



# New Advances in Electronic Toll Collection Systems

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## 1. State of ETC in Japan

### 1) State of ETC

### 2) Effects of spread of ETC

### 3) Introduction and effectiveness of Smart Interchanges

### 4) Start of motorcycle ETC service

## 2. Efforts to promote the increased use of ETC

### 1) Multi-purpose use

### 2) Field trials of ETC at public parking areas

### 3) Examples of expected multi-purpose uses of ETC

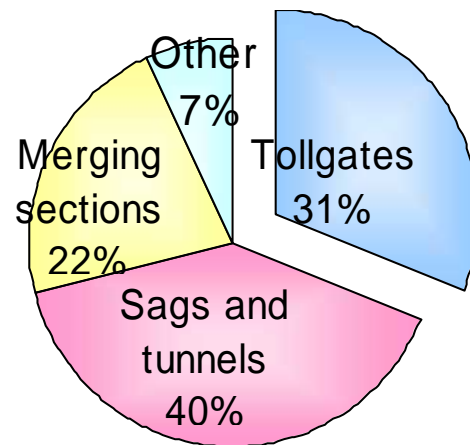
- ETC is an advanced automatic toll collection system that enables nonstop tollgate transitions.
- In Japan, ETC service started in March 2001, installing 19million automobile by August 2007.
- Used by about 5.5 million automobiles/day, the utilization rate has soared to reach about 66%.
- The target utilization rate is 80% by next spring.



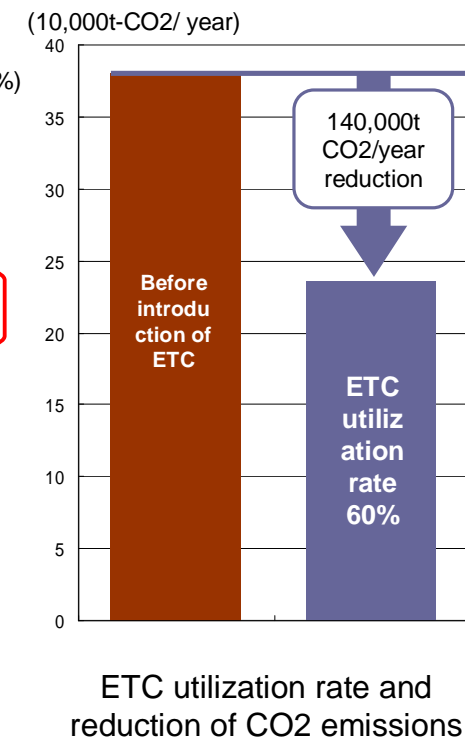
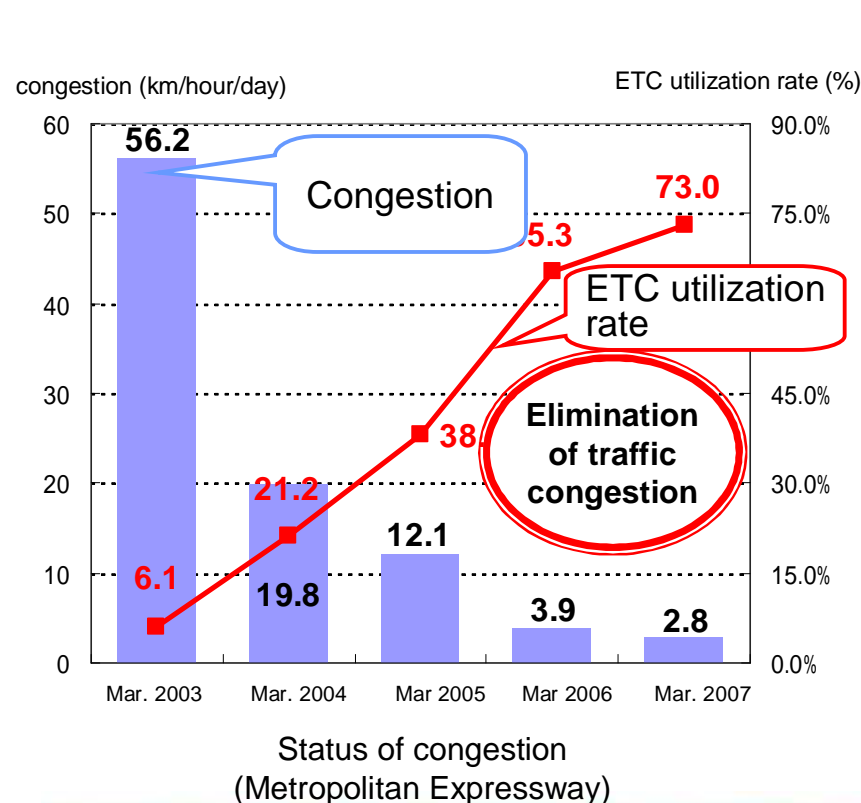
# 1. State of ETC in Japan

## 2) Effects of spread of ETC

- About 30% of congestion on expressways is caused by a shortage of toll gate capacity.
- ETC displays its congestion elimination effectiveness by enabling automobiles to pass through without stopping, increasing the processing capacity of toll gates.
- Congestion at tollgates on the Metropolitan Expressway has been eliminated through an increased ETC utilization rate.



