

SMARTWAY

- Open platform for Cooperative Vehicle Safety -

2006.10.10

Yukihiro Tsukada

Director, Road Bureau, Ministry of Land Infrastructure and Transport

1.Current State of ITS in Japan

2.Smartway: the Integrated Systems Solution

3.Reducing Traffic Accidents

4.Conclusion

1. Current State of ITS in Japan



1) ITS in Japan

1996 Comprehensive Plan for ITS

1. Navigation
2. ETC
3. Driving safety
4. Traffic management
5. Road management
6. Public transport
7. Commercial vehicles
8. Pedestrians
9. Emergency vehicle operation



2006 Second Stage

- Popularization of vehicle navigation systems and VICS
- Popularization of ETC
- AHS research & development

1.Current State of ITS in Japan

2) Popularization of vehicle navigation systems

Vehicle navigation systems exceeds 20 million (out of 79 million vehicles owned in Japan).

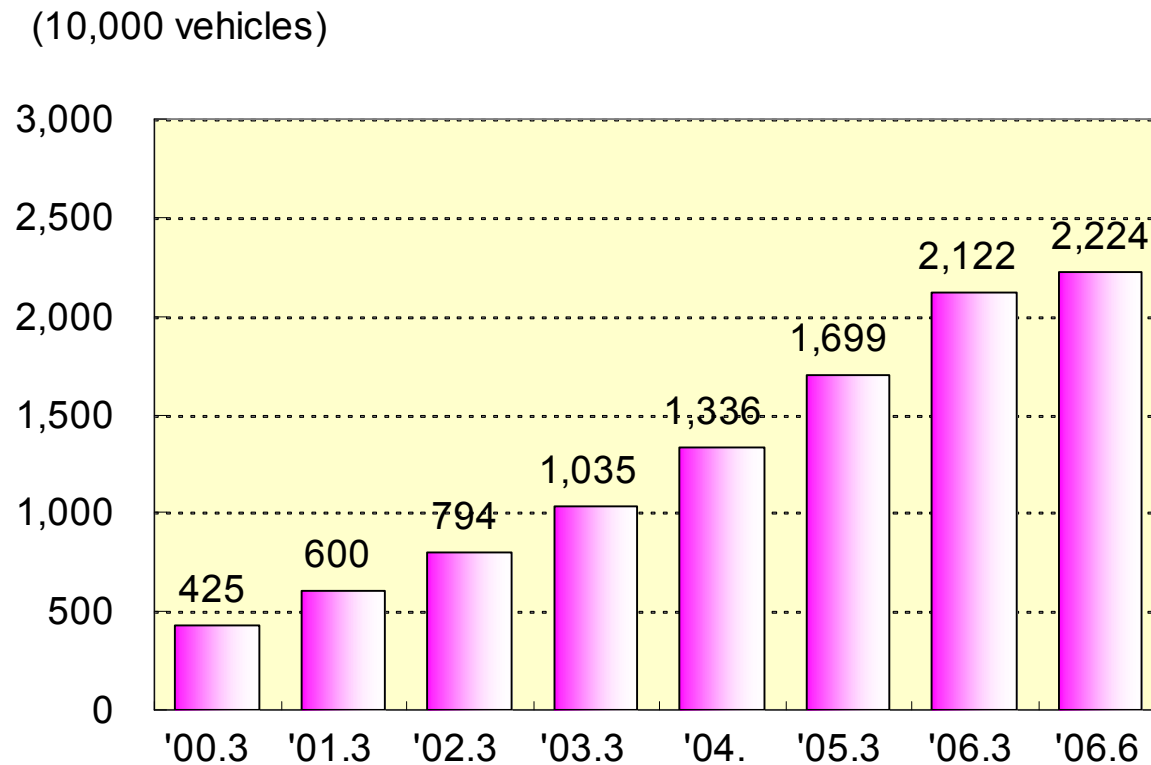


Fig. Cumulative number of vehicles equipped with vehicle navigation systems



Source: Smartway Project Advisory Committee



Source: Smartway Project Advisory Committee

1.Current State of ITS in Japan

2) Popularization of VICS

More than 15 million vehicles have been equipped with VICS.

(10,000 vehicles)

