Sustainable Mobility India 2011, New Delhi India

Moving towards the next generation Intelligent Transport Systems in Japan

ITS Japan

December, 6 2011

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Contents

1. Introduction
2. ITS Technologies in Japan
   - Widespread technologies
   - New technologies
   - Future technologies

Achievements of Automobiles

Freedom and convenience
Mobile private space

Economic growth
Social and cultural expansion

Leading causes of death

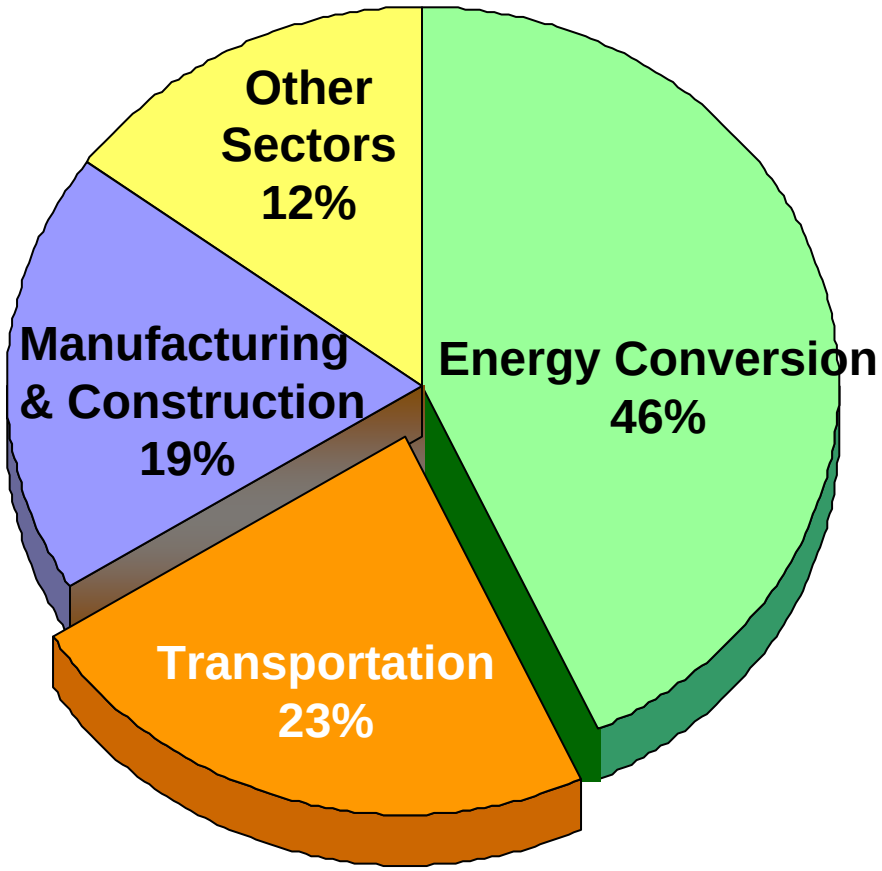
■ Traffic safety in critical for sustainable society

2004			2030		
Rank	LEADING CAUSE	%	Rank	LEADING CAUSE	%
1	Ischaemic heart disease	12	1	Ischaemic heart disease	12
2	Cerebrovascular disease	10	2	Cerebrovascular disease	10
3	Lower respiratory infections	7.0	3	Chronic obstructive pulmonary disease	7.0
4	Chronic obstructive pulmonary disease	5	4	Lower respiratory infections	5
5	Diarrhoeal diseases	4	5	Road traffic injuries **2.4 million?**	4
6	HIV/AIDS	4	6	Trachea, bronshus, lung cancers	4
7	Tuberculosis	3	7	Diabetes mellitus	3
8	Trachea, bronshus, lung cancers	2	8	Hypertensive heart disease	2
9	Road traffic injuries **1.2 million**	2	9	Stomach cancer	2
10	Prematurity and low birth weight	2.0	10	HIV/AIDS	2.0

Source：GLOBAL STATUS REPORT ON ROAD SAFETY, World Health Organization (WHO) 2009

Share of CO_2 Emission by Source

- **Emission reduction in Transportation is critical for sustainable society**



Source：OECD, 2008

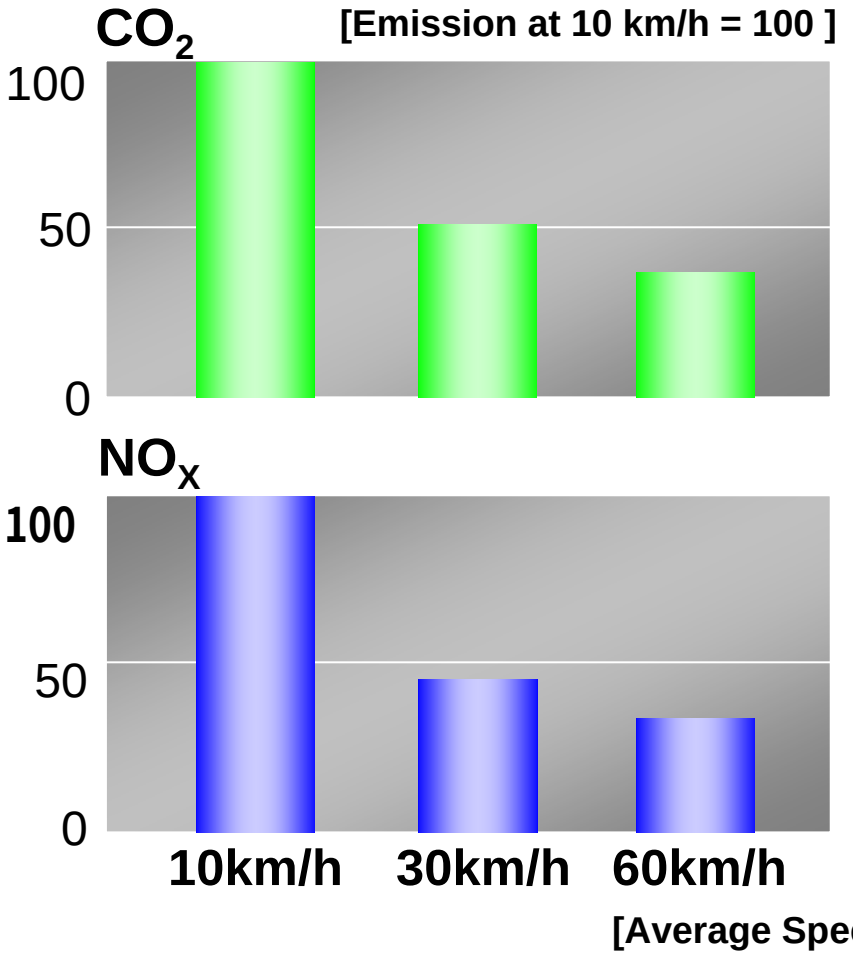
Traffic Congestion and Emission

■ Smooth traffic contributes emission reduction

Average Vehicle Speed in peak hours

20km/h or lower
30 to 40km/h
20 to 30km/h
40km/h or higher

Gas emission index

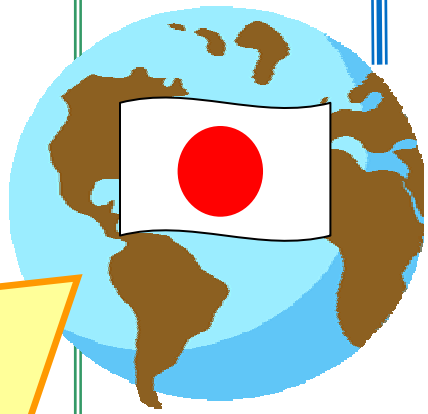


Source: Ministry of Land, Infrastructure, Transport and Tourism

ICT Government Strategy

◆IT Strategy Headquarters (Chief: Prime Minister)

IT New Reform Strategy (January 2006)



e-Japan strategy II (July 2003)

Traffic fatalities in 2012 ≦ 5,000

e-Japan strategy (January 2001)

