Policy for Cooperative ITS in Japanese Smartway Project

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Building a common infrastructure

Car navigation system
VICS

Dedicated software
Dedicated on-board unit
Dedicated hardware

Company A
Company B

ETC
Application
Application

Comprehensive effects

Common software

ITS on-board units

Common hardware & data
- More advanced digital maps
- Building a data infrastructure

Open platform
Diversification of services with a common infrastructure

Car navigation systems

VICS
2.4 GHz beacon

ETC
5.8 GHz DSRC

ITS on-board units

Multiple media

Supplying information

Fee collection
Two-way communication

Next-generation road services

5.8 GHz DSRC

Tourist information and route selection

Fee payment at parking facilities, et cetera

In-car Internet access

Shinjuku-Dori Ave. near Yotsuya-Mitsuke: Congested for 0.5 km

VICS (wide-area, detailed road traffic information)

Tourist destination driving guide

Toyota Municipal Museum of Art

Toyota Stadium

In Shinjuku-Dori Ave. near Yotsuya-Mitsuke: Congested for 0.5 km
New cooperative vehicle-highway system

ITS on-board units

Speech-only unit

Unit linked to car navigation system

DSRC roadside unit

5.8 GHz short-range communications
New IT Reform Strategy (adopted by IT Strategic Headquarters in January 2006): Excerpt

Goal:

The world’s safest road traffic environment
—Reducing traffic fatalities to 5,000 or below—

Policies toward realization:

- Formation of a public-private joint committee (April 2006)
- Large-scale proving tests, verification, and evaluation (2008)
- Nationwide deployment, primarily at locations of frequent traffic accidents (2010)
都心環状線

Caution.  Many accidents occur at a sharp curve ahead.

Caution.  Many rear-end collisions occur 200 meters ahead.

Providing location information (electronic signs)

Service to provide information on obstacles ahead

Service to provide information on conditions ahead

This is an announcement of conditions on Metropolitan Expressway Route 4 in the Tokyo direction.

The required travel time is ...

Traffic congestion is ...

Current conditions before Gaien Entrance, about 1 kilometer ahead.

Route 4 (Shinjuku Line)

Central Loop Shinjuku Line

Route 5 (Ikebukuro Line)

Providing location information (electronic signs)

Map-linked service

EMV payment processing services (at Kajibashi Parking Area)

IP data link services (at Daikoku Parking Area)
Countermeasures for snowy and icy roads using Smartway (FY 2008-)

Kanto and Joshin-Etsu regions

Kan-Etsu Expressway
(from Minakami Interchange to Yuzawa Interchange)

Using cooperative vehicle-highway ITS technologies to collect and supply vehicle behavior data
Support for effective route selection using Smartway (FY 2008-)

Supporting appropriate route selection on the Meishin Expressway and the New Meishin Expressway

- Existing 2.4 GHz beacons
- New 5.8 GHz beacons

Supplying wide-area route selection information with highway radio (audio).

- 2.4 GHz (existing) (simple diagrams)
- 5.8 GHz (new) (simple wide-area diagrams) plus audio information

Using highway radio to provide supplemental traffic information in audio form.
Beginning in fiscal year 2008, testing is being expanded to various other areas besides the main focus of Tokyo. Services based on the characteristics of each region will be tested.

- **Kyoto, Osaka, and Kobe (Meishin Expressway and New Meishin Expressway)**
  Providing information on obstacles ahead (highway radio reports)

- **Kyoto, Osaka, and Kobe (Hanshin Expressway)**
  Preventing hazards on entering curves, providing information on obstacles ahead, merging assistance, and providing information on conditions ahead (providing road information by still images)

- **Hiroshima (Sanyo Expressway)**
  Calling attention when exceeding the speed limit

- **Niigata (Kan-Etsu Expressway)**
  Collecting vehicle behavior information (snow-covered road surface information)

- **Tokyo (Metropolitan Expressway)**
  Providing information on obstacles ahead (coordinated service for expressways and ordinary roads)
  Providing road traffic information (support for route selection)
  Providing information on conditions ahead (providing road information by still images)

- **Aichi (Nagoya Expressway, National Highway 153, and Tokai-Kanjo Expressway)**
  Providing information on obstacles ahead, preventing hazards on entering curves, providing information on conditions ahead, and Internet information access
Promoting the spread of Smartway services:

1. Development of speech-only on-board units

On-board units for the realization of Smartway services

ITS on-board units linked to car navigation systems

Beep. Congestion ahead. Take care to avoid a rear-end collision.

Speech-only ITS on-board units

Beep. Congestion ahead. Take care to avoid a rear-end collision.

Both its functionality and price are only incrementally higher than existing ETC on-board units, making it easier for users to buy as a replacement.
Promoting the spread of Smartway services:

2. Unification of on-board unit formats

### Conventional services
- Car navigation system: 31.83 million vehicles (as of June 30, 2008)
- VICS receiver unit (2.4 GHz): 2.74 million vehicles (as of June 30, 2008)
- ETC on-board unit (5.8 GHz): 21.06 million vehicles (as of September 2008)

### New services using Smartway
- Car navigation system
- ITS on-board unit (5.8 GHz) (New ETC on-board unit)

The unification of on-board unit formats makes it easier for users.
• To verify the effectiveness of driving safety support systems based on vehicle-highway cooperation, the public and private sectors have cooperatively implemented public road testing in accordance with the needs of specific regions and routes.

• The result of technological integration on a common platform and development of service models based on the user's point of view will be to achieve a more advanced system with lower costs, leading to widespread adoption.

• We anticipate further progress in the future with plans that are based on services to provide road traffic information using VICS, which will be continued and expanded.
Thank you