Executive Session 8
Environmental Sustainability – How Does it Deliver?

Smart mobility for sustainable development
- ITS measures in Japan -

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Discussion Points

1. ITS measures for environment

- Smooth traffic flow (ETC, VICS, Smart Interchange)
- Traffic Demand Management
- Promote use of public transportation

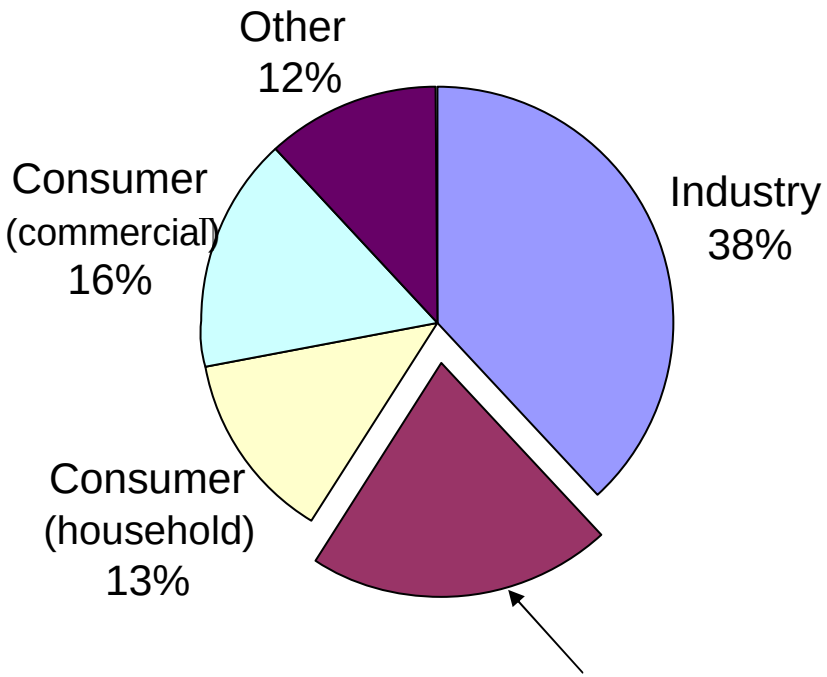
2.Platform supports a variety of measures

- Common platform for sustainable society

1. ITS measures for environment

- 20% of CO_2 emissions is from vehicles
- CO_2 emissions is to be reduced by 6% during 2008-2012
- ITS is expected to be a strong weapon for environmental sustainability

Carbon dioxide emissions in Japan



Transport 21% !
(Vehicle: 90%of transport)

Projected reduction of CO_2 emissions

Measures	Projected emissions reduction (1000ton-CO2)
1)Smooth traffic flow	3600 (VICS : 2400)
2)Traffic demand management	300
3)Use of public transportation	3800
4)Others	
Reduce road works	500
Develop traffic safety facilities	500
Tele-working, etc.	3400
Eco-driving	1300
Anti-idling automobiles	600

*)Projected reduction of CO_2 emissions in Kyoto Protocol Target Achievement Plan
("Design CO2-saving transportation systems")

1. ITS measures for environment

■Various measures for each situation

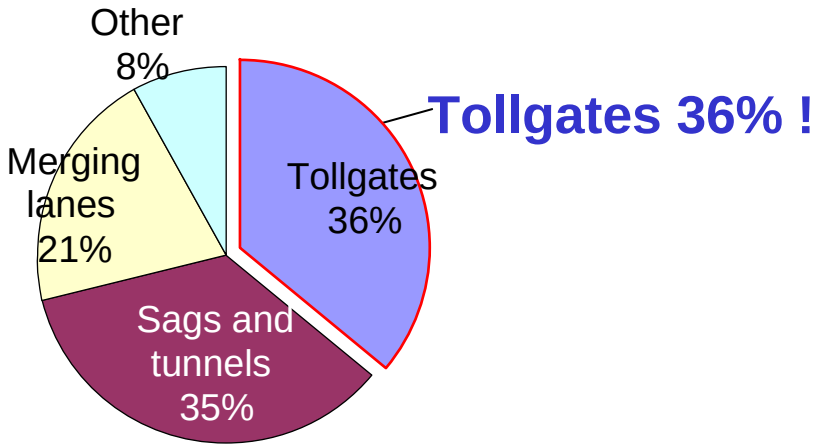
Kind of measures	Concrete measures in Japan
1)Smooth traffic flow	- Eliminate traffic jam at tollgate by increasing ETC (Electronic Toll Collection) usage rate to 50%. - Improve access and reduce traffic jam on the roadside by smart interchange. (Under trial) - Wide and detailed information providing by advanced VICS. (Under research)
2)Traffic Demand Management	- Environmental road pricing, fee measures, etc.
3)Promote use of public transportation	- Highway bus location system contribute to the greater convenience in public transportation, and is utilized as probe data.
4)Other measures	- Evaluate economic loss due to traffic jams using probe data. - Eco-driving by monitoring fuel consumption and driving condition.