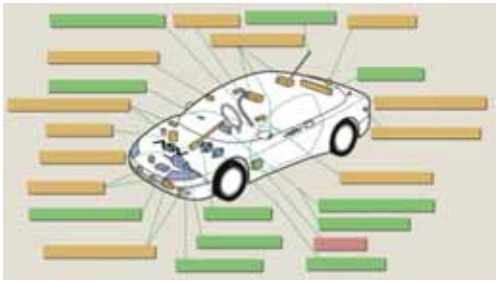
2001 2003 2006 2011

Nine Areas of ITS Development (1996)

1. Car Navigation

2. ETC

3. Driving Safety



4. Traffic Management

5. Road Management

6. Public Transportation

7. Commercial Vehicle Operation

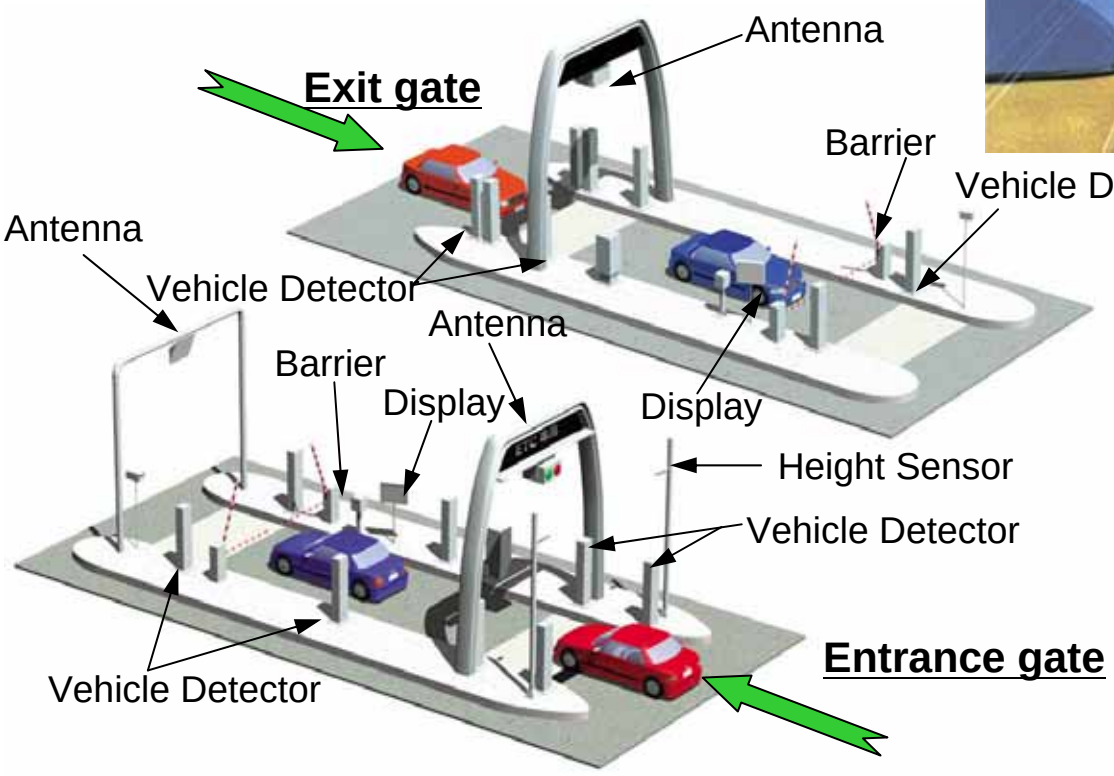
8. Pedestrian Support

9. Emergency Vehicle Operation

ETC (Electronic Toll Collection)

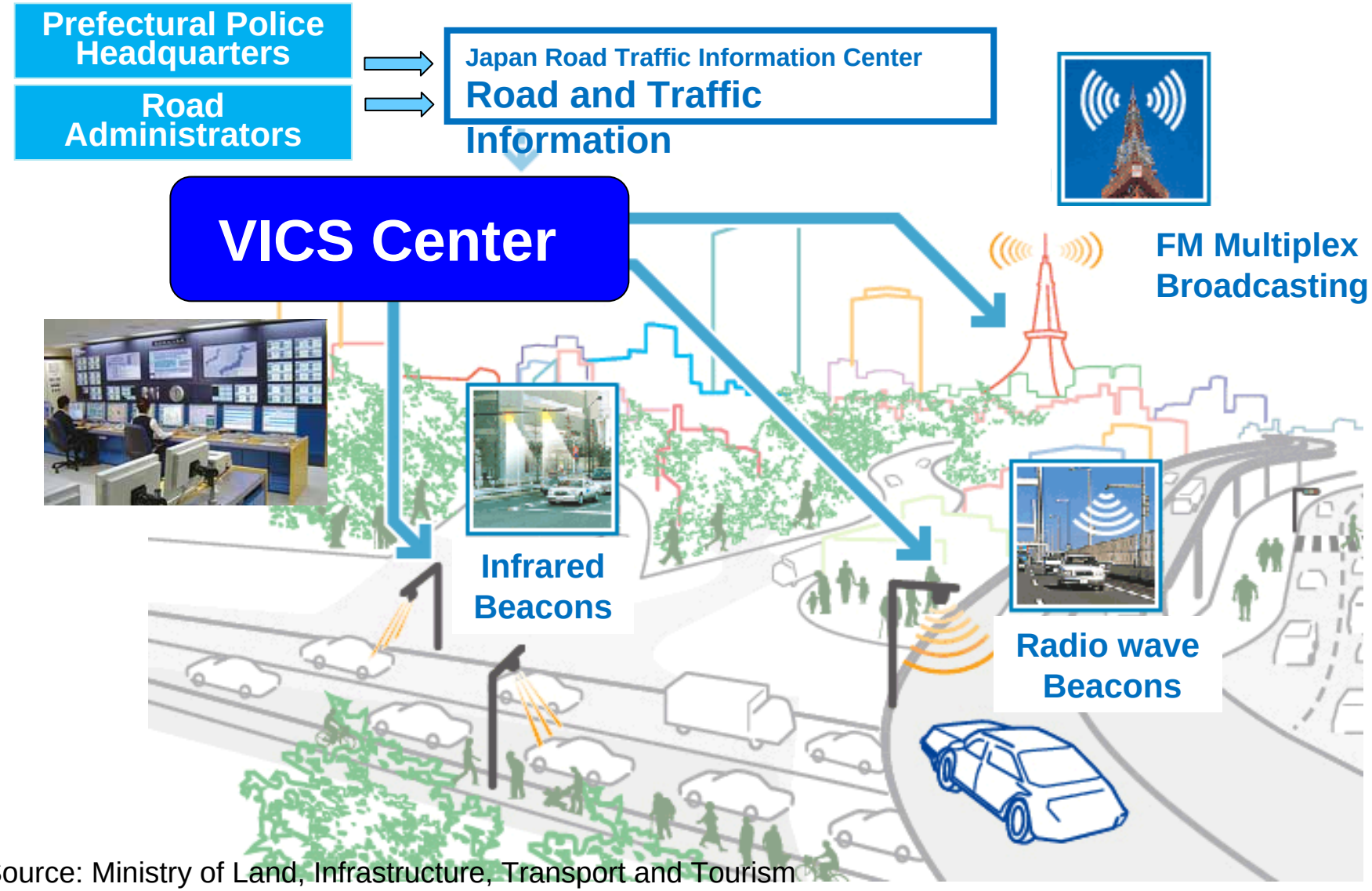
- **Eliminated almost all toll-gate congestions**

Non-stop at the gate with ETC



VICS (Vehicle Information and Communication System)

■ Real time traffic information to each driver



Source: Ministry of Land, Infrastructure, Transport and Tourism

VICS (Vehicle Information and Communication System)

ITS Japan

■ Avoids traffic congestions and reduces travel time

● Traffic Restrictions

Road Blocked
Road Closed to Large-Size Cars
No Entry
Slow
Speed Limit
Entry Ramp Closed
Entry Ramp Restricted
Chain Reguration
Lane Reguration
Alternate Traffic
Two-Way Traffic

● Traffic Hazards

Accident
Disabled Car
Traffic Obstruction
Contruction
Road Work
Icy Road

● Parking Lot s

Parking Lot (Vacant)
Parking Lot (Full)
Parking Lot (Crowded)
Parking Lot (Closed)
Parking Lot (Unknown)