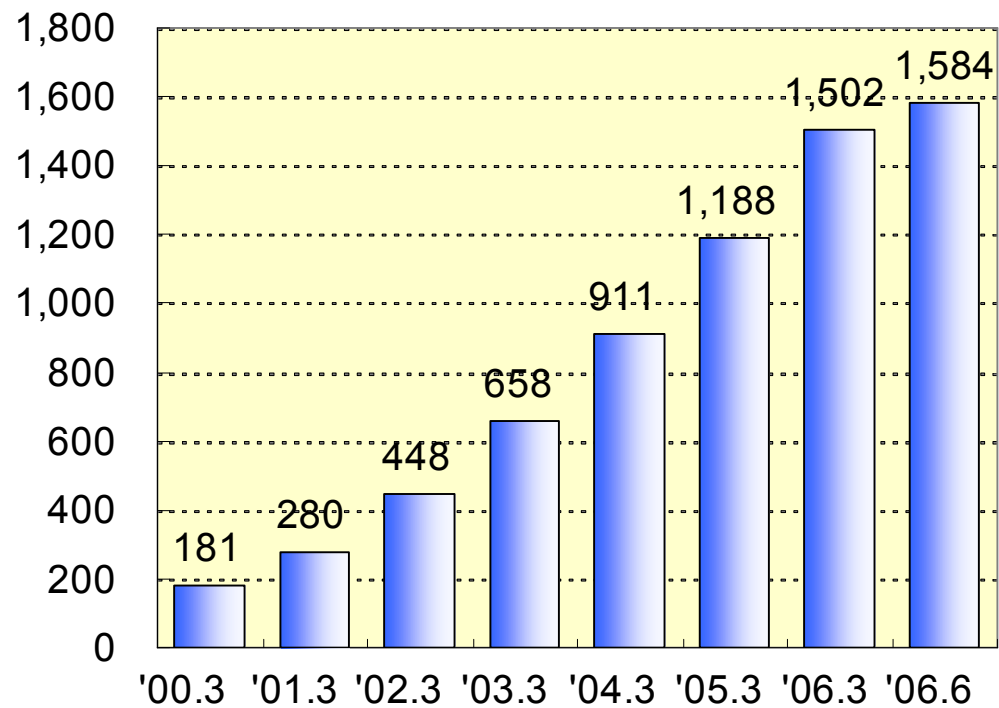
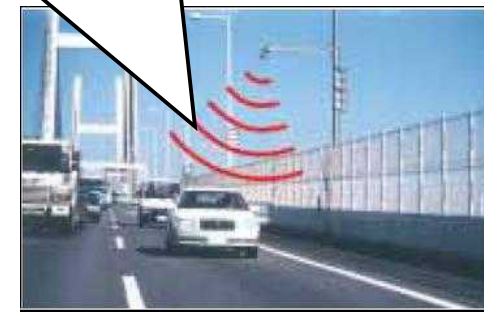
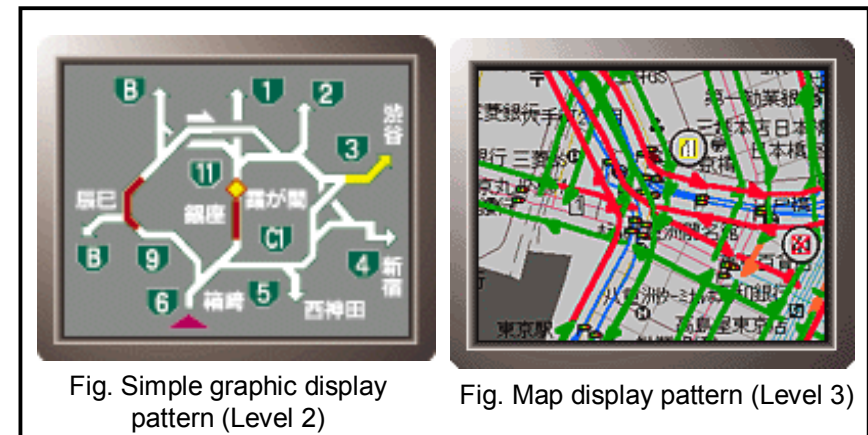


Fig. Cumulative shipments of vehicles equipped with VICS units



1.Current State of ITS in Japan

3) ETC

5.8 GHz active DSRC was introduced.
They are used on expressways nationwide.



1.Current State of ITS in Japan



3) ETC

Now, ETC's nationwide usage rate is 60%.

70% are on expressways in the Tokyo metropolitan area.