1. ITS measures for environment

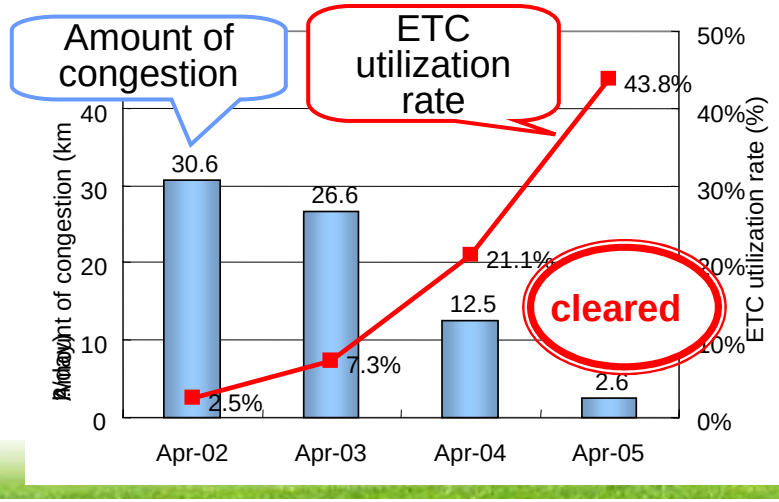
1) Smooth traffic flow (ETC)

■ETC utilization rate raised to 50% and traffic congestion cleared

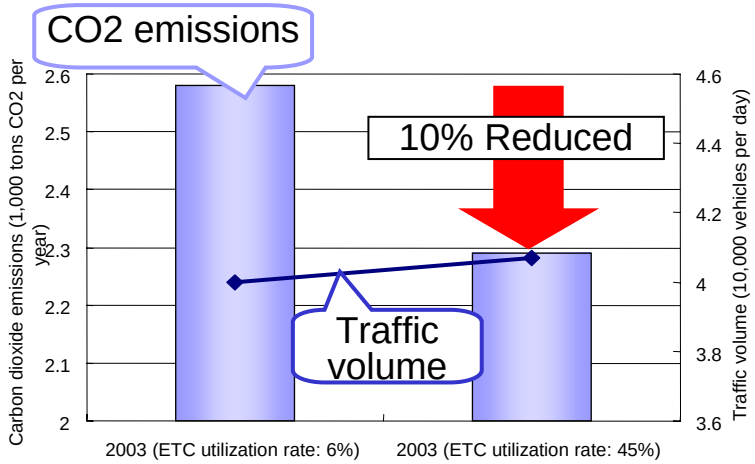
Causes of congestion on expressways



ETC utilization rates and tollgate congestion
(on the main lines of Metropolitan Expressways)



CO2 emissions at Kawaguchi Toll Plaza



Source: Conference on highway policy to prevent global warming (May 23, 2005)

Picture: Kawaguchi Toll Plaza

1. ITS measures for environment

1) Smooth traffic flow (Smart Interchange)