Source: Ministry of Land, Infrastructure, Transport and Tourism

Traffic Information System with Probe Data

■ Private sectors started services with Probe data

Conventional System

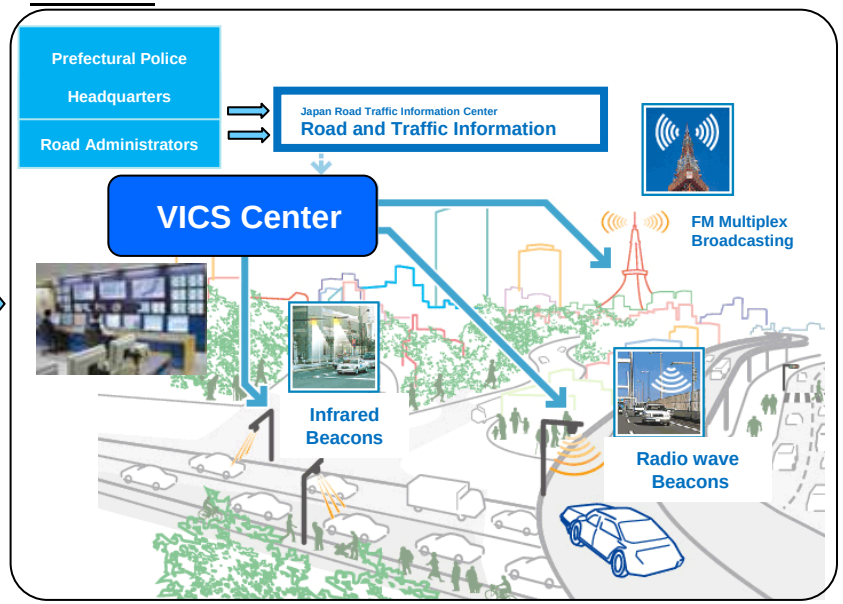
Fixed sensor data

Central Tokyo

Traffic Control Center

Road Side

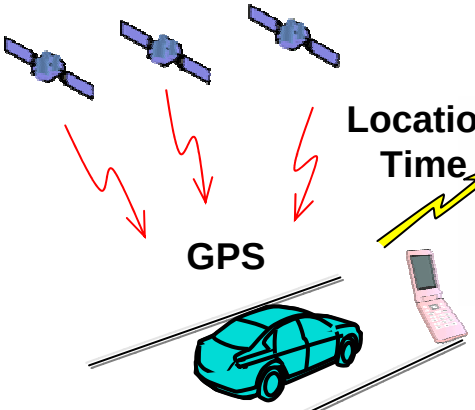
VICS



Private Application with Probe Data

Probe Data

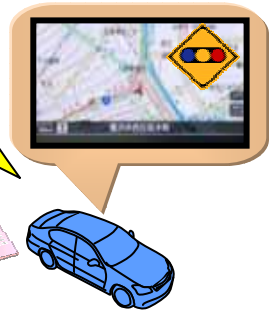
Central Tokyo



Location
Time

Information Center

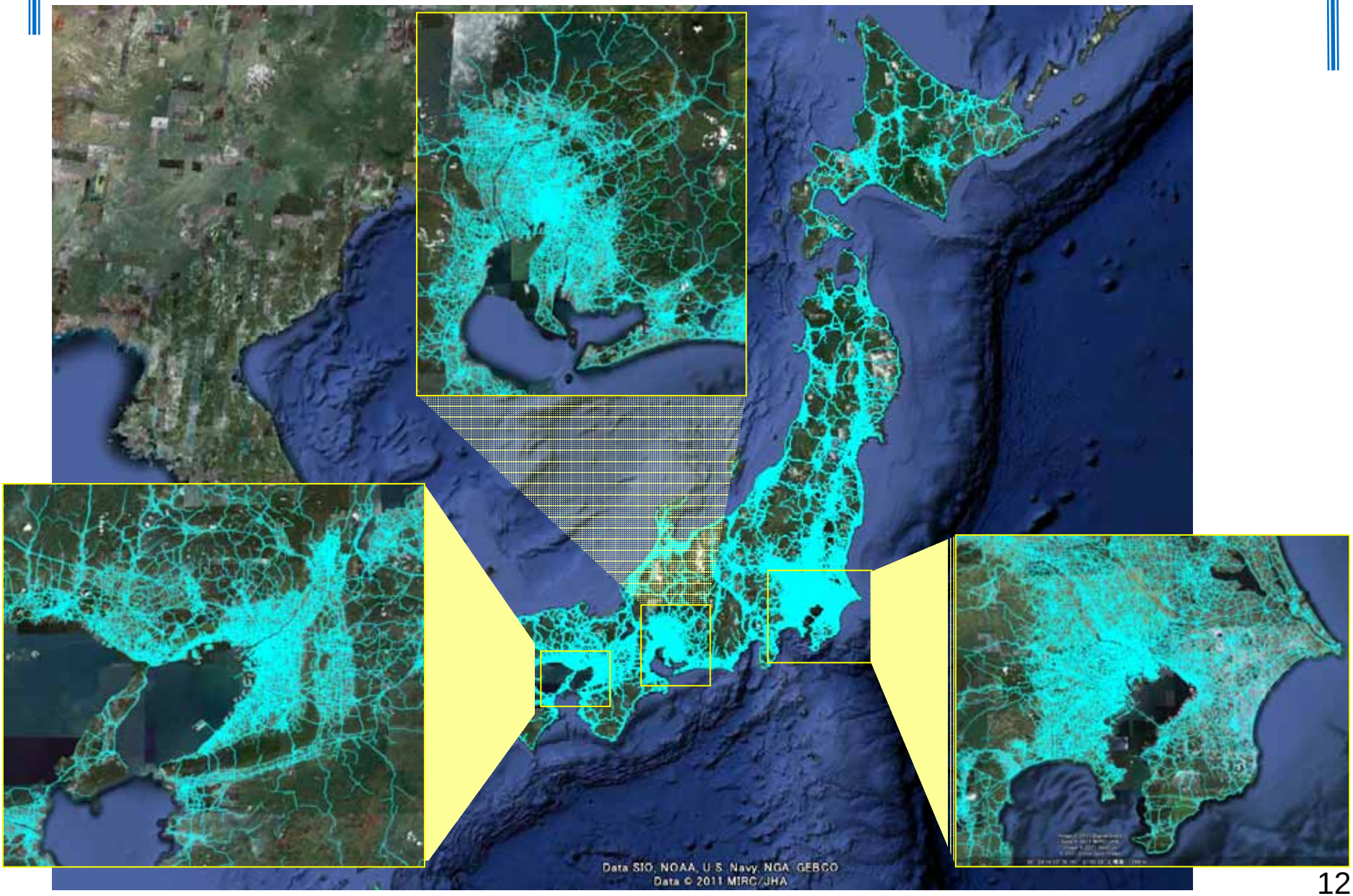
Traffic Information with Probe Data



One application of Private Telematics Service

More accurate by additional use of Probe Data

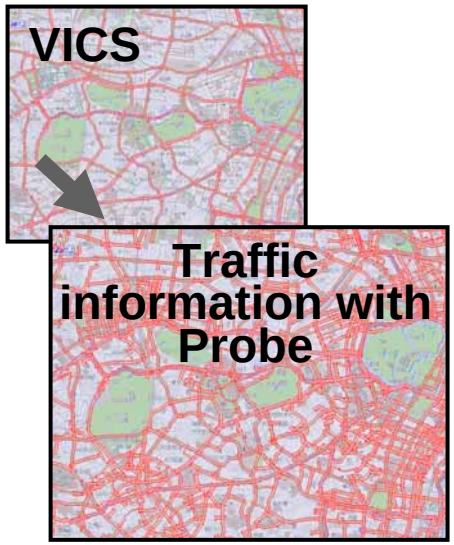
Probe Car Data Collected by Private Sectors