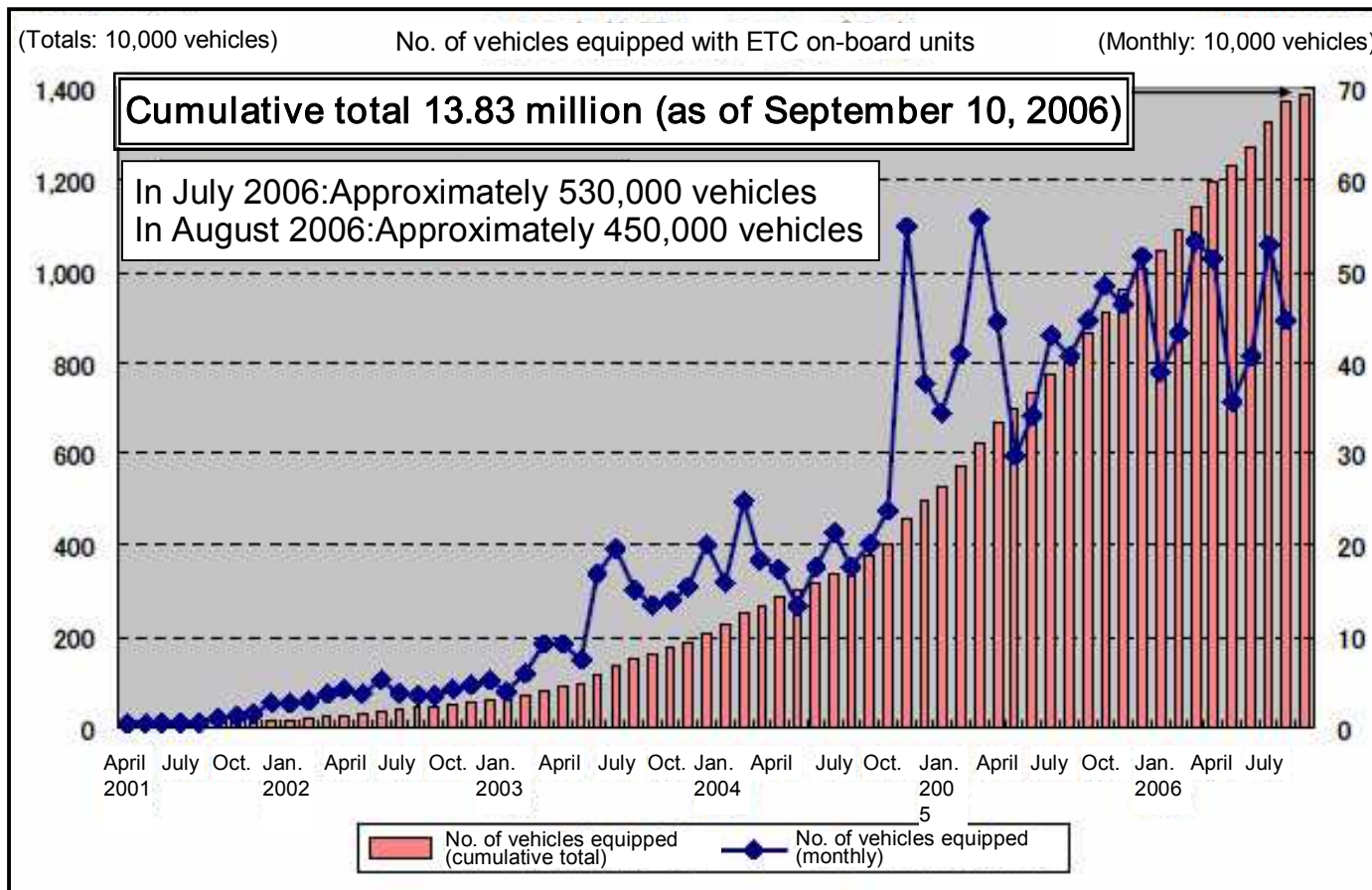


Fig. No. of vehicles equipped with ETC on-board units

1. Current State of ITS in Japan



3) ETC

30% of the traffic congestion on expressways is occurred near tollgates. The increased use of ETC has eased congestion at tollgates

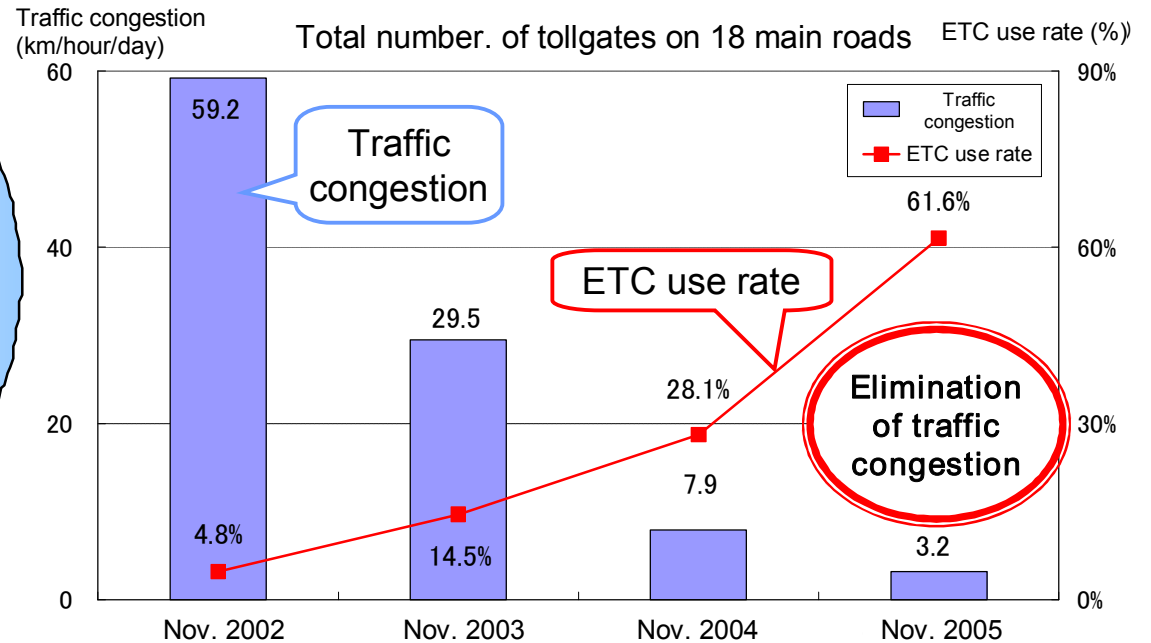
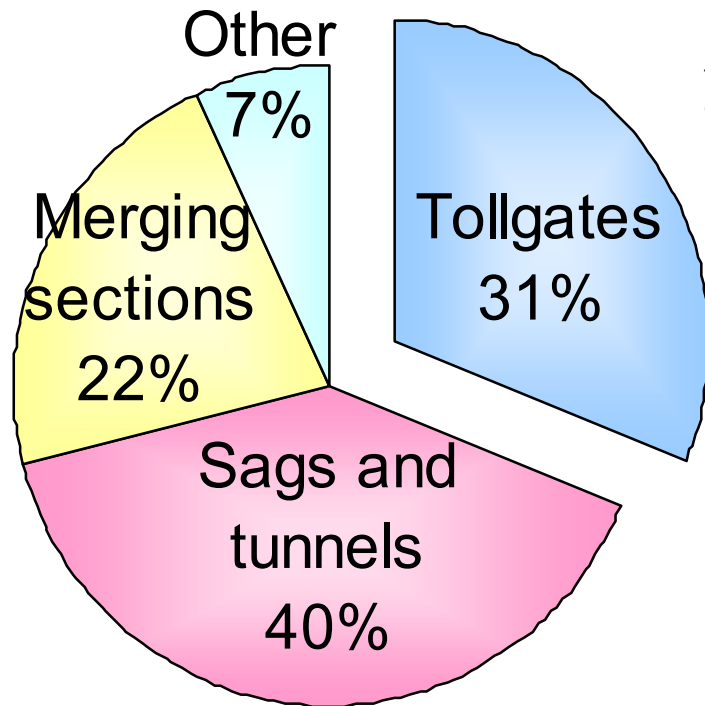