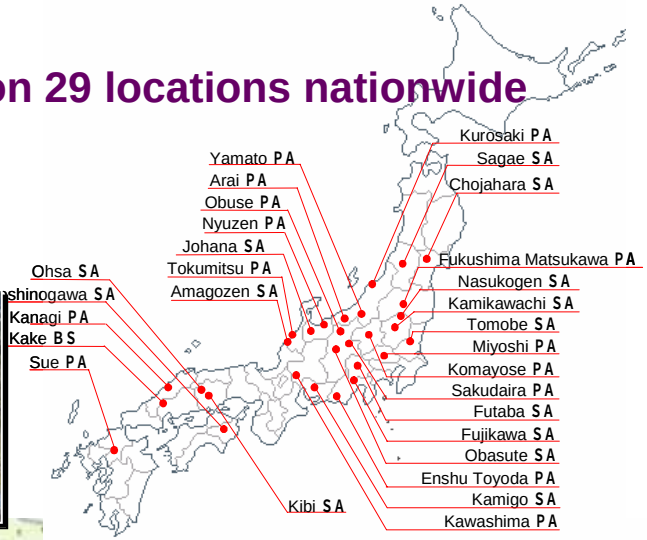
■Smart interchanges, dedicated for ETC, will contribute to less congestion

Average distance between interchanges

Japan :About 10 km

Europe and North America:4-5 km

Field trial on 29 locations nationwide



Introduce smart interchanges

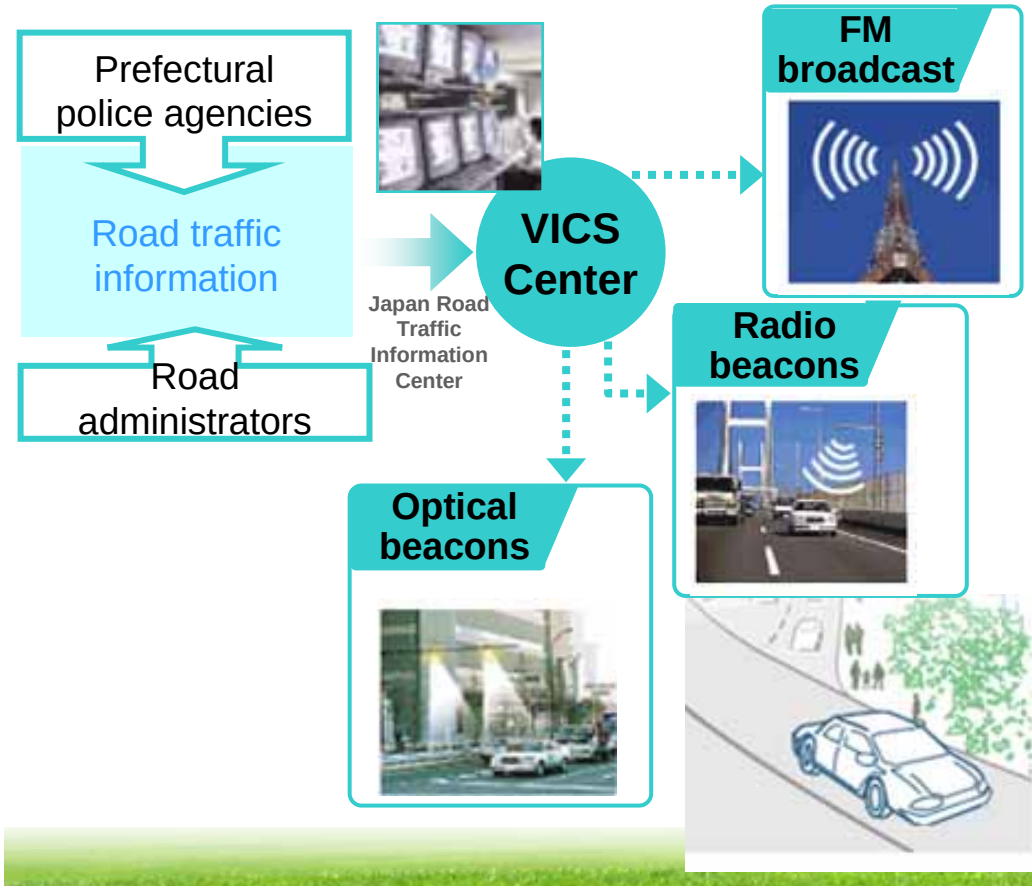
1. ITS measures for environment

1) Smooth traffic flow (VICS)

- Started in April 1996
- Provide real-time road traffic information on car-navigation system

Schematic depiction of VICS

Providing information using three communications and broadcasting media



Text display (level 1)

2 kilometers of congestion ahead due to an accident between Gotemba and Susono.