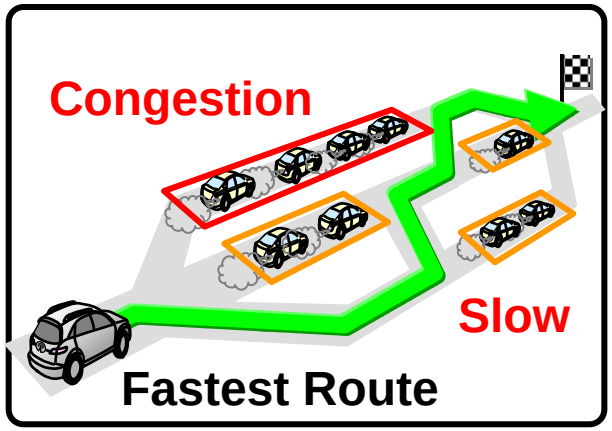


Use of Probe data

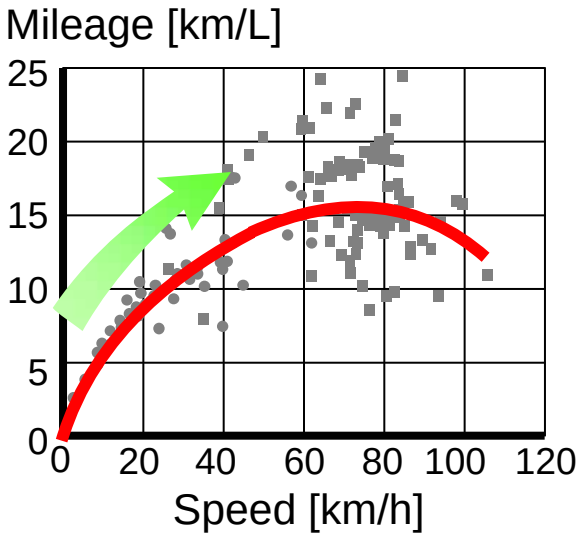
- **"Fastest Route Guide" with Probe data**
  1. **20 % shorter Travel Time**
  2. **17 % less CO_2 Emission**

