







ITS initiatives in Japan

VICS (Vehicle Information and Communication System)

- Road traffic information on car navigation unit screens.
- Approximately 30 million automobiles are now equipped with VICS onboard units.
- VICS will reduce annual CO₂ emissions by 2.5 million tons by 2012.

	Information via FM multiplex broadcasting Displayed if manually selected	Beacon (radio wave, optical) information Automatically pops up
Ordinary road	 <p>Area for which information desired is selected from the menu. Example of FM simple map display</p>	 <p>Information on direction of travel provided based on vehicle location (▲ indicates vehicle location)</p>
Inner-city express-way	 <p>Area for which information desired is selected from the menu.</p>	 <p>Information on direction of travel provided based on vehicle location (▲ indicates vehicle location)</p>
Inter-city express-way	 <p>Area for which information desired is selected from the menu. Example of FM simple map display</p>	 <p>Information on direction of travel provided based on vehicle location (▲ indicates vehicle location)</p>

ETC (Electronic Toll Collection)

- ETC utilization rate on toll roads is approximately 85% (cumulative set-ups in approximately 45 million automobiles)
- Eliminates almost all toll-gate congestion on expressways throughout Japan.
- And cuts CO₂ emissions by about 210,000 tons per year

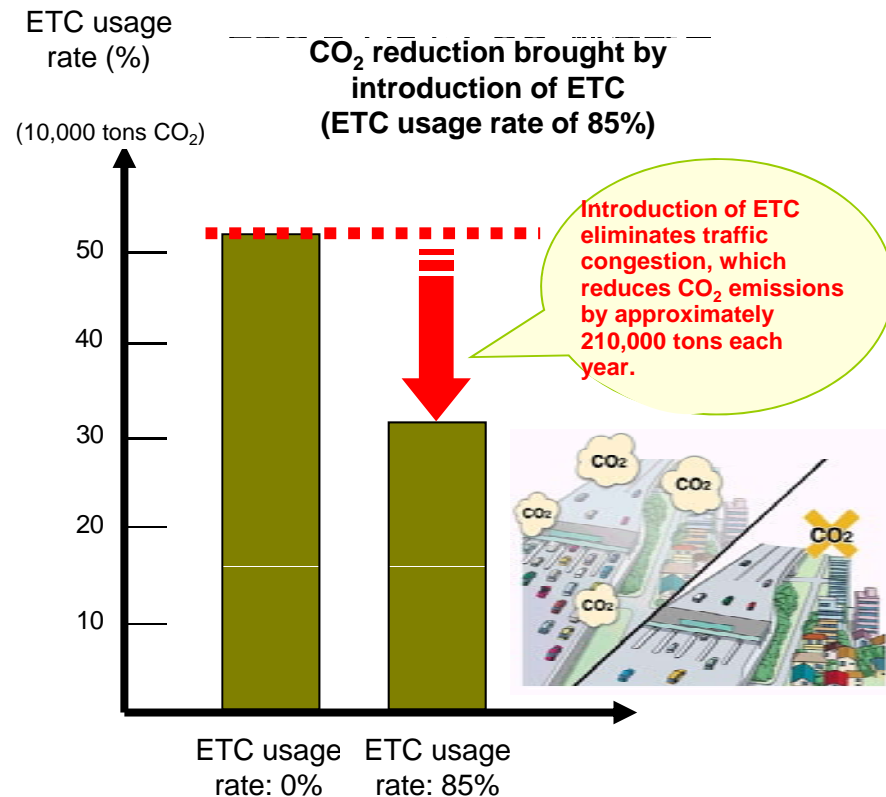
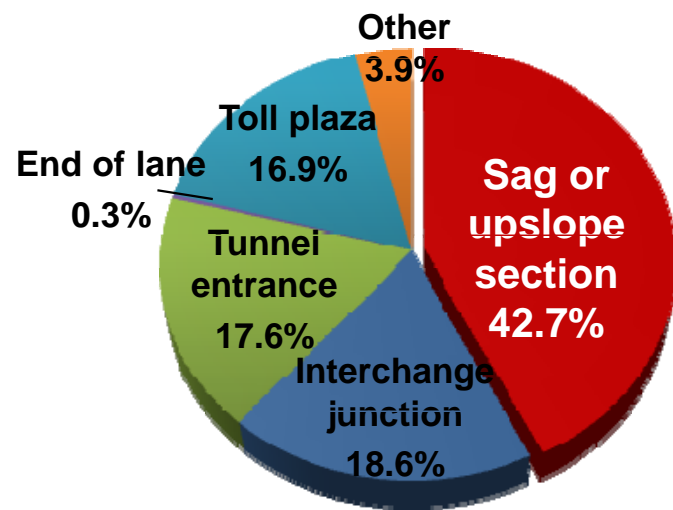


Figure: ETC usage rate and reduced amount of CO₂ emissions

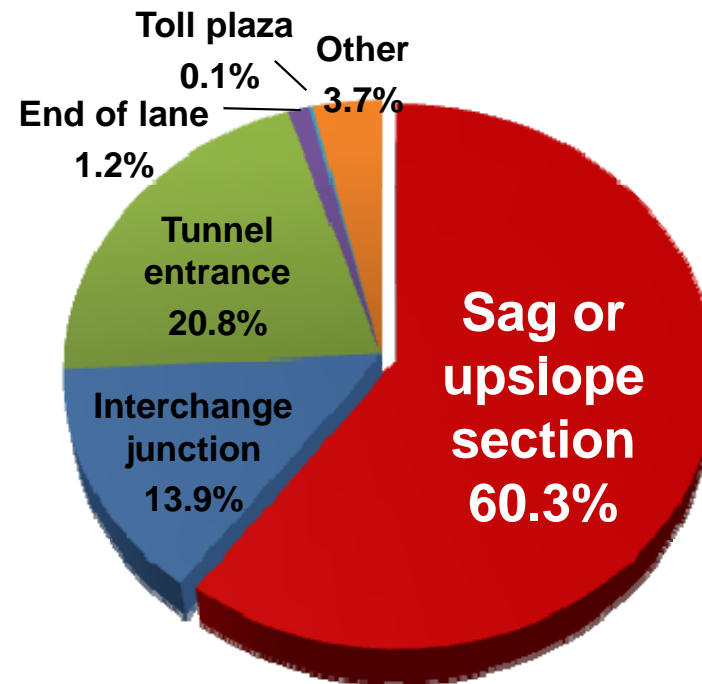
Now that ETC is in wide use, toll gate congestion has almost disappeared from expressways. Because 60% of congestion now occurs at sags and on upslope sections, measures are urgently needed at such locations.