Simple diagrams (level 2)

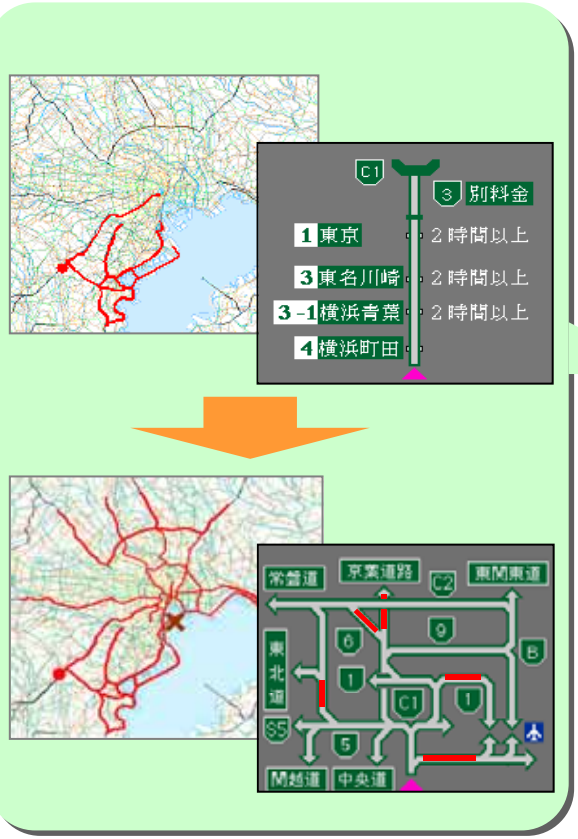
Map display (level 3)

1. ITS measures for environment

1) Smooth traffic flow (VICS)

■Wide and detailed information by VICS using 5.8GHz-DSRC

[Wide range of information]



[Information by voice]

1. ITS measures for environment

1) Smooth traffic flow (VICS)

■Wide and detailed information by VICS using 5.8GHz-DSRC

[Information by static image]

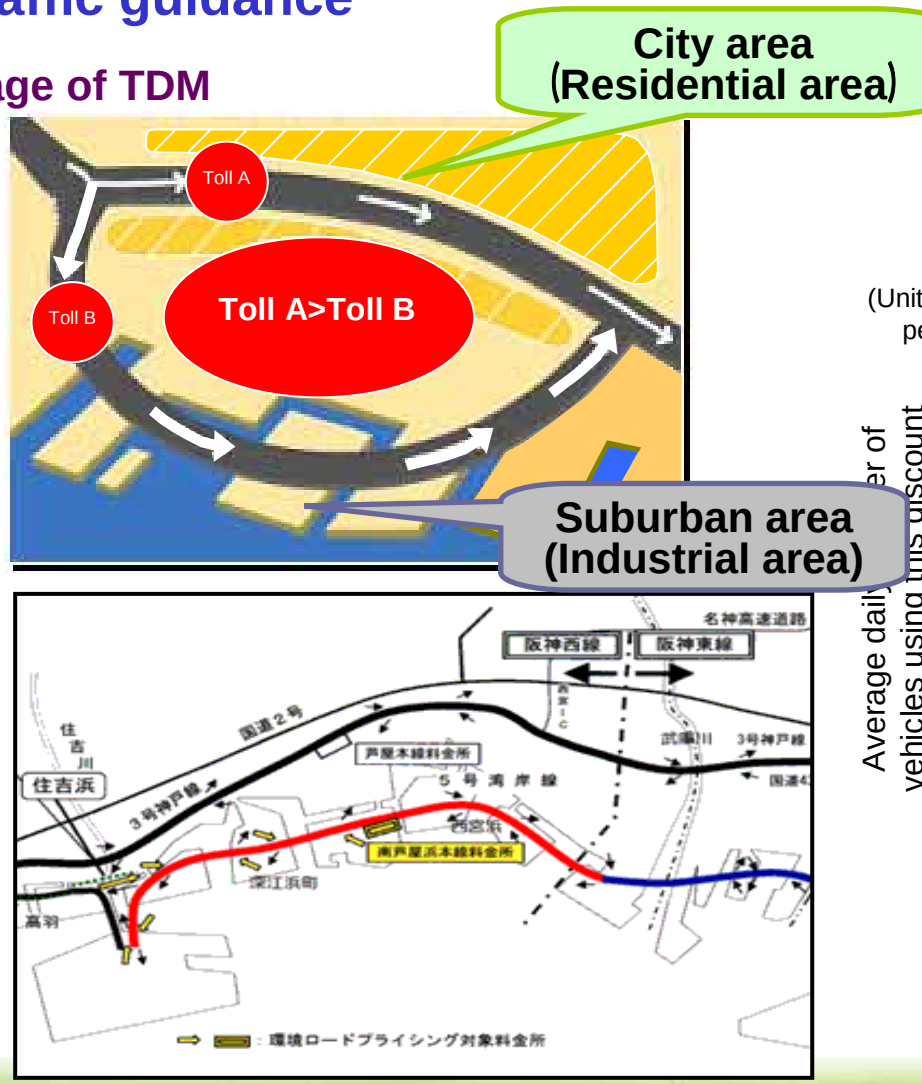
[Information on greater numbers of routes]