Nissan CARWINGS





Test results in Tokyo



20% shorter Travel Time

17% less CO2

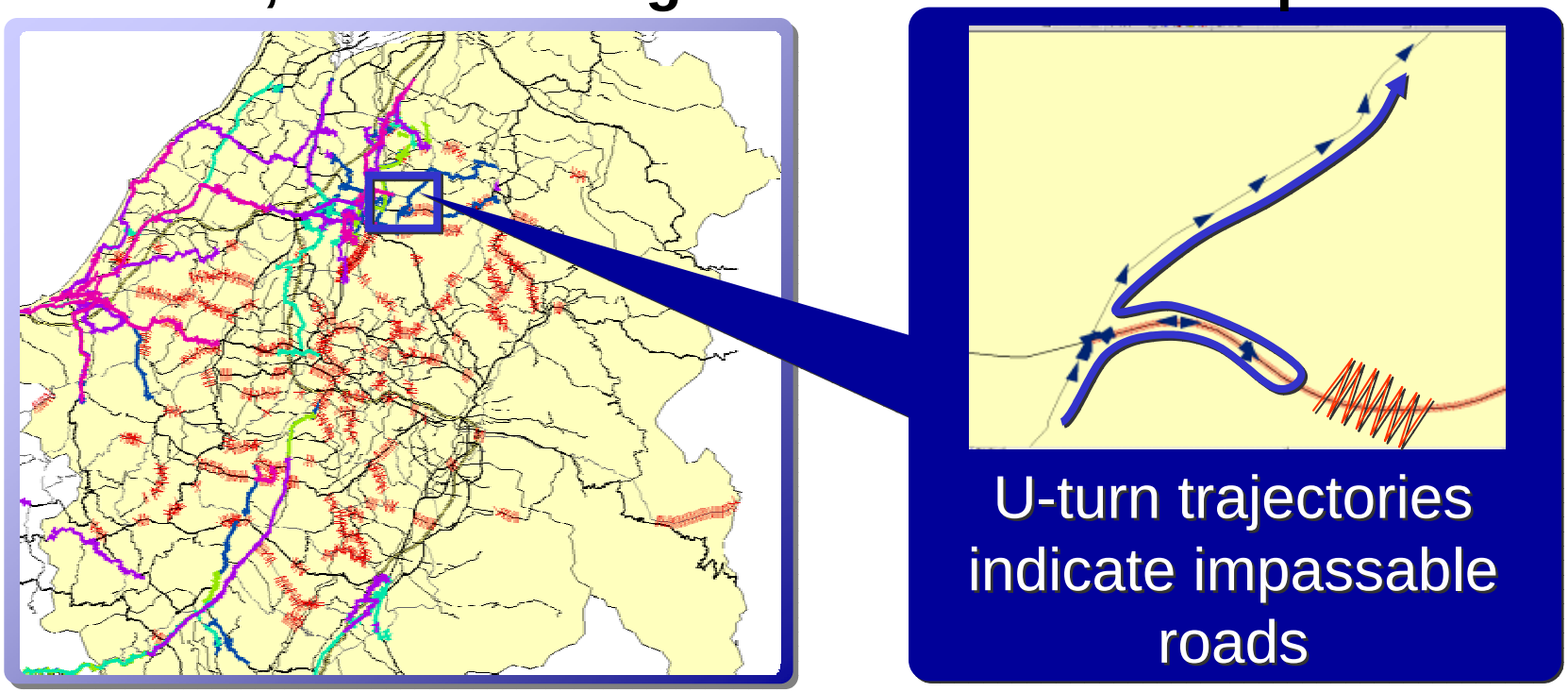
Source Nissan

Use of Probe data

■ Probe data helps judge Passible or Impassable roads

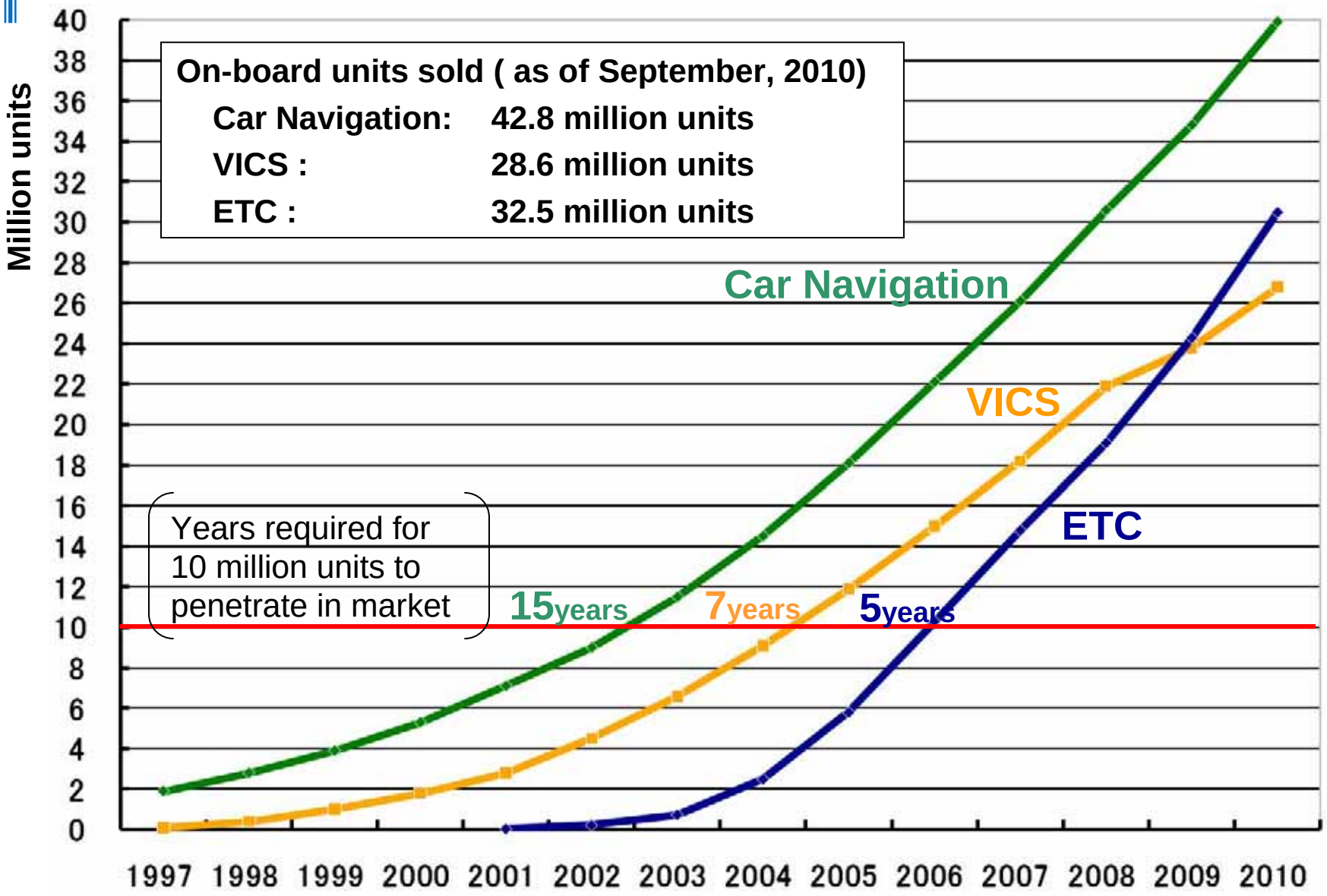
Honda Internavi PremiumClub

October 23, 2004 Mid Niigata Prefecture Earthquake



Source: Publication of Honda Motor

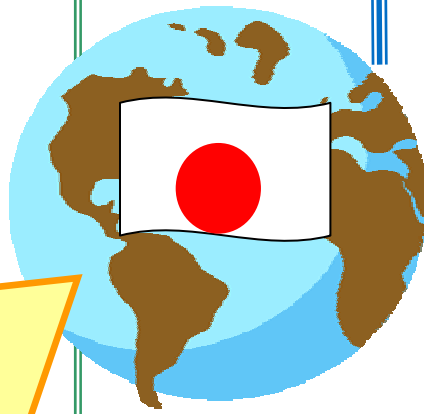
On-board unit Market Penetration



Source: Ministry of Land, Infrastructure, Transport and Tourism

New ICT Government Strategy 2011

◆ IT Strategy Headquarters
(Chief: Prime Minister)



IT New Reform Strategy
(January 2006)

e-Japan strategy II
(July 2003)

Traffic fatalities in 2012 ≦ 5,000

e-Japan strategy
(January 2001)