Cause of congestion on expressways

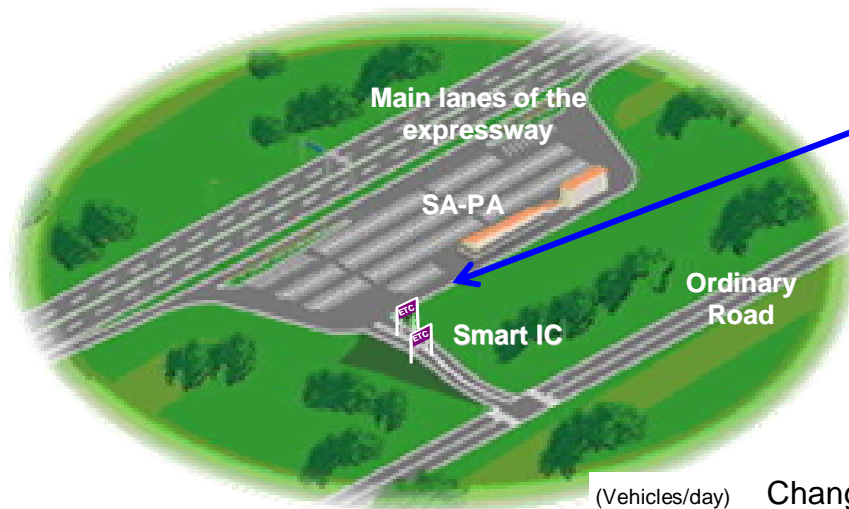




# 1. State of ETC in Japan

## 3) Introduction and effectiveness of Smart Interchanges

- Reducing personnel costs of toll collectors resolves the problem of the high operating cost of toll gates at the same time as installation costs are cut by the simplified IC structure.
- Smart IC that were tested by field trials beginning in 2004 gradually came into full use beginning in October 2006, and are in operation at 31 locations nationwide on April 1 2007.



Smart IC  
(SP – PA connected type)

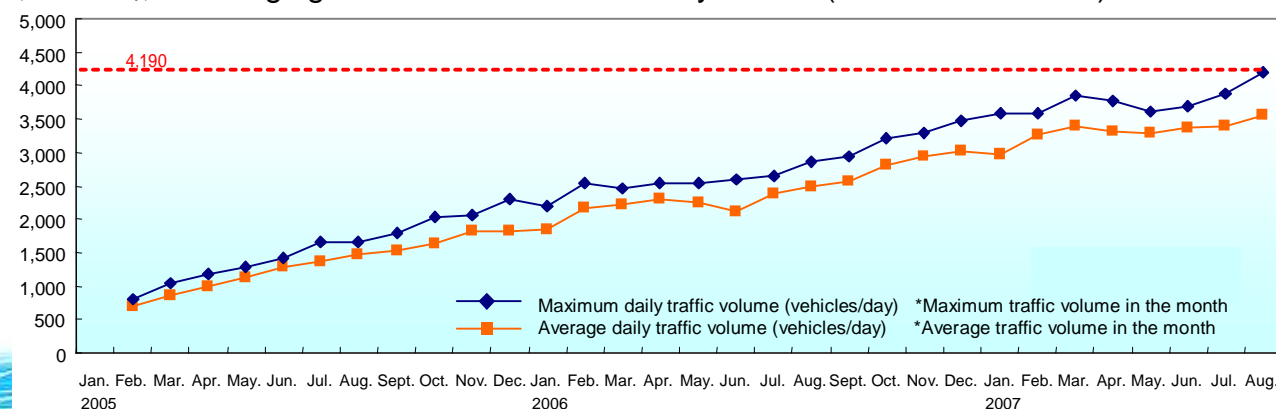


Smart IC (for use only by ETC equipped vehicles)

Road side radio equipment  
(DSRC Antenna)



(Vehicles/day) Changing Number of users of Komayose PA (Gunma Prefecture) Smart IC