Fig. Status of traffic congestion

Fig. Cause of traffic congestion on expressways

2.Smartway: the Integrated Systems Solution



1) ITS on-board units

Various applications can be provided by a single ITS on-board unit.



Interior of vehicle equipped with various on-board units



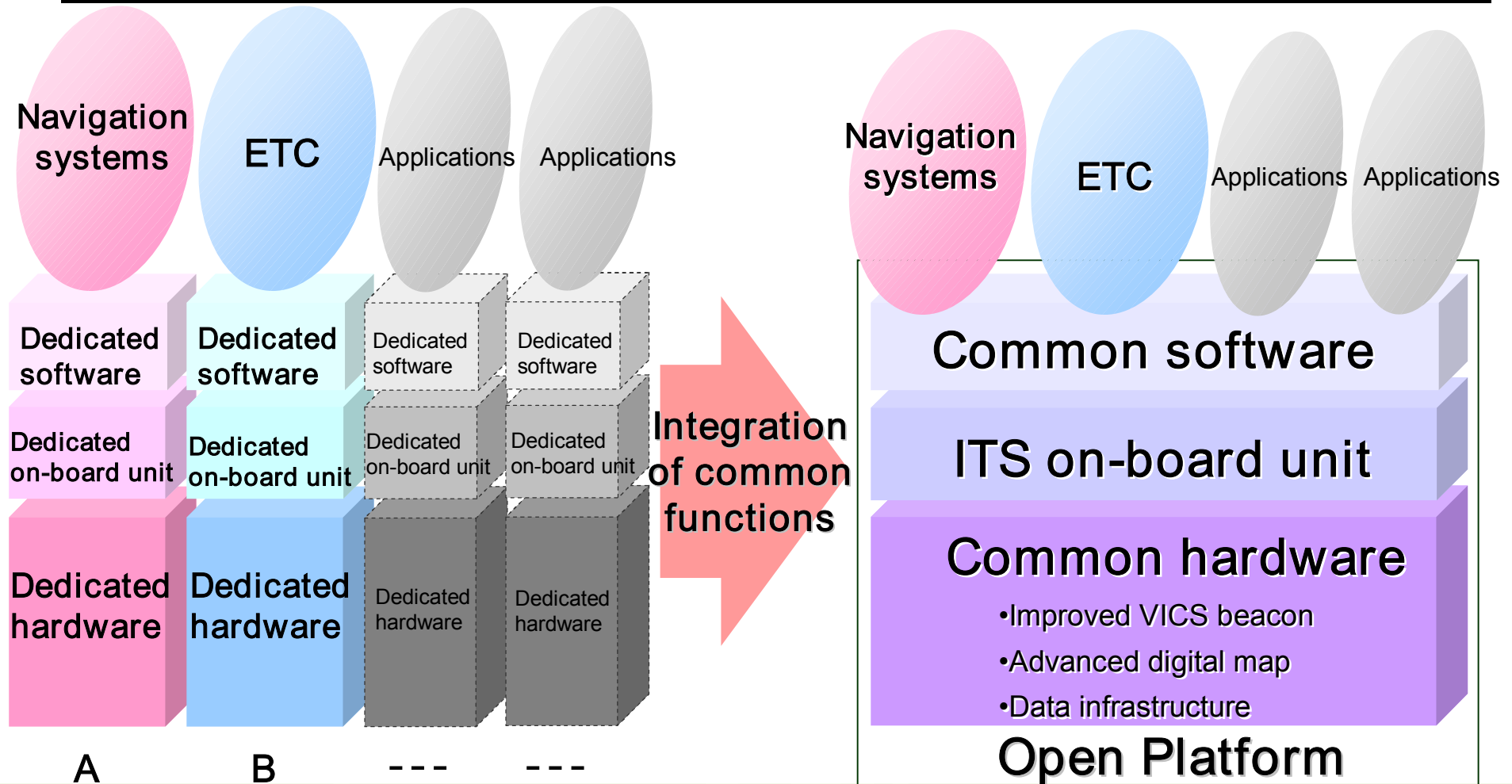
Less cluttered interior
(in the case of a vehicle equipped with a single ITS on-board unit)

2.Smartway: the Integrated Systems Solution



2) Open platforms

The open platform approach
Integration of common functions with a single ITS on-board unit.



2.Smartway: the Integrated Systems Solution



3) Public-Private joint research

SMARTWAY DEMO 2006 (February 22 - 24, 2006)

Place: National Institute for Land and Infrastructure Management (NILIM) test course



Demonstration vehicle

2.Smartway: the Integrated Systems Solution



3) Public-Private joint research

Voice information



"Information on road freezing:"

Picture information



"Construction ahead; lanes closed."