Congestion on inter-city expressways



2002 without ETC

Total congestion amount =
65,226 km·h per year



2009 with ETC

Total congestion amount =
107,516 km·h per year

Prepared based on totals for three NEXCO companies

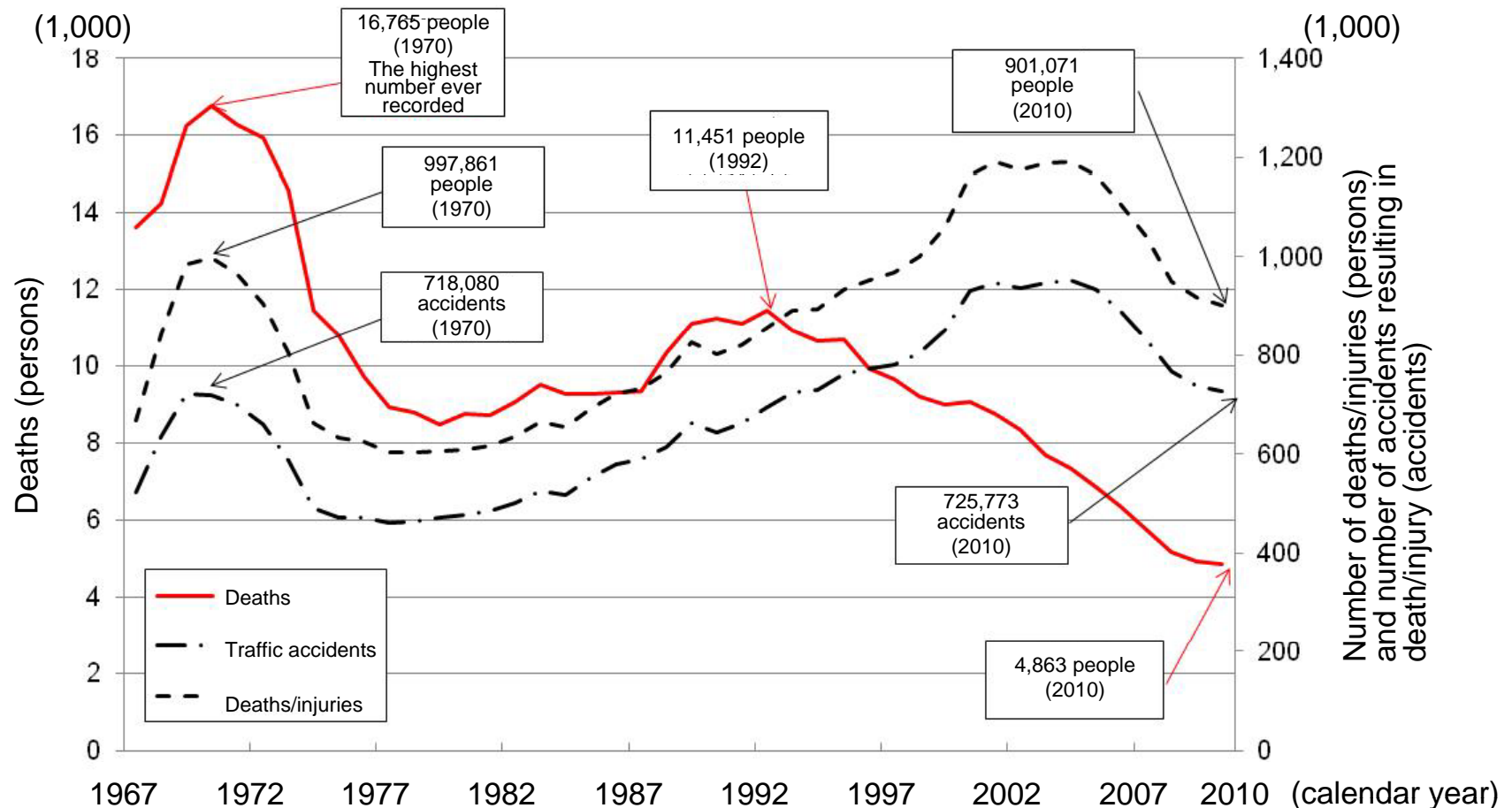
(congestion amount = number of congestion incidents x average congestion time x average maximum congestion length / 2)

Traffic accidents caused 4,863 fatalities in 2010.

-About 1/3 of the record number of fatalities of 16,765 (1970)

-About 1/2 of the second peak of 11,451 fatalities (1992)

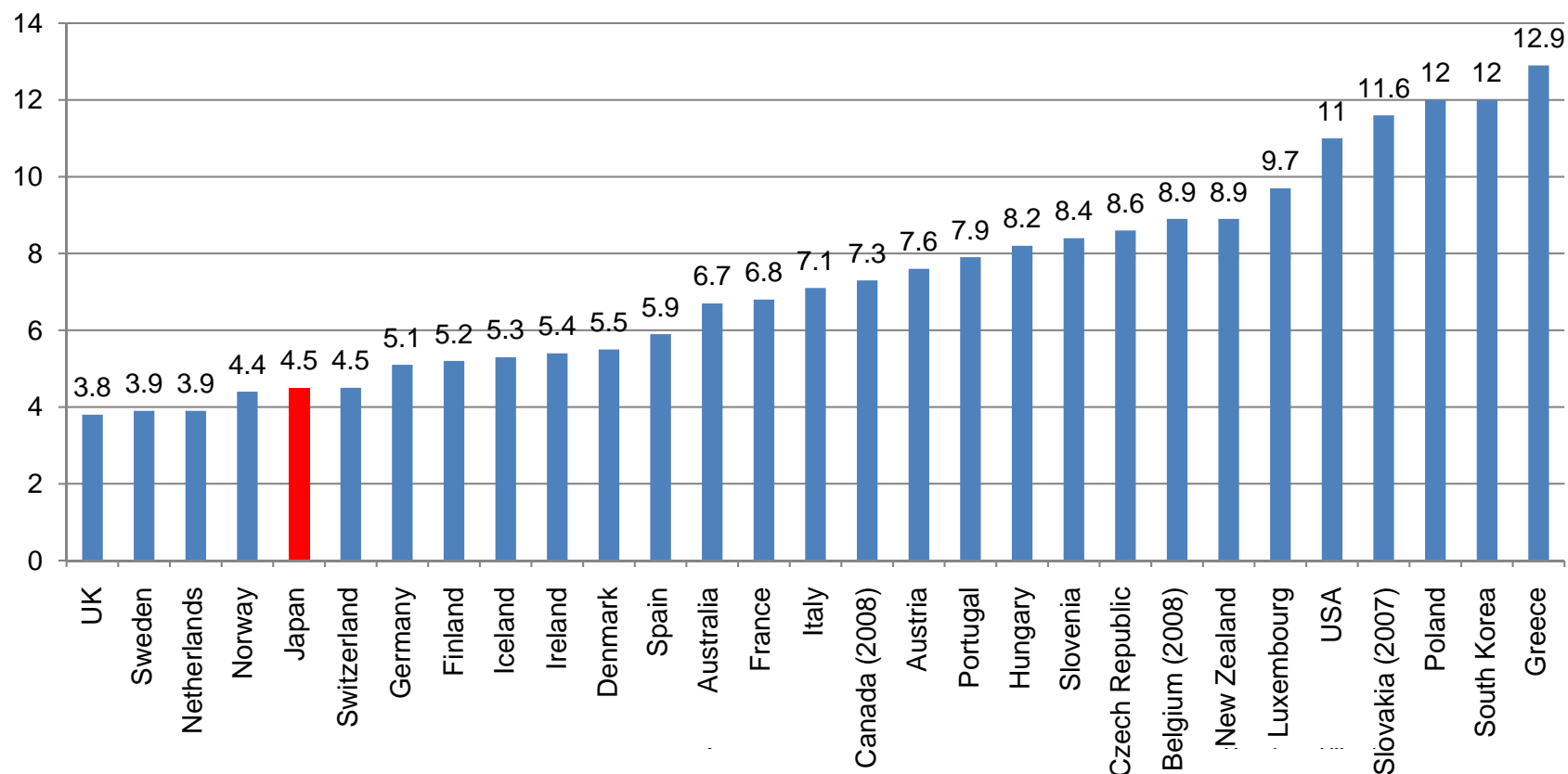
[Changes in numbers of traffic accident deaths and deaths/injuries]



