infrastructures**
- **Fiber optic network**

Cyberspace

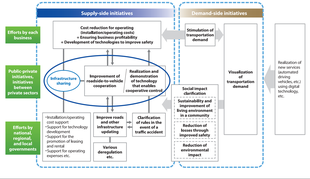
Creating a framework for data creation and distribution
Examples of digital lifelines

- **Data exchange infrastructures** — Data exchange infrastructures for searching and integrating individual data held by different operating entities.
- **3D maps** — Dynamic maps and 3D city models that can also be used for the safe operation of automated vehicles, drones, etc.

Mobility Roadmap [Digital Agency]

Measures related to demand-side and supply-side approaches will be implemented simultaneously by the various entities involved. Promoting social implementation of new mobility services.

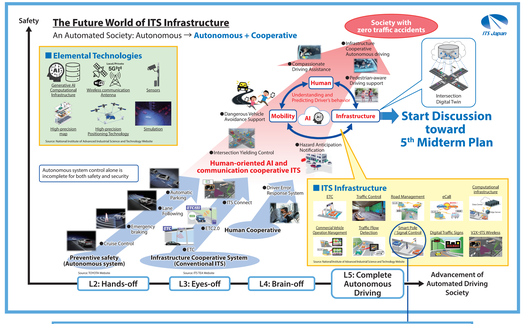
Interrelationships and main issues in promoting initiatives for automated driving vehicles etc.



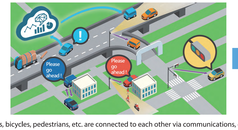
ITS/ICT Infrastructure of the Future

Advancements in AI and communication technologies have led to the development of new ITS services that integrate people, vehicles, and infrastructure.

Study of ITS/ICT infrastructure necessary for the mobility society of the future.



Automatic driving and safe driving support using telecommunications



Detailed initiative <Smart Pole Project>

Road infrastructure, automobiles, motorcycles, bicycles, pedestrians, etc. are connected to each other via communications, etc., and contribute to the reduction of traffic accidents and the realization of automated driving by providing information such as yielding at intersections with poor visibility, providing signal information, assisting merging on expressways, and notifying drivers of falling objects.

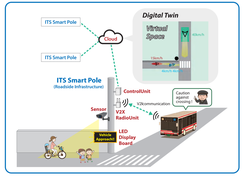
ITS Smart Pole World

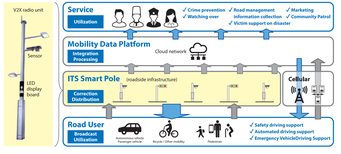
A World enabled by ITS Smart Pole

What is "ITS Smart Pole"...

◆ **Roadside infrastructure** equipped with several functions to realize **Cooperative Vehicle-Infrastructure ITS systems** (as shown in the figure on the right)

- **Sensor** detects road users, such as bicycles and pedestrians
- **V2X radio unit** transmits the detected information to vehicles and notifies approach of road users
- **LED display board** notifies road users visually of a vehicle approaching from the other direction, that is communicated to the smart pole via V2X wireless
- **Control unit** manages the connection and functions of the equipment and is also capable of connecting to an external network, such as the cloud that can realize digital twin





Features of ITS Smart Pole

◆ **Multifaceted infrastructure** that contributes to solving various traffic and social issues and improving public safety
◆ Information can be used for various resident services, such as "**Mobility DX,**" by uploading to the cloud and integrating, processing or analyzing
◆ **Flexible specification** that supports a wide variety of communication methods and sensors
◆ **Flexible design** to add, delete, or update equipped devices after installation

Use Cases for ITS Smart Pole

ITS Smart Poles can be utilized in the following use cases

✓ **Accident prevention support**
Prevents accidents such as head-on collisions at intersections without traffic signals, during poor visibility, etc.

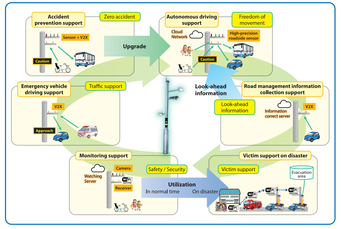
✓ **Autonomous driving support**
Supports safe and comfortable driving by providing information on objects in blind spots of autonomous vehicles

✓ **Emergency vehicle driving support**
Supports emergency vehicles to travel smoothly and shortens arrival time

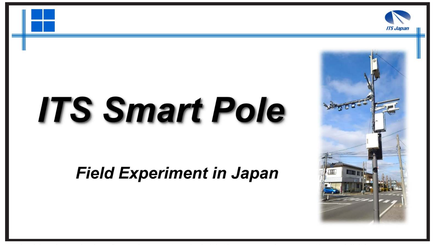
✓ **Road management information collection support**
Collects vehicle data which could be utilized for traffic information management and monitoring of traffic congestion, etc.,

✓ **Support for victims of large-scale disasters**
Guides victims to evacuation sites in the event of a natural disaster and supports the detection of damaged areas on roads

✓ **Monitoring support & crime prevention**
Support notification of the whereabouts of children and senior citizens to guardians and carers



A shared infrastructure that contributes to solving multifaceted traffic issues and improving society



A video introducing Japan's smart pole initiatives was shown at the exhibition venue.

■ **Member companies and organisations**

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