1. ITS measures for environment

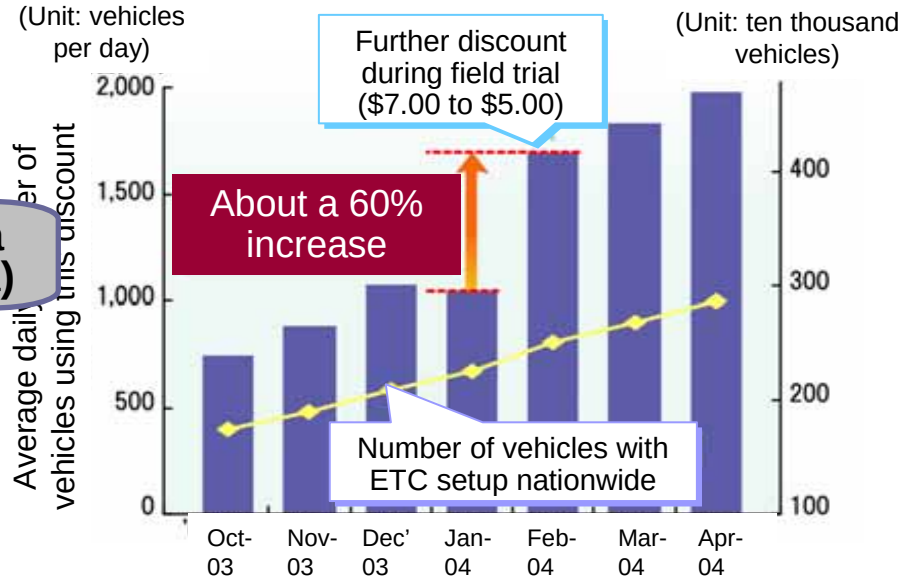
2) Traffic Demand Management

■ITS as a policy tool, multi-modal measures and fee measures for traffic guidance

Image of TDM



Environmental road pricing in Hanshin Expressway

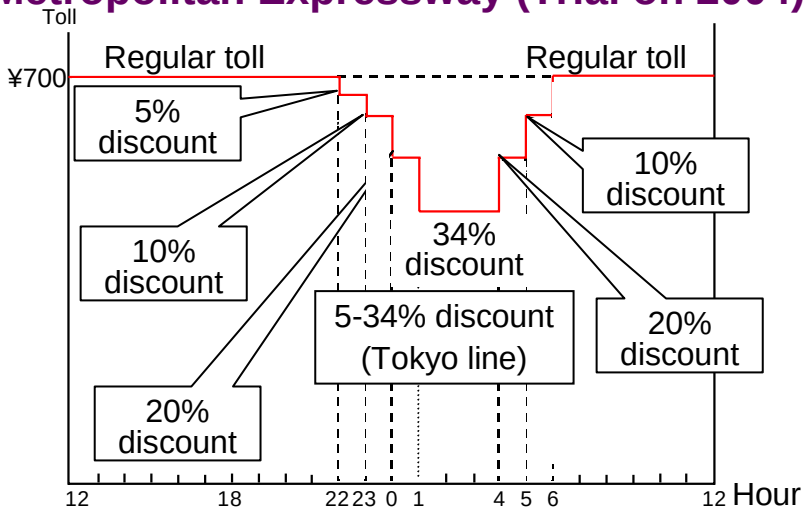


1. ITS measures for environment

2) Traffic Demand Management

■ITS as a policy tool, multi-modal measures and fee measures for traffic guidance