Note: Numbers of accidents, deaths, and deaths/injuries up to 1971 do not include Okinawa Prefecture.

Source: Prepared based on data of the National Police Agency

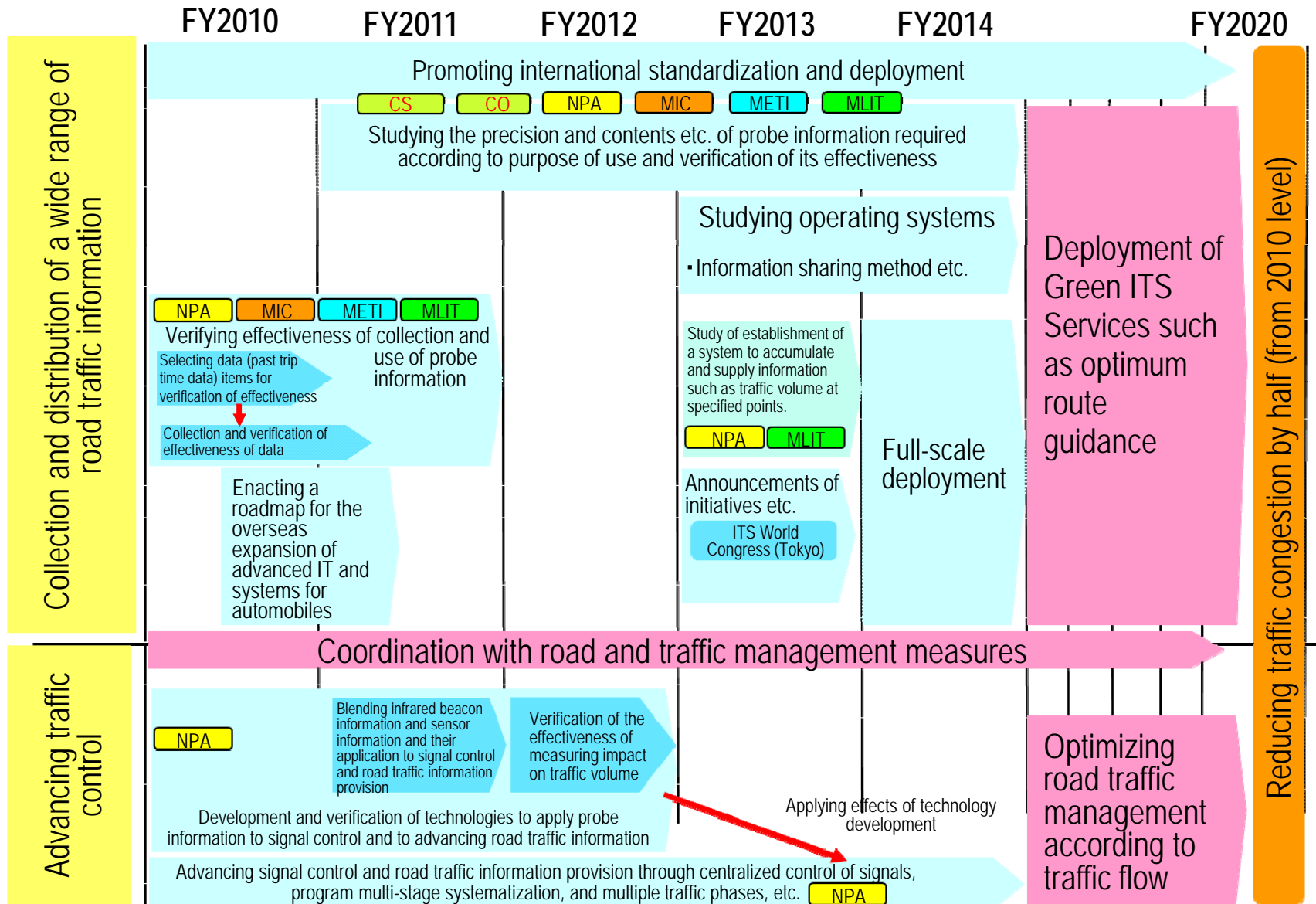
A comparison of numbers of fatalities per 100,000 people ranks Japan fifth lowest at 4.5 fatalities (2009).



- Notes:
1. Based on IRTAD data
 2. Figures are for 2009, with the exception of those countries with years appearing in parentheses following their names.
 3. All figures were calculated based on data for people who died within 30 days from the day of the relevant accident.

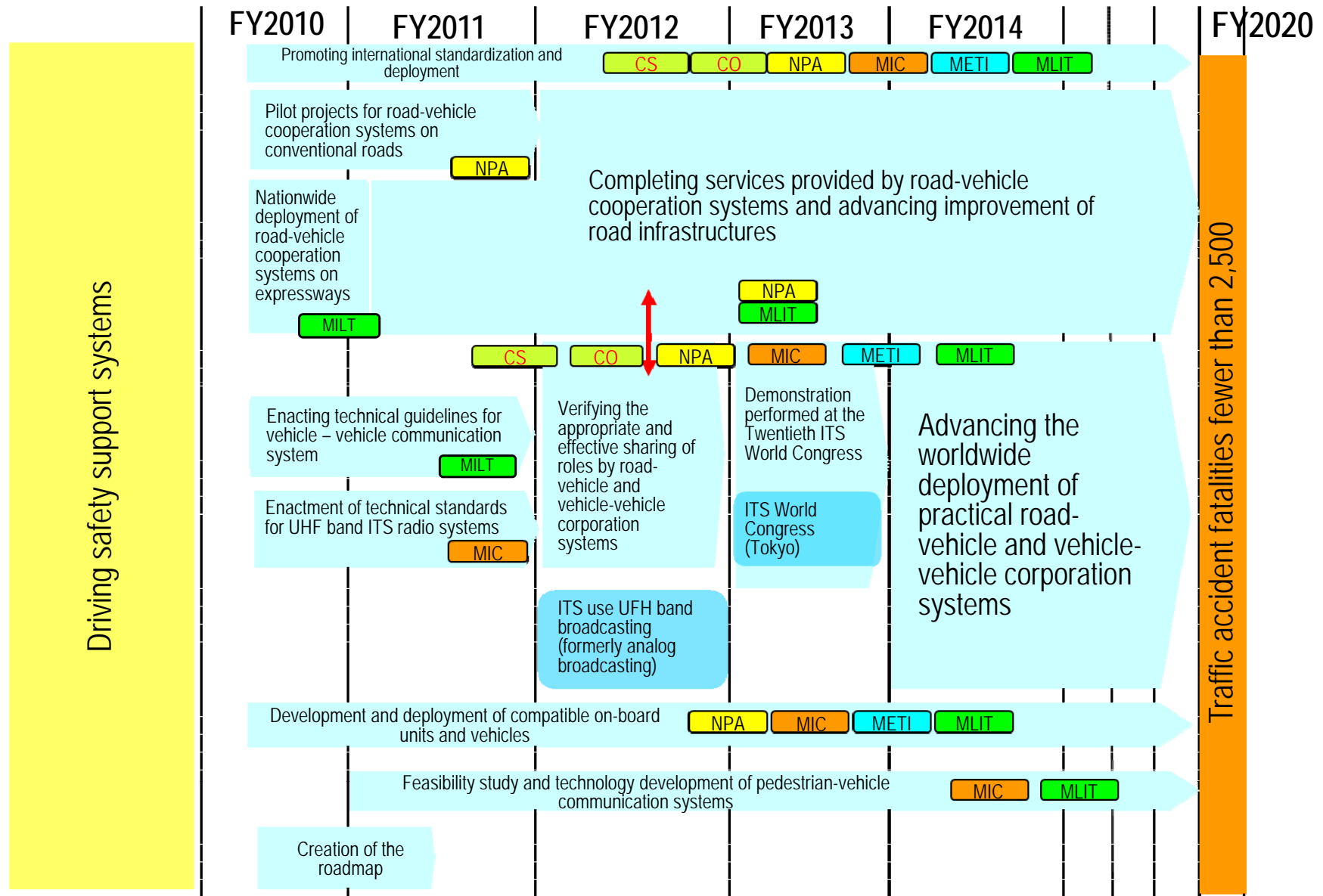
Goal: Halving traffic congestion on major roads nationwide by 2020 (compared with 2010)

Promoting green transport of people and goods



Goal: Fewer than 2,500 traffic accident fatalities in 2018
(4,863 fatalities in 2010)

Promoting disaster, crime, and accident countermeasures



- “ITS Spots”, which are a cooperative vehicle-highway system used on Smartways have been installed at about 1,600 locations throughout Japan, reaching the practical application stage nationwide in August 2011.
- Two-way high volume communications by DSRC provide a variety of services including wide-area road traffic information, driving safety support, and probe information collection.

“ITS Spot” compatible car navigation systems went on sale in the fall of 2009

“ITS Spots” have been installed at about 1,600 locations, mainly on expressways.

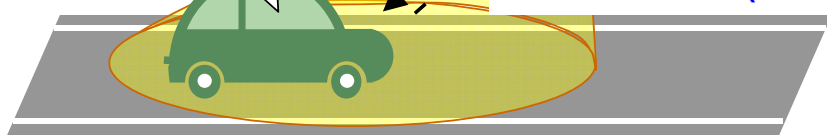


“ITS Spot” Compatible Car Navigation Units



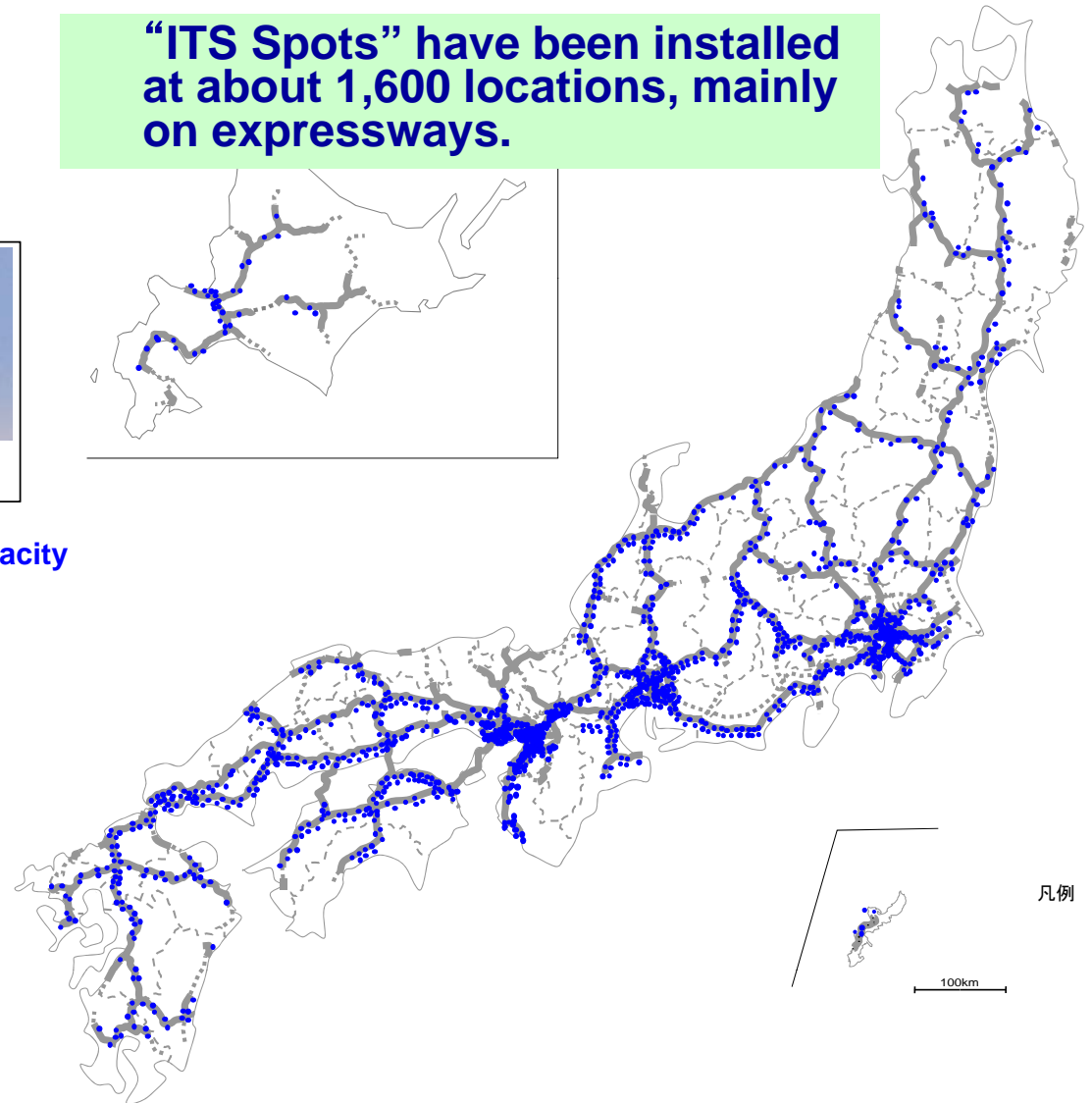
ITS Spots

High-speed and large-capacity communication (DSRC)



3 Basic Services

- Dynamic Route Guidance
- Safety Driving Support
- ETC



Toyota Motors
(Sold beginning October 2009)



Nissan Motors
(Sold beginning June 2011)

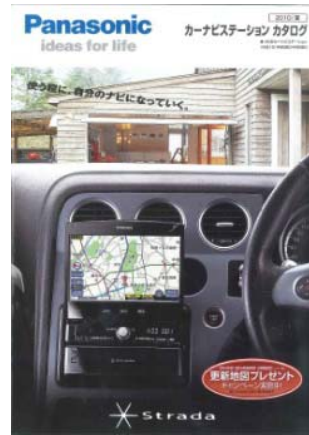


Pioneer
(Sold beginning October 2009)



Panasonic
(Sold beginning March 2010)

Mitsubishi Electric
(Sold beginning October 2009)



Mitsubishi Heavy Industries
(Sold beginning March 2010)

三菱重工 **ニュース**
2010年3月11日発行 第4912号
アンテナ分離型DSRC車載器「MOBE-1000」を新発売
「スポット通信サービス (DSRCサービス)」に対応

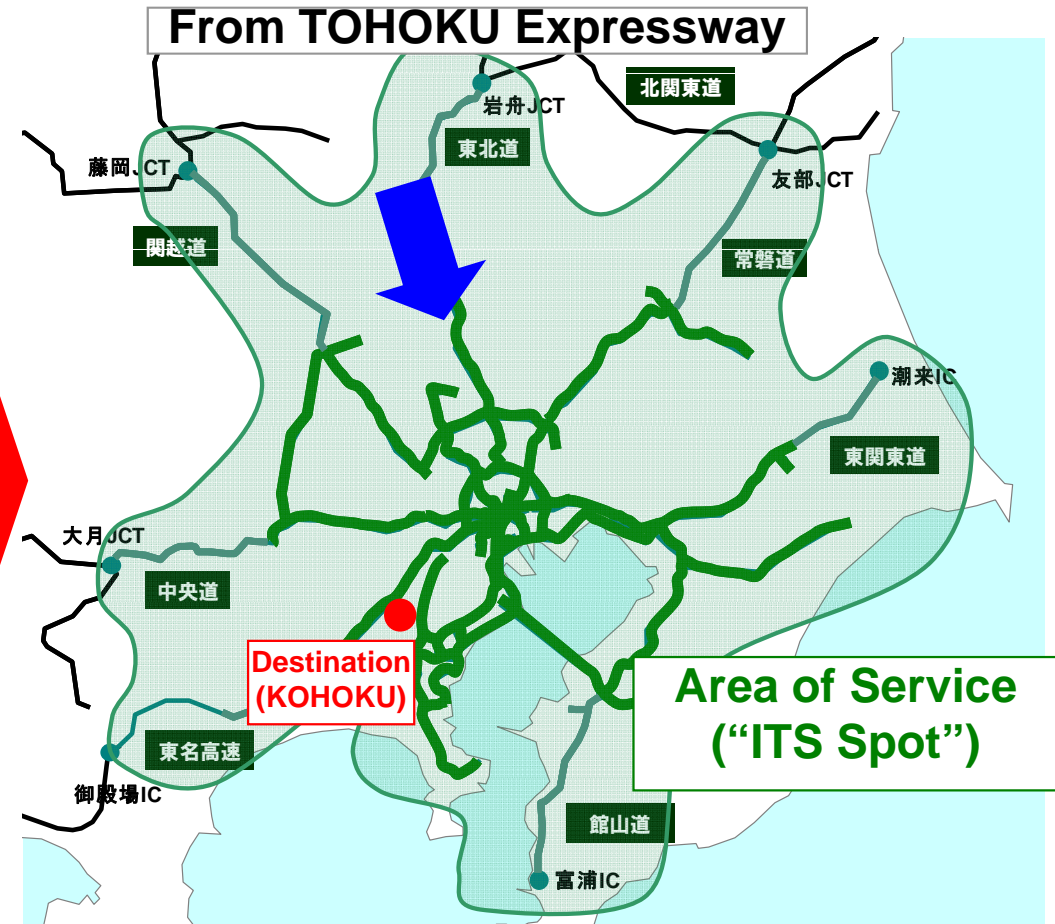
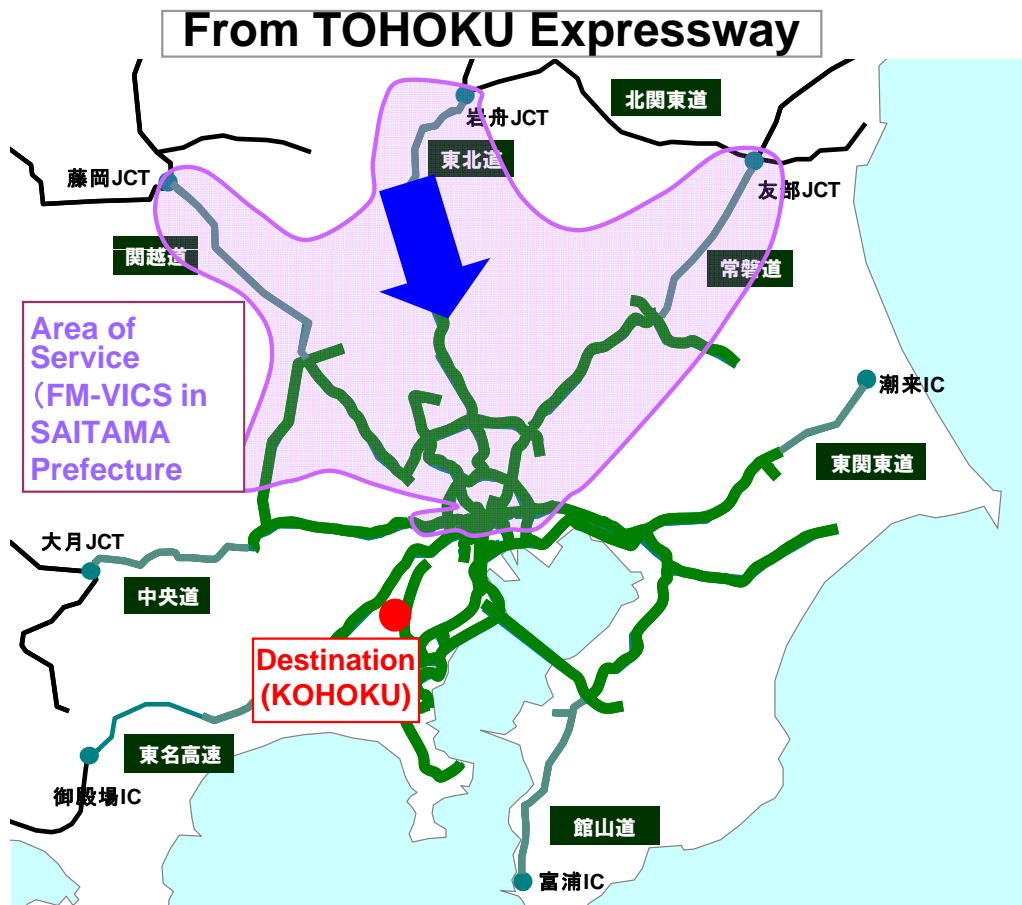


【MOBE-1000】

Alpine
(Sold beginning July 2011)



Drivers can obtain congestion data on all expressways in the Metropolitan Region via “ITS Spots.” They can select routes avoiding city center congestion from among multiple routes, permitting the overall effective use of the road network.



“ITS Spot”, which provide wide-area road traffic information, also provide safe driving support information.

Warnings of obstructions fallen on the road

- On the Metropolitan Expressways, obstructions fall on the roads up to 50,000 times each year (an average of 140 times per day, or once every 10 minutes).
- Information collected by the traffic control center is broadcast



(Displayed about 1 kilometer before the obstruction.)

Warning of congestion invisible beyond a curve etc. at an accident hot spot

- On the Metropolitan Expressway system, 20 percent of accidents occur at locations on 2% of the total route length.
- Rear end collisions have been reduced by 60% at such accident hot spots.

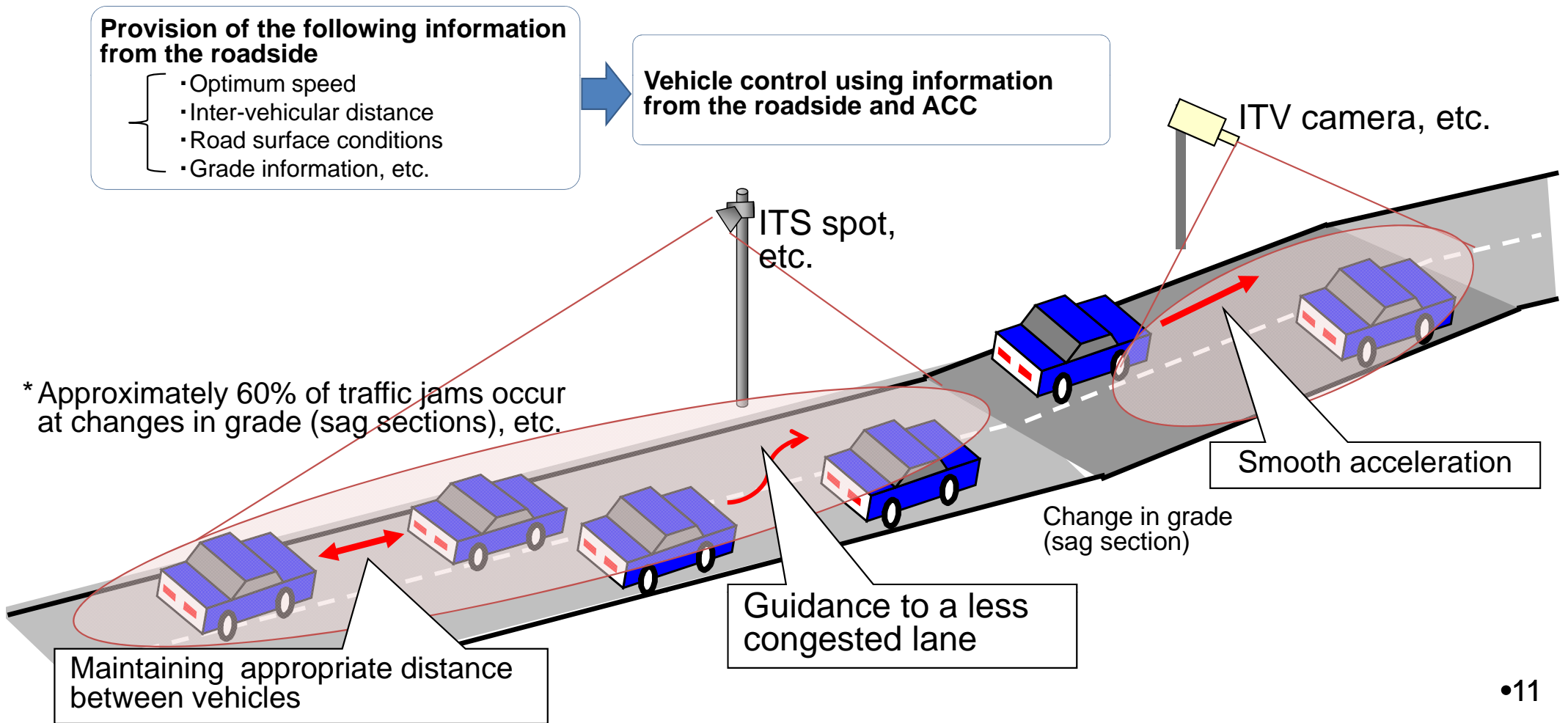


Images inform drivers of snow, fog, and other weather conditions, and of congestion inside tunnels.