New ICT strategy 2010

Traffic fatalities in 2018 ≦ 2,500
½ Traffic congestions in 2020 vs. in 2010

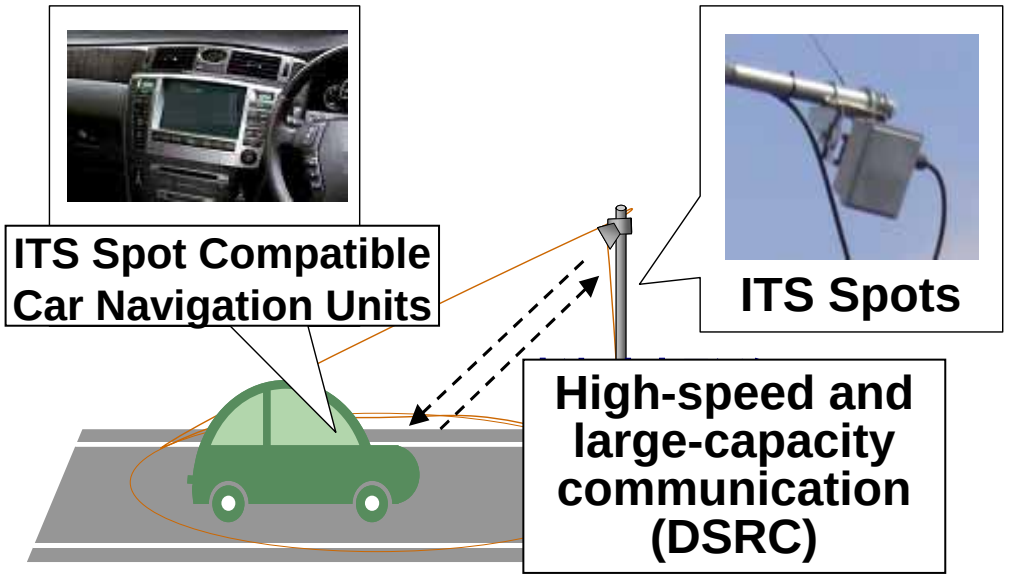
2001 2003 2006 2011

ITS Spots : Nationwide deployment in 2011

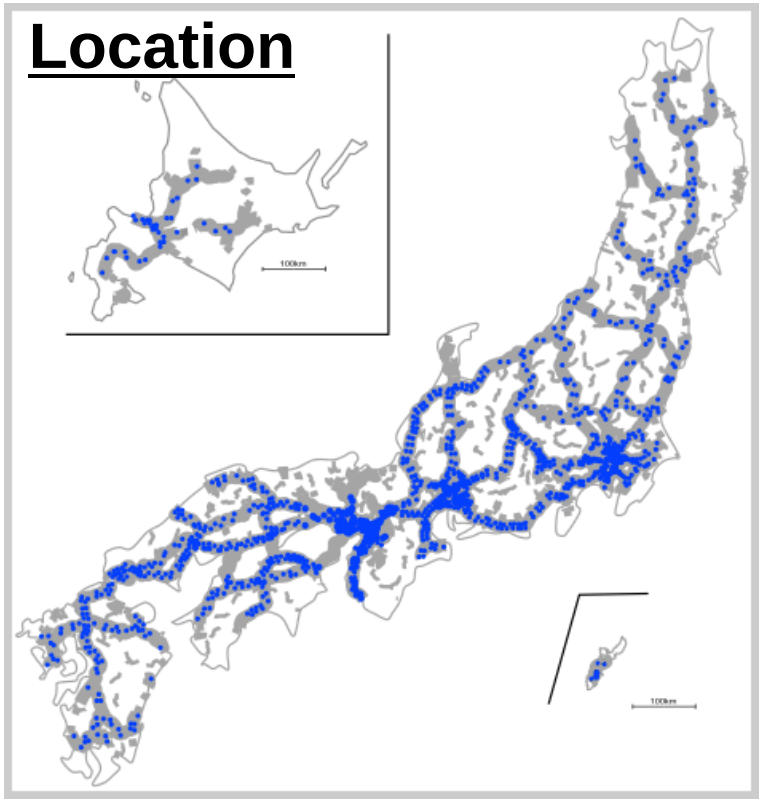
■ Three main services

1. Dynamic Route Guidance
2. Safety Driving Support
3. ETC

Configuration



Location

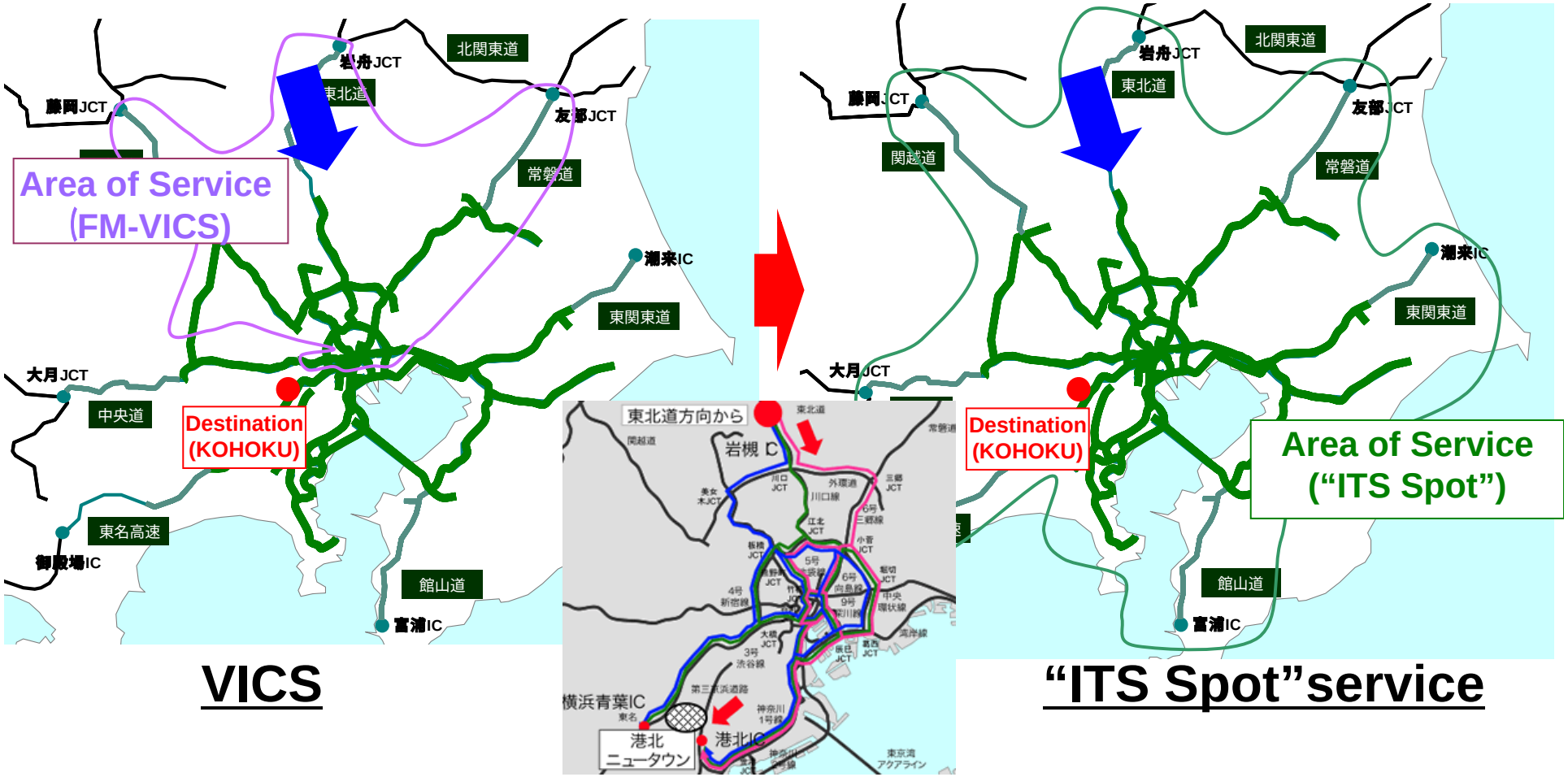


Approximately 1,600 locations

Source: Ministry of Land, Infrastructure, Transport and Tourism

ITS Spots : Dynamic Route Guidance

- Receives all road travel time data in the area
- Selects an optimum route avoiding congestion



VICS **"ITS Spot"service**

Route guidance from TOHOKU Expressway to Destination (KOHOKU)

Source: Ministry of Land, Infrastructure, Transport and Tourism

ITS Spots : Safety Driving Support

■ Alerts drivers in advance

Incident information

Display
Obstruction 
Disaster 

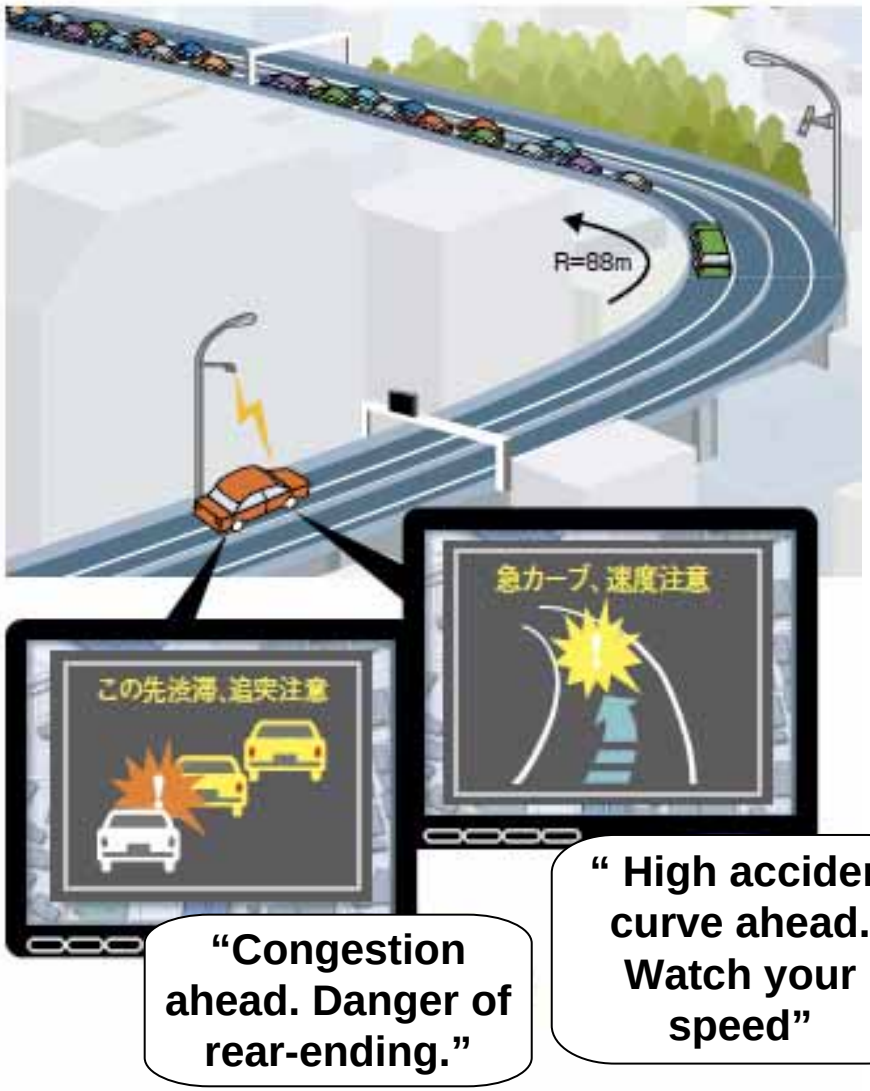
Real time information

Location	Information	Display (Image sample)
Before areas of sudden weather change	**Weather information** Road condition •Snowfall •Rainfall Road surface condition •Icy •Wet •Flooding •Snow ,etc.	
Before areas of frequent traffic jam	**Traffic information** Traffic Jam •Location •Length Traffic speed ,etc.	

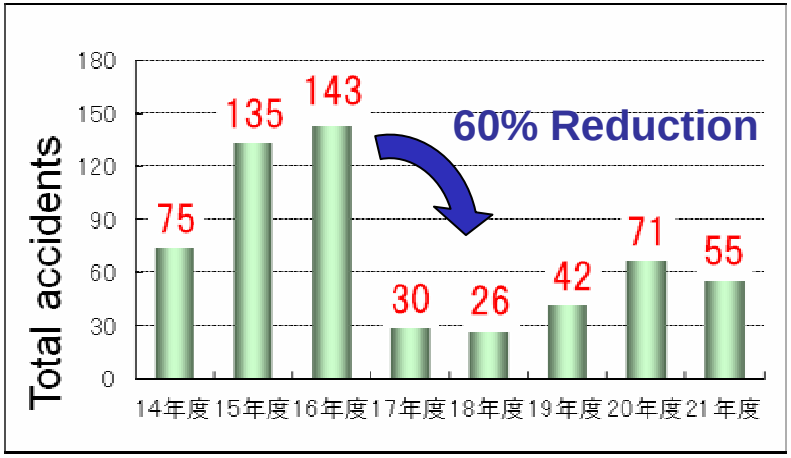
Source: Ministry of Land, Infrastructure, Transport and Tourism

ITS Spots : Safety Driving Support

■ Alerts drivers in advance



The accidents at Sangubashi Curve



Total in the Sangubashi Section (5.182kp – 5.29kp)

Source: Ministry of Land, Infrastructure, Transport and Tourism

ITS Spots : Other services

- **Free internet access from designated parking spots**
  - **Local information**
    - **Facility**
    - **Food**
    - **Entertainment**
    - **- - -**