Warning Information



"Caution: vehicle stopped 300 meters ahead."

Merging at intersections



Refueling service



Internet connection at highway rest area



Parking area entrance



3.Reducing Traffic Accidents



1) Current state of traffic accidents

There are limits to conventional policies.
ITS is the solution to this problem.

Big Accident on Expressway
(September 14, 2006)

(1,000 accidents)

(No. of persons)

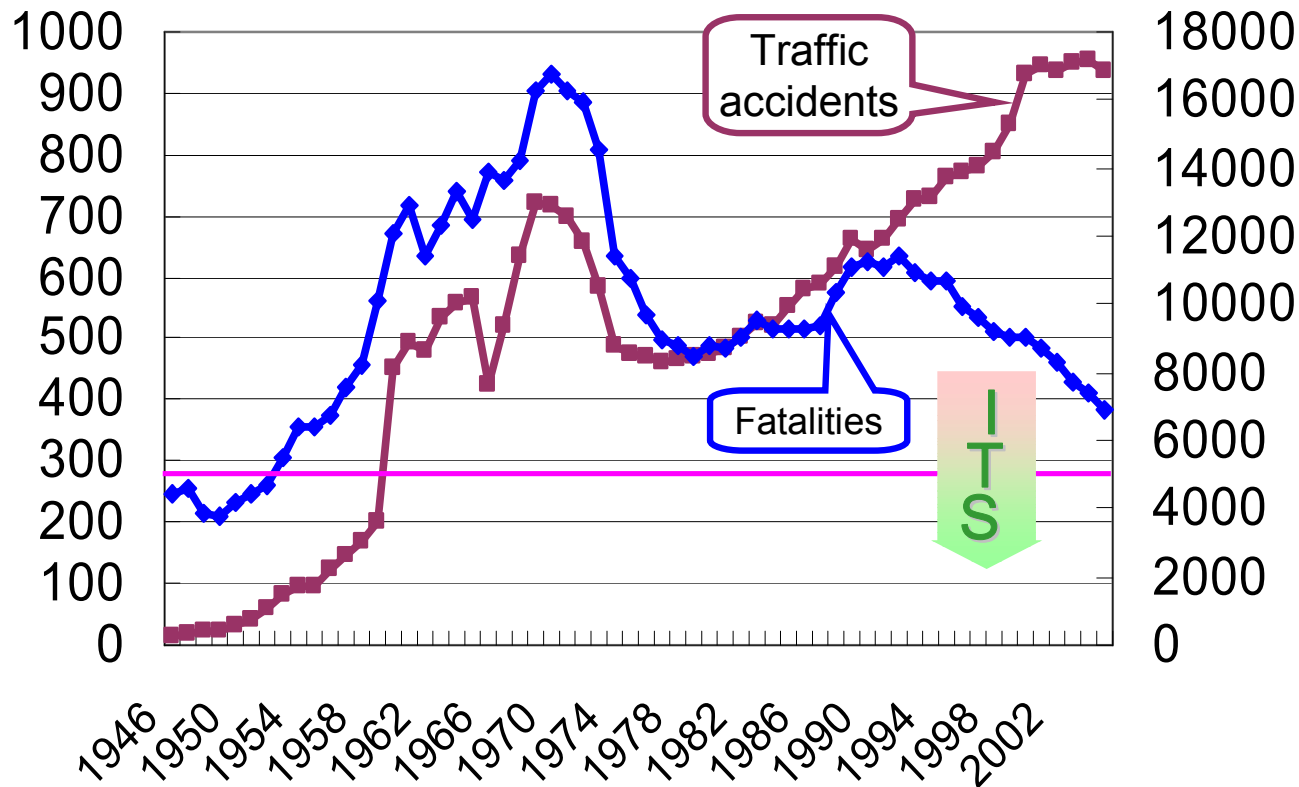
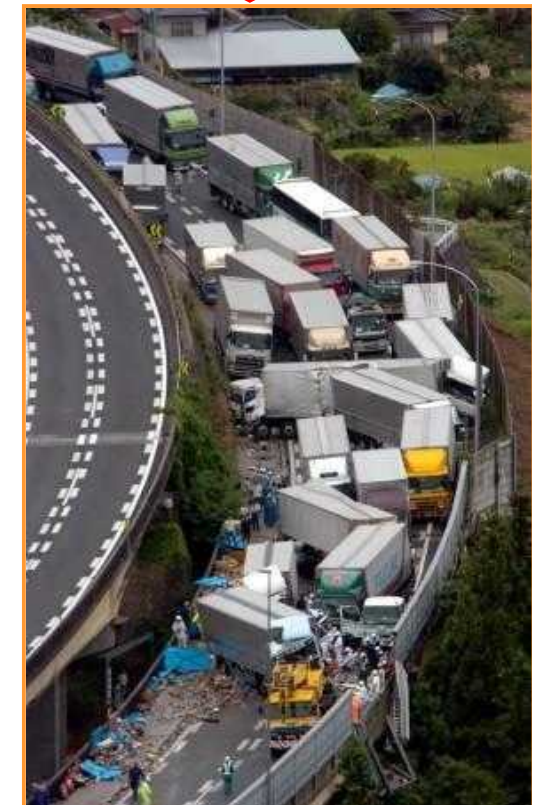


Fig. Number of traffic accidents



3.Reducing Traffic Accidents



2) New IT Reform Strategy

The aim is to achieve traffic fatalities reduction to under 5,000. Through the use of Cooperative Driving Safety Support Systems.