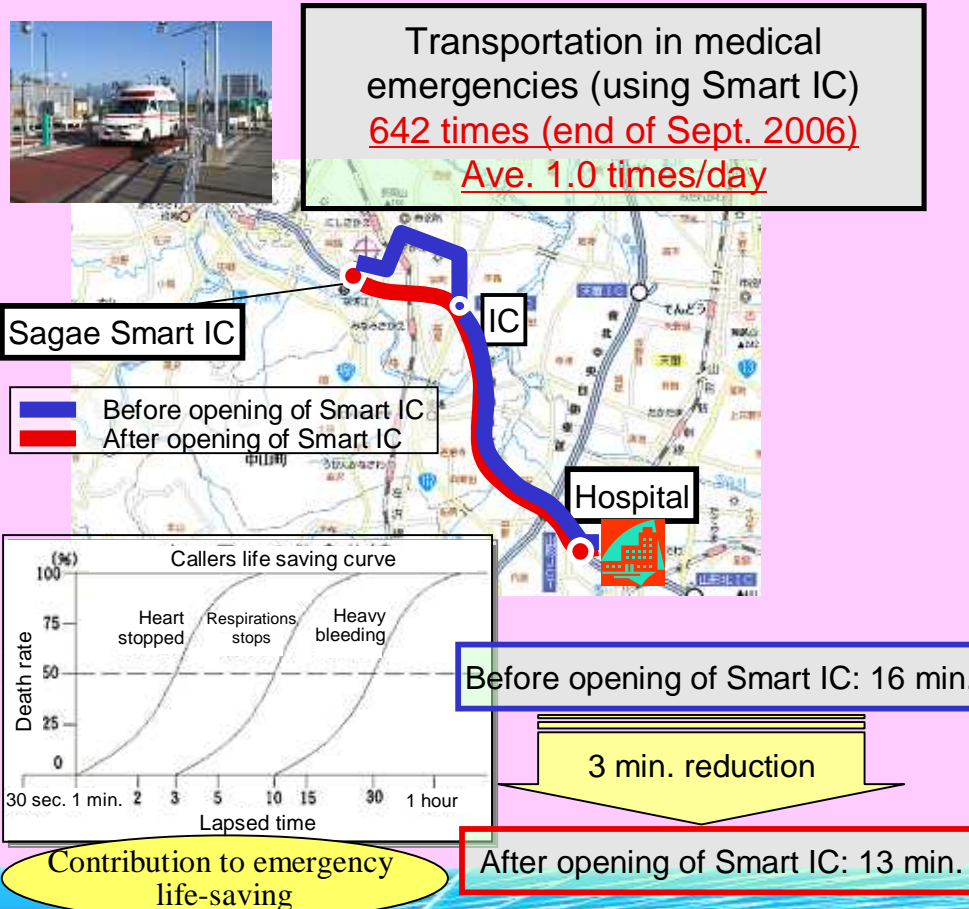


# 1. State of ETC in Japan

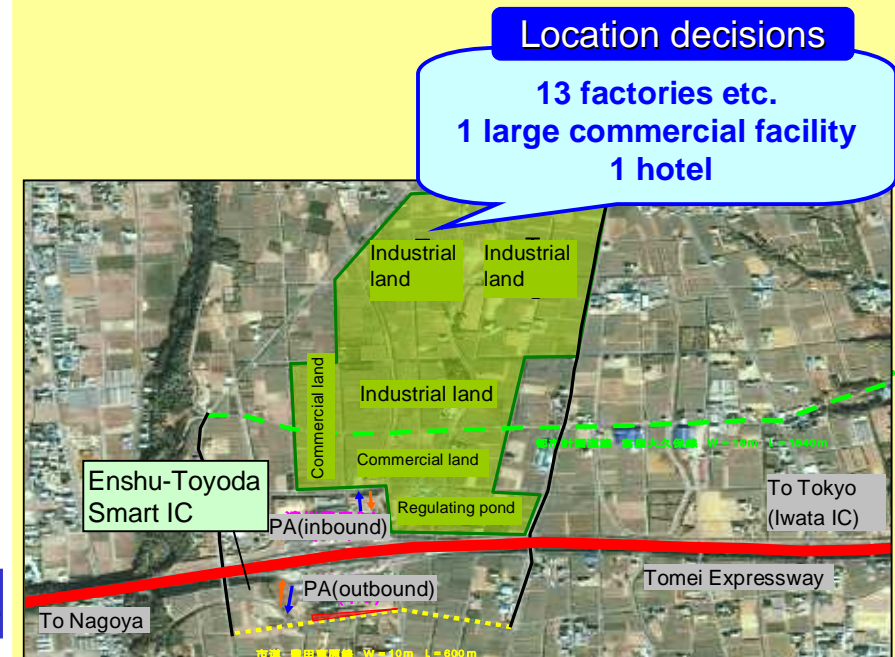
## 3) Introduction and effectiveness of Smart Interchanges

- The introduction of Smart IC cut transportation time to an advanced medical treatment institution and contributes to the economic revitalization of the surrounding region.

### Reduction of transportation time to an advanced medical treatment institution



### Contribution to stimulation of surrounding region



# 1. State of ETC in Japan

## 4) Start of motorcycle ETC service

- Beginning on November 1, 2006, full-scale operation of this service started on expressways nationwide, installing the system on about 50,000 motorcycles (the end of August 2007).
- The results of the trial involving 200,000 motorcycles have confirmed the safety of the service and good operation of the communication equipment. It was also confirmed that the ETC service has a lot of benefits to use and that 96% of the users want to continue using it.



Shortening the bar (gap approx. 1.5m)



Antenna and indicator



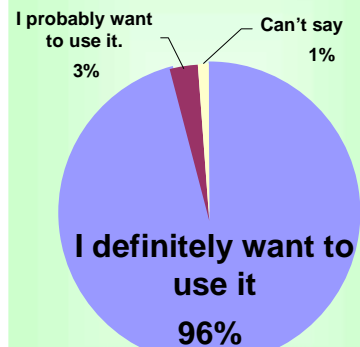
Onboard unit



Motorcycle use ETC onboard unit

### Desire to use motorcycle ETC after completion of public trial