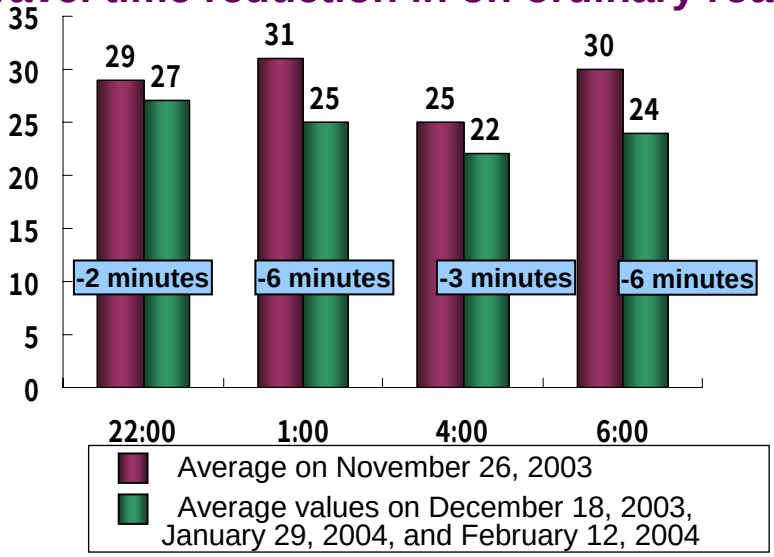
Discounts rate for ETC users on the Metropolitan Expressway (Trial on 2004)



Source: Metropolitan Expressway Public Corporation
Note: The tolls shown are for ordinary cars on the Tokyo line.

Fee measures using ETC on Metropolitan Expressway 4

Travel time reduction in on ordinary roads



*Travel time on National Highway 20 from Miyakezaka to Kamitakaido (away from Tokyo)

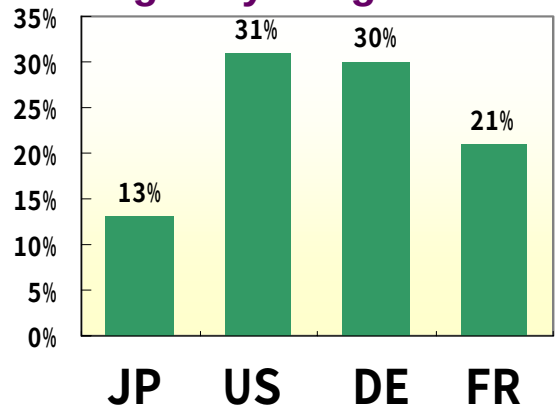
Source: Data from the Metropolitan Expressway Public Corporation