■ Objective

1.The Pursuit of IT Structural Reform Capabilities

(2)Realization of Safe and Secure Society

- The world's safest road traffic environment
- Reducing traffic fatalities to 5,000 or below-



■ Concrete policy

Form a joint committee from the public and private sectors in early 2006 to work towards the realization of Cooperative Driving Safety Support Systems

Conduct large-scale verification testing, verification, evaluation, of Driving Safety Support Systems by FY 2008.

Deploy Driving Safety Support Systems throughout the country focusing on roads prone to traffic accidents

**Road-Vehicle Cooperative
system**

**Vehicle-To-Vehicle
Communication System**

Support for Pedestrians

3.Reducing Traffic Accidents

3) Causes of traffic accidents

75% of traffic accidents are caused by human error

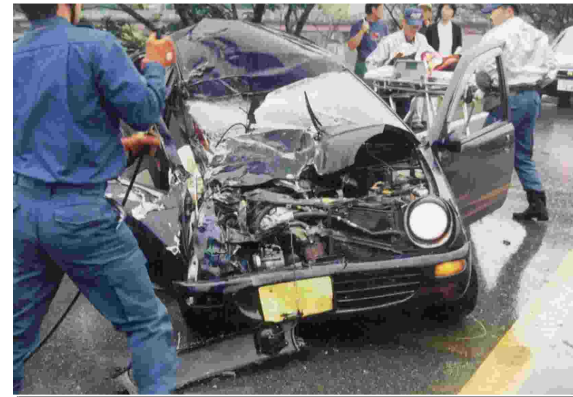
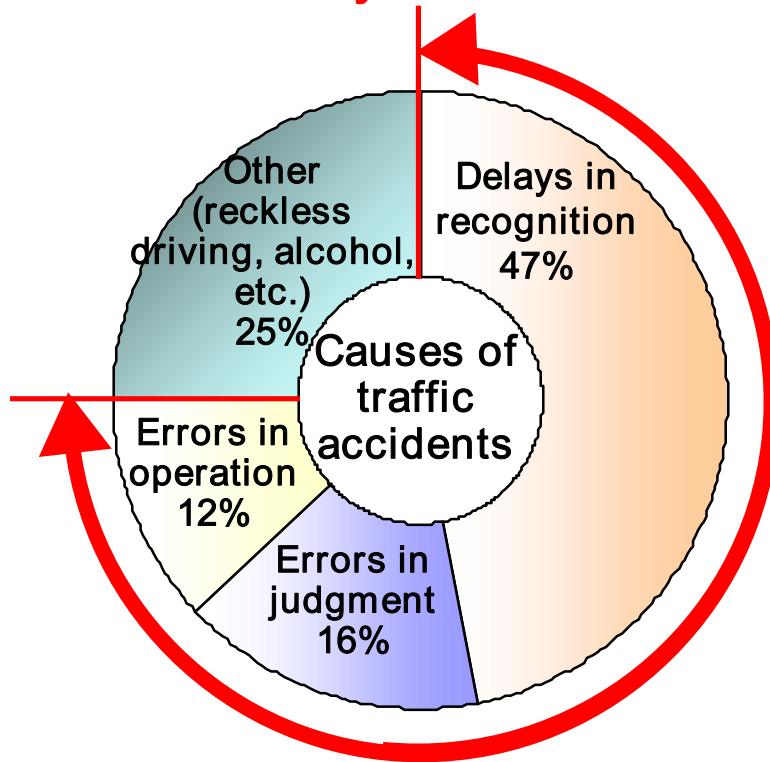