ITS spot

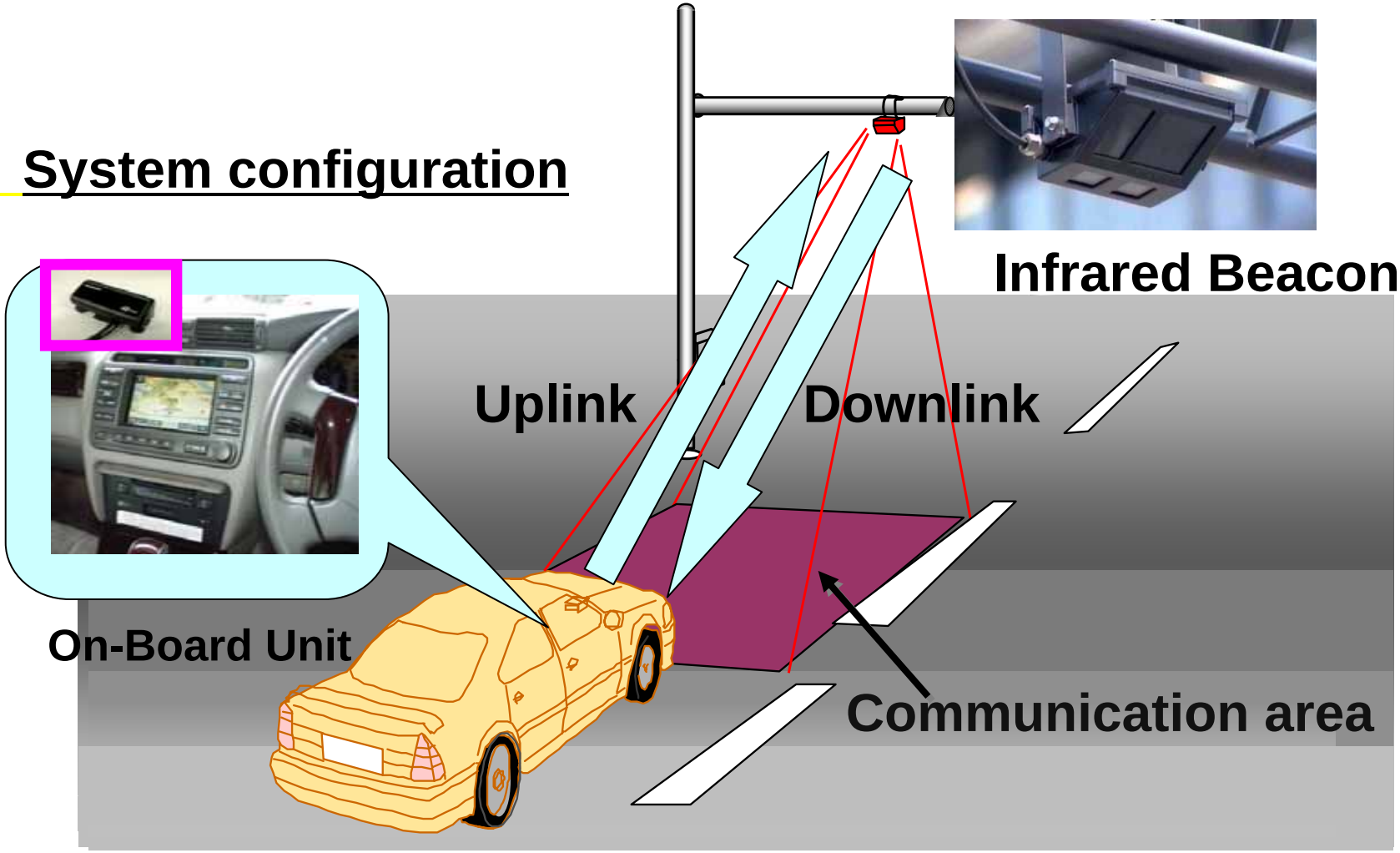
Designated Parking spaces

Source: Ministry of Land, Infrastructure, Transport and Tourism

DSSS (Driving Safety Support Systems)

- **Help prevent accidents caused by recognition/judgment errors**

System configuration

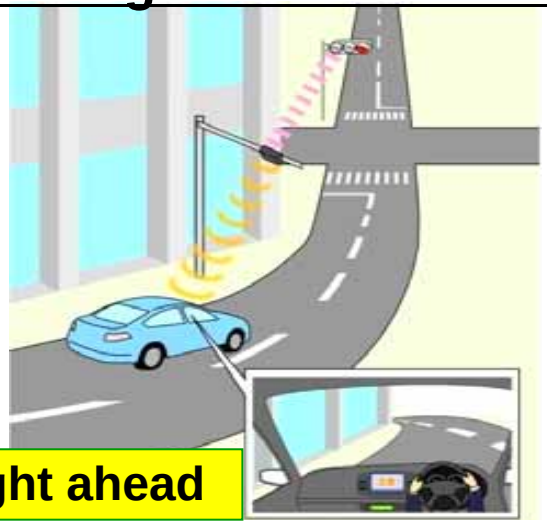


Source: National Police Agency

DSSS (Driving Safety Support Systems)