1. ITS measures for environment

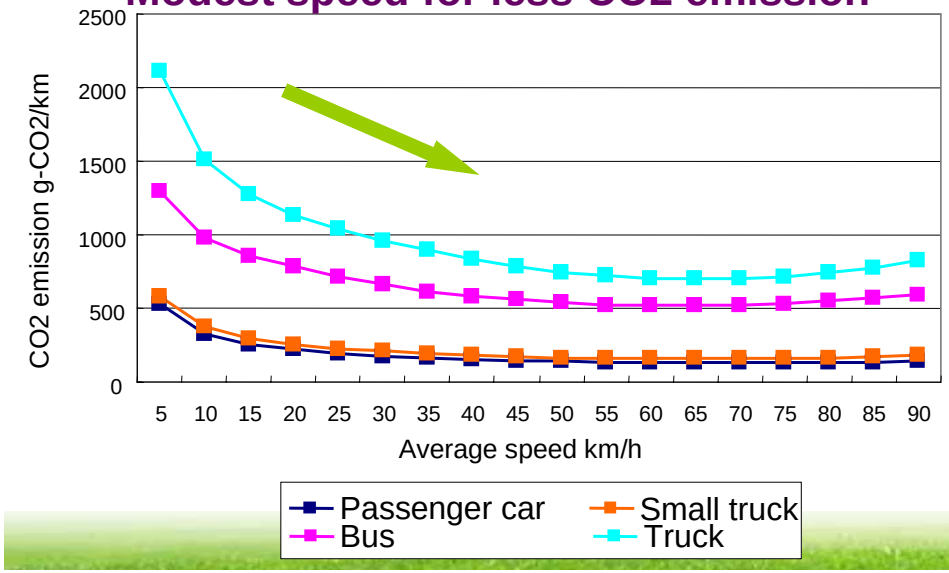
2) Traffic Demand Management

■Raise highway usage rate by offering discounts for long distance driving

Low highway usage rate in Japan



Modest speed for less CO2 emission



All day discount for long distance (Japan Highway) (Trial on 07.2003-03.2004)

Travel distance	300km-400km	400km-600km	600km-900km	900km-
Discount rate	5%	10%	20%	30%

Midnight discount for long distance (Japan Highway) (Trial on 04.2004-10.2004)

Travel distance	200km - 300km	300km - 500km	500km - 800km	800km-1,000km	1,000 km-
Discount rate	0% - 10%	10% - 20%	20% - 30%	30%-33%	33%-

1. ITS measures for environment

3) Promote use of public transportation

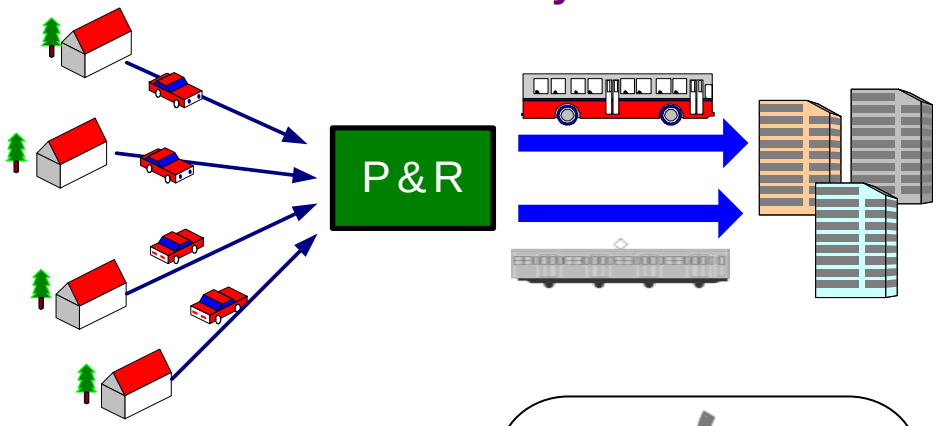
- Bus location information provided through internet
- Park and Ride system trial in many cities using IT