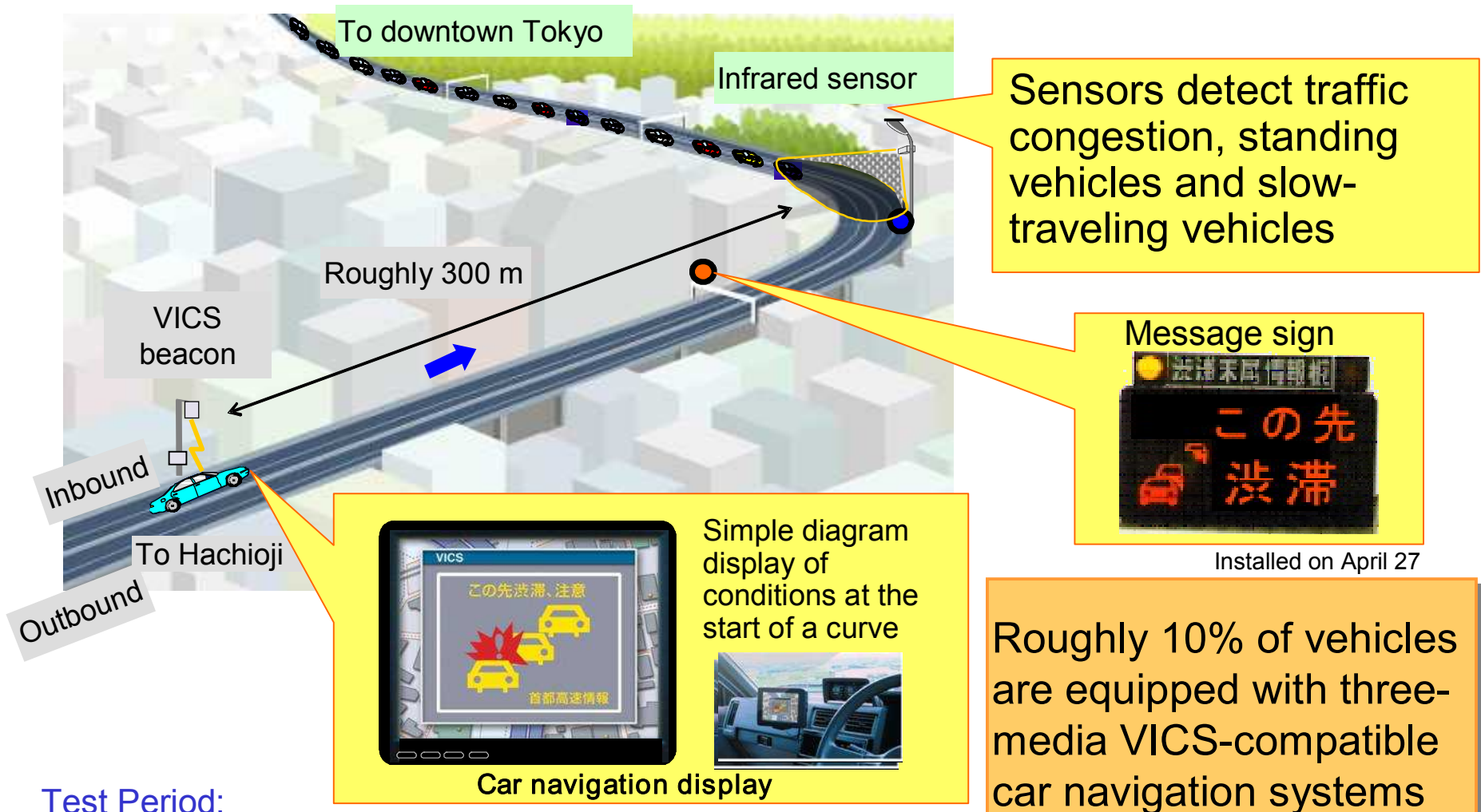
Fig. Causes of traffic accidents

Source:Fiscal 2000 tabulated data for traffic accidents (Institute for Traffic Accident Research and Data Analysis (ITARDA))

3.Reducing Traffic Accidents

4) Test of Cooperative Safety Support Systems (AHS)

Pilot tests on the Metropolitan Expressway Route 4 (Shinjuku Route).



Test Period:
March 1 to May 31, 2005

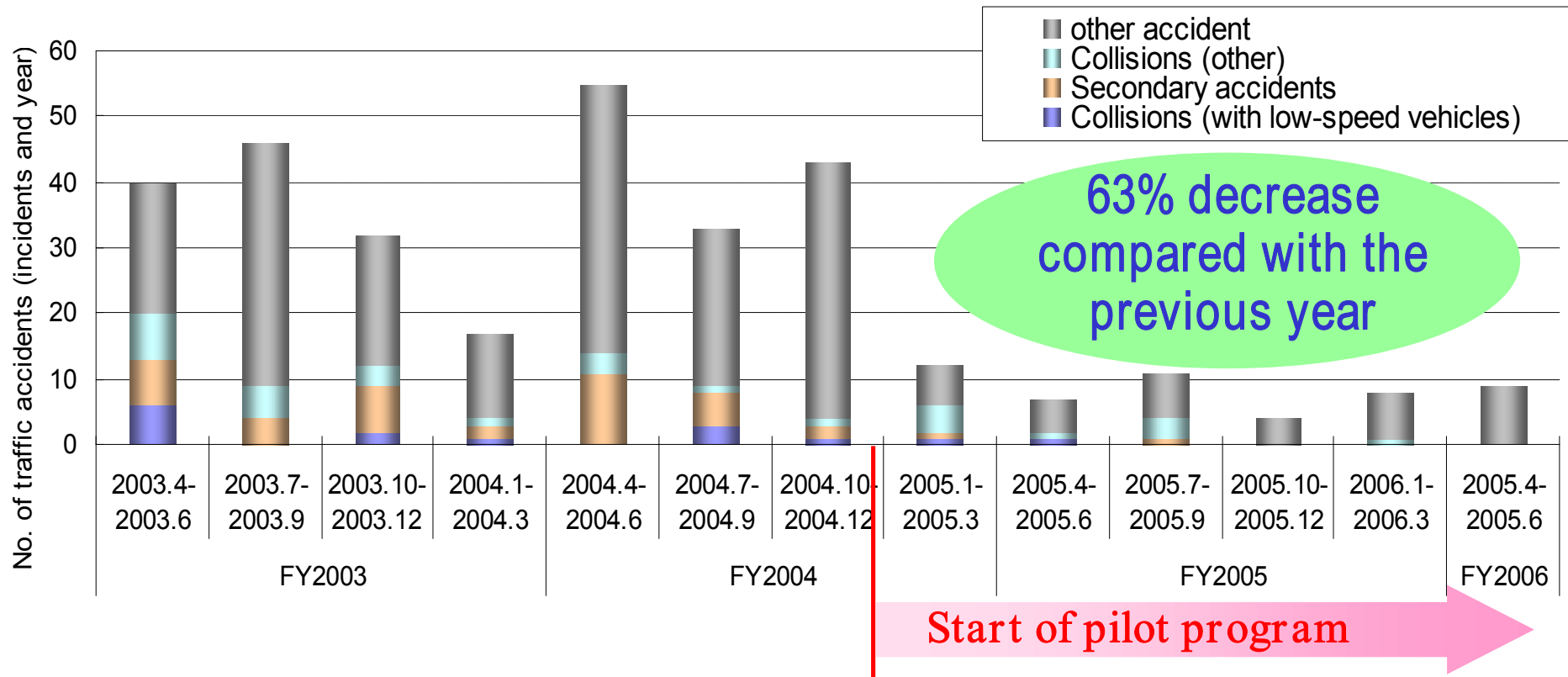
Roughly 10% of vehicles are equipped with three-media VICS-compatible car navigation systems