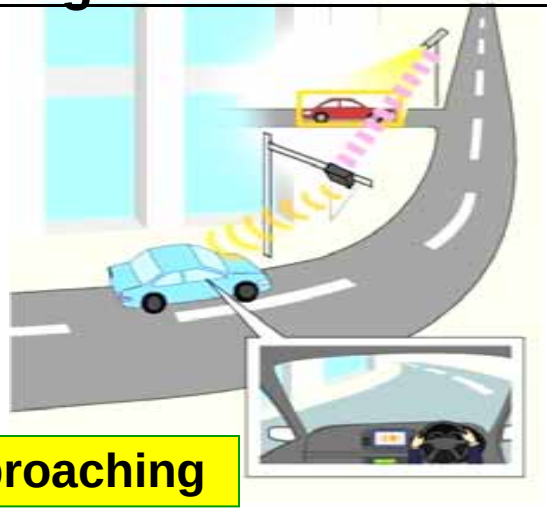
■ Warn the Driver surrounding dangers

Signal Recognition Enhancement



Red light ahead

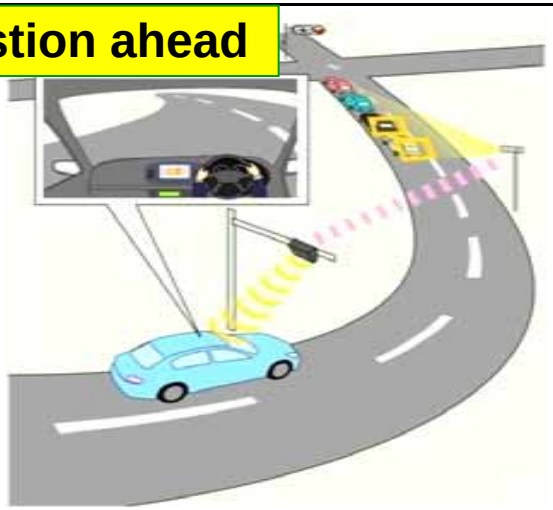
Crossing Collision Prevention



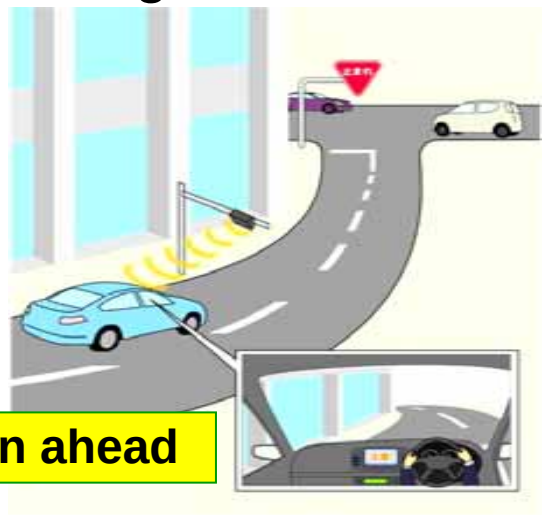
Vehicles approaching

Rear-end Collision Prevention

Congestion ahead



Stop Sign Recognition Enhancement



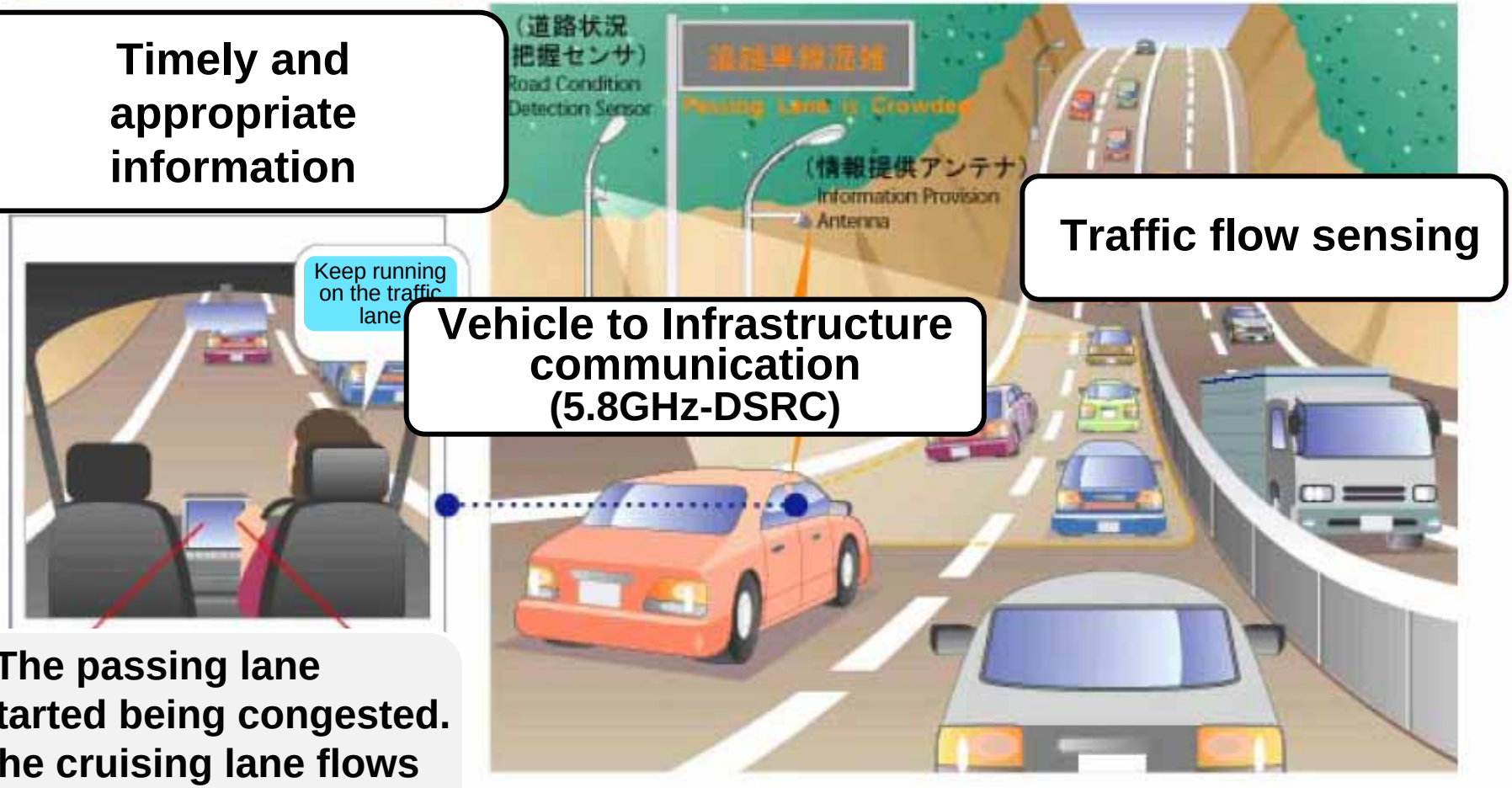
Stop sign ahead

Source: National Police Agency

Future cooperative ITS

■ Traffic congestion reduction at Sag by V to I

Timely and appropriate information



Traffic flow sensing

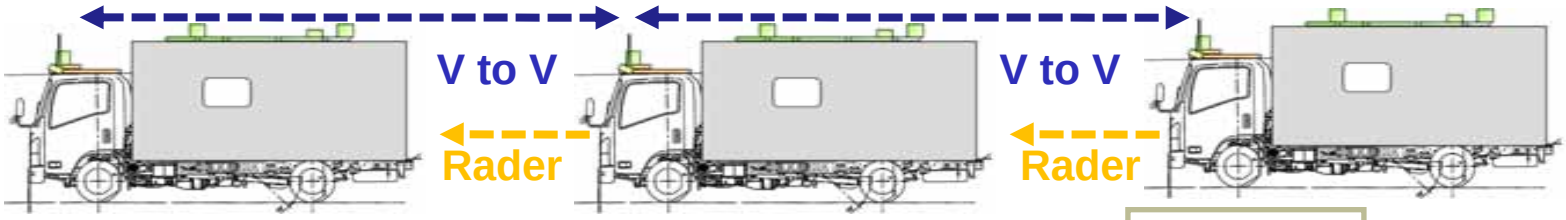
Vehicle to Infrastructure communication (5.8GHz-DSRC)

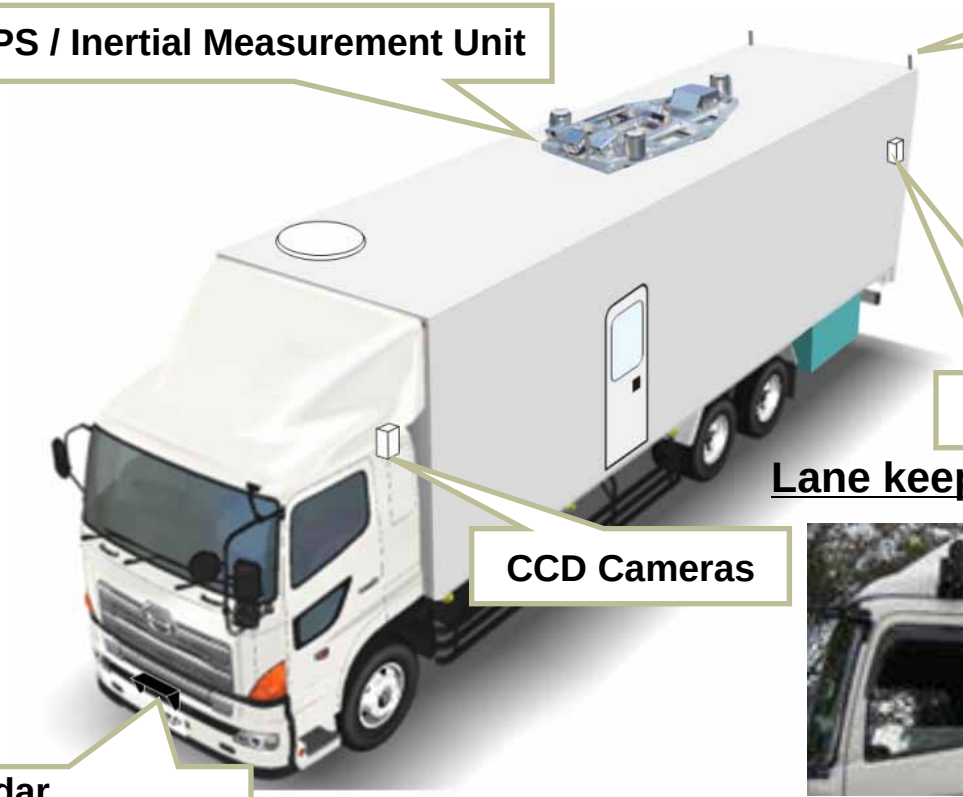
"The passing lane started being congested. The cruising lane flows smoothly."

Source: Ministry of Land, Infrastructure, Transport and Tourism

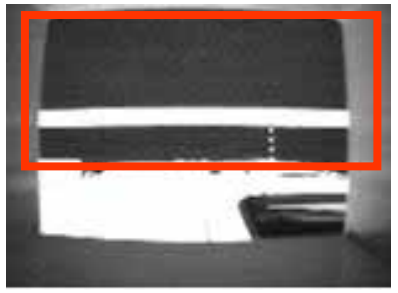
Future cooperative ITS

■ Automated Platoon by V to V





Lane keeping by lane marker recognition



Source: Japan Automobile Research Institute

Future cooperative ITS

■ Automated Platoon by V to V

Conducted by **Japan Automobile Research Institute (JARI)**
at National Institute of Advanced Industrial Science and Technology (AIST)

Source: Japan Automobile Research Institute

ITS Japan

20TH ITS WORLD CONGRESS TOKYO 2013

2013 ITS WORLD CONGRESS TOKYO

20th ITS WORLD CONGRESS TOKYO 2013

Open ITS to the Next

October 14 - 18, 2013

END

Thank you for your attention