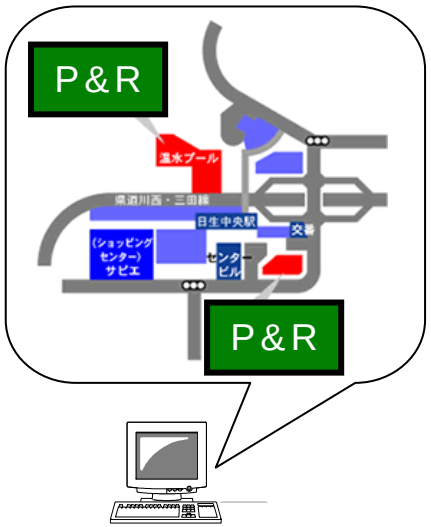
Bus location systems

Approaching bus indicator at a bus stop

Bus stop information accessed by cell phones

Park and ride system





2. Platform supports a variety of measures

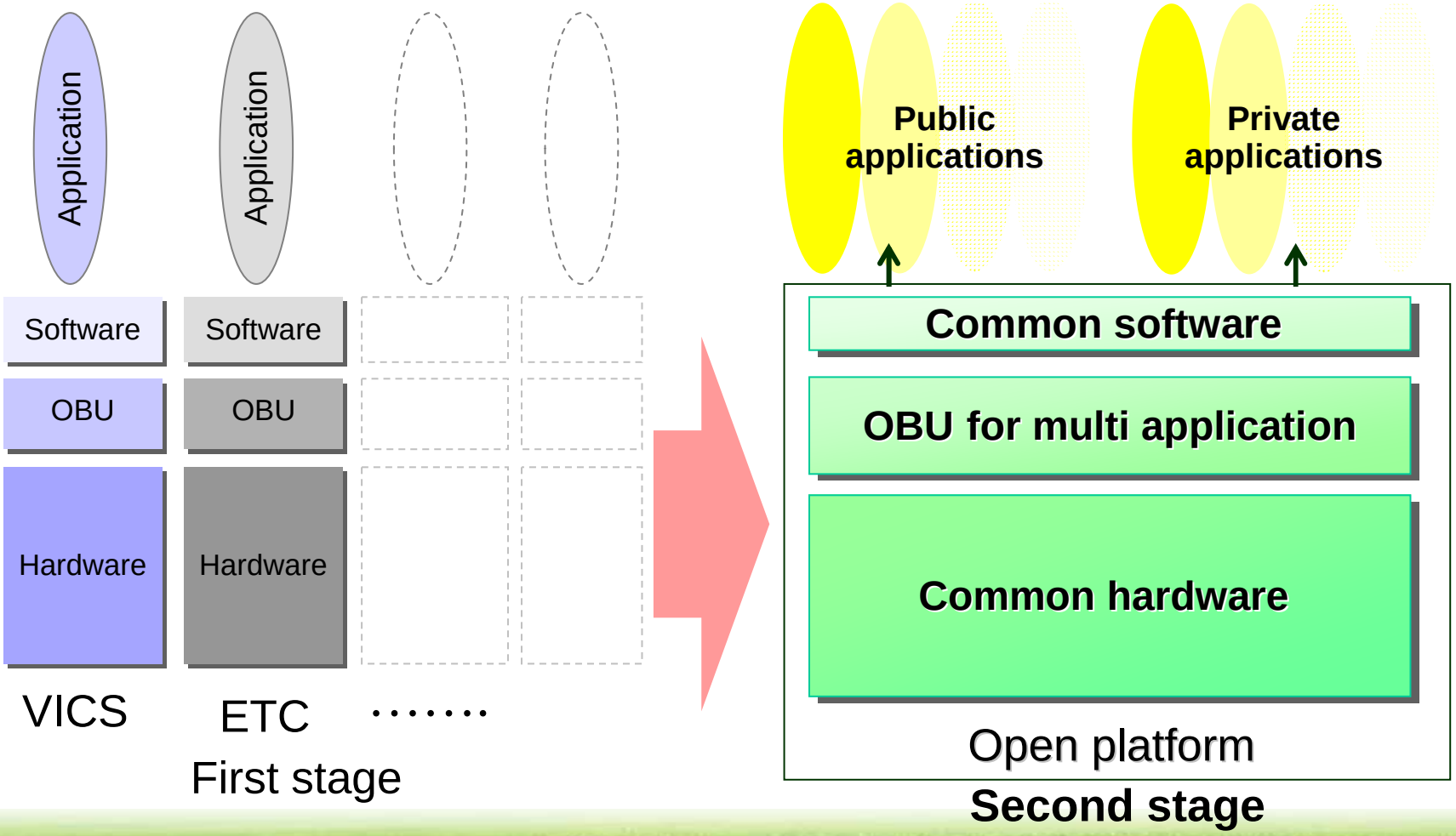
- An environment that supports multiple applications from a single on-board unit
- Promote the establishment of an open platform

If a different device is needed for each application…..

Multiple applications with a single ITS on-board unit

2. Platform supports a variety of measures

- From separate platforms to a common platform
- This platform will support a wide variety of applications



2. Platform supports a variety of measures

Common platform for sustainable society

- Awakening various measures and services toward environmental sustainability using a common platform
- ITS enter the second stage and common platform and new ITS service in 2007FY