3.Reducing Traffic Accidents



4) Test of Cooperative Safety Support Systems (AHS)

Traffic accidents decreased dramatically.



Source:AHSRA

Fig. Traffic accidents at the Sangubashi Curve, the Metropolitan Expressway Route 4 (Shinjuku Route)

3.Reducing Traffic Accidents



5) Services to be deployed

Platform, audio, still images, etc., will be used to deploy advanced services.

[Still image data]



[Audio data]



"Warning: traffic congestion ahead for 2 kilometers between Urayasu and Makuhashi."

3.Reducing Traffic Accidents



5) Services to be deployed

a. Information Provision on forward obstacles



b. Information Provision on unusual conditions ahead



3.Reducing Traffic Accidents



5) Services to be deployed

c. Information Provision on the road environment

d. Support for merging (evaluation of feasibility)



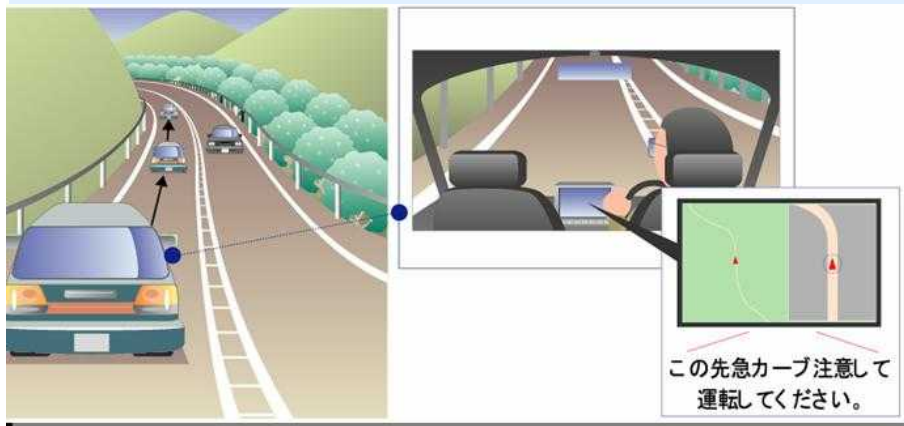
3.Reducing Traffic Accidents



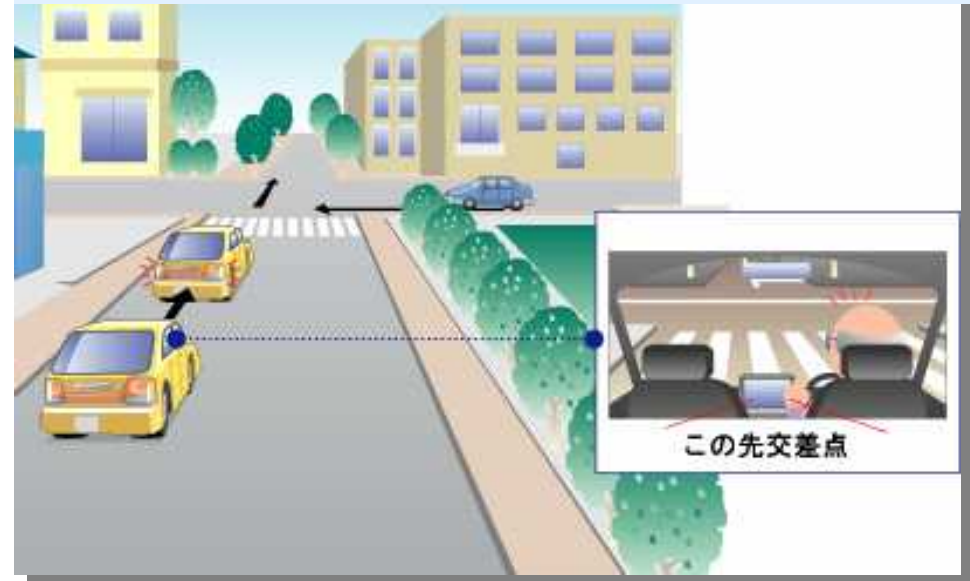
5) Services to be deployed

e. Information Provision with digital road map data
(Evaluation of feasibility)

Support for prevention of hazards
when entering curves



Providing information on
intersections



1. Integration through open platforms will bring about widespread use of the system and lower costs.
2. Public-private sector cooperation is indispensable for deploying a safe system that integrates various road/vehicle systems.
3. Traffic accidents are a problem common to every country in the world. Japanese experience and technical expertise can help to reduce traffic accidents worldwide.

Note

Next year, Pilot program will be implemented on TOKYO, etc.
Please visit Japan after ITS Beijing Congress.



Network of the Metropolitan Expressway

Thank you