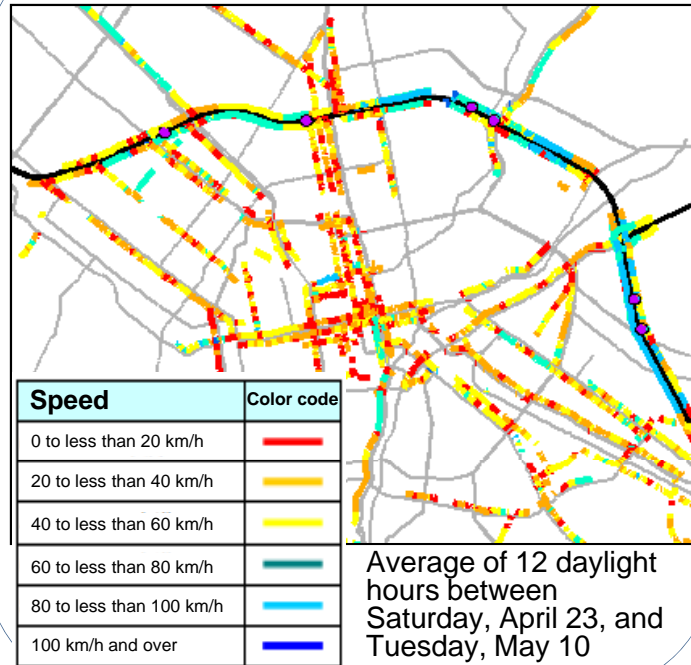
- “ITS Spots” installed on the roadside transmit optimum speed, headway distance, and other information.
- ACC※ equipped automobiles automatically control headway etc. based on the information they have received.
- The goal is to eliminate or reduce major congestion on expressways.

※ACC (Adaptive Cruise Control): Function which controls speed and headway of a moving automobile.

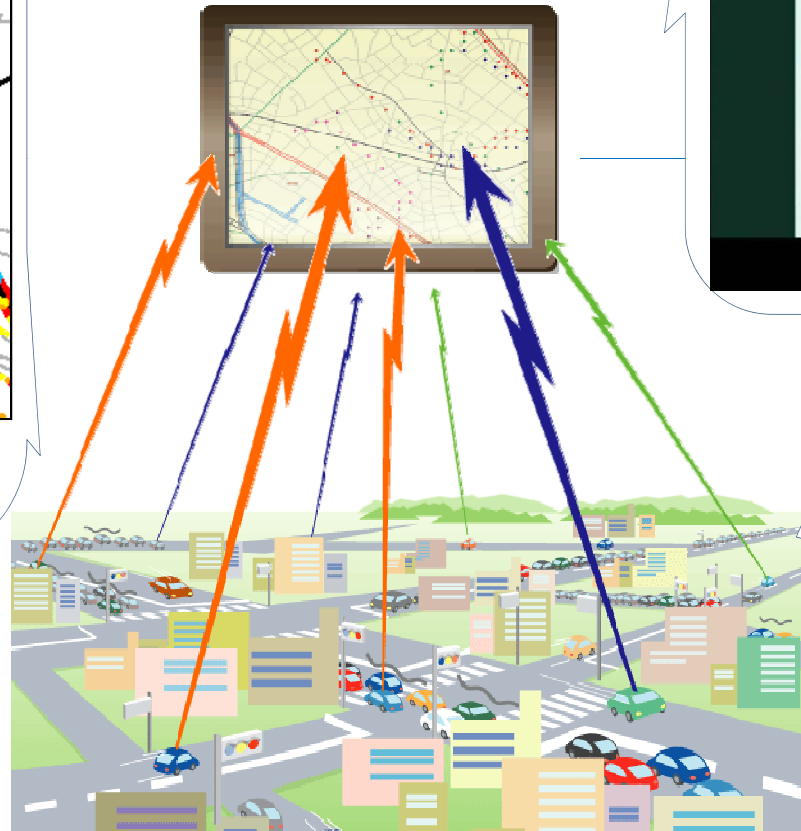
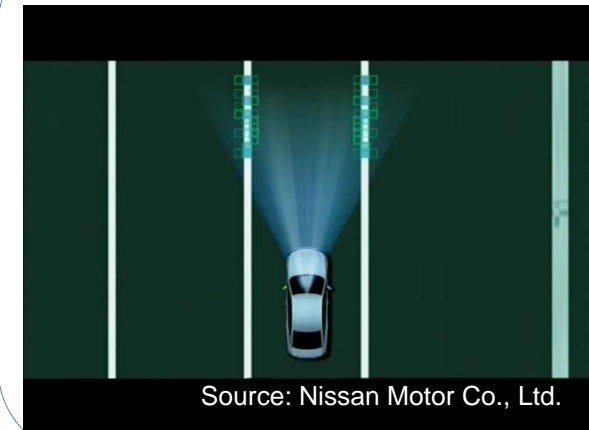


- Efficient and advanced management of road traffic by collecting information such as automobile probe information, on-board camera information, sensor information, emergency brake locations etc. and other behavior information.

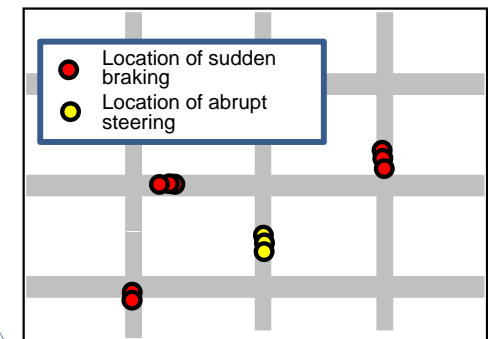
Probe data (example of Sapporo City)



Data from onboard camera and sensor

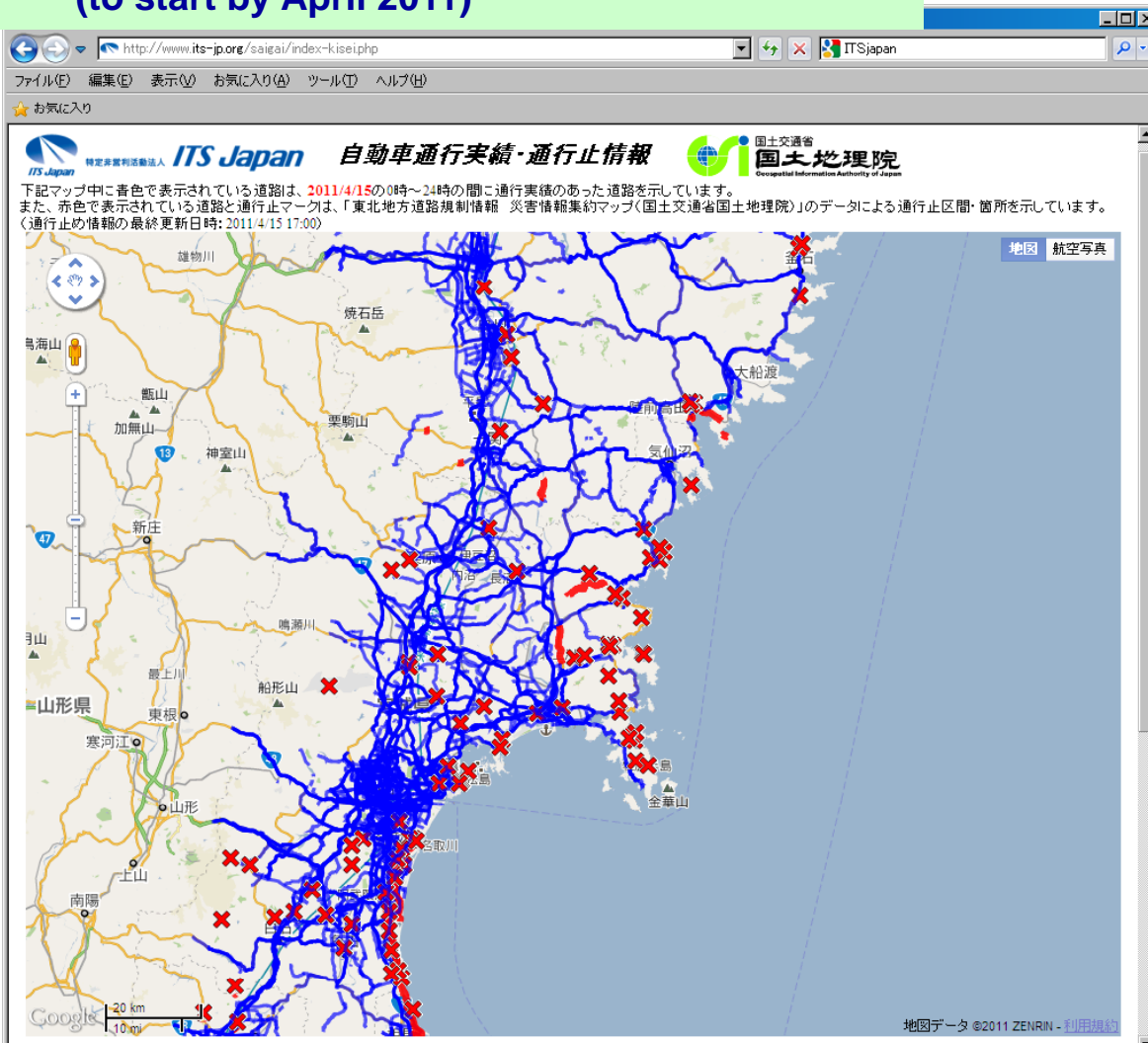


Behavioral data on locations of sudden braking and abrupt steering

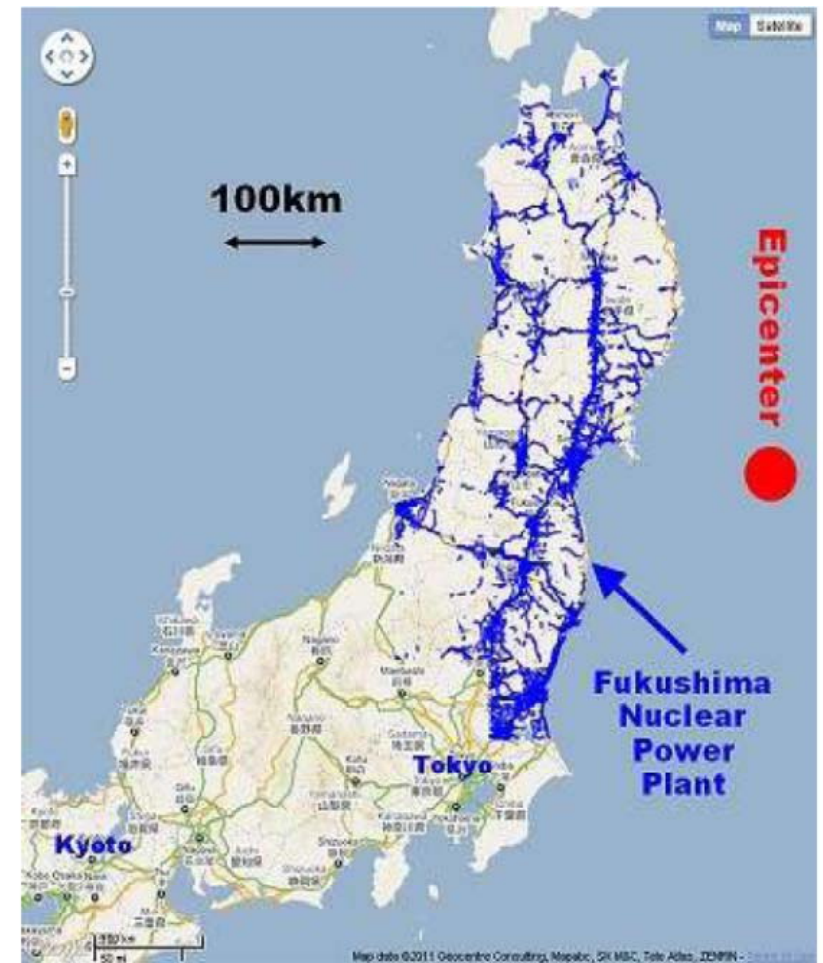


- The public and private sectors cooperatively collect probe data and provide travel history information and traffic restriction information during disasters.

Information provision by Web sites (to start by April 2011)



Range of probe collection and provision during the Great East Japan Earthquake



- Traffic record data (blue lines) use private-sector telematics data.
- Traffic control data (red Xs) use data provided by road managers.

Source: ITS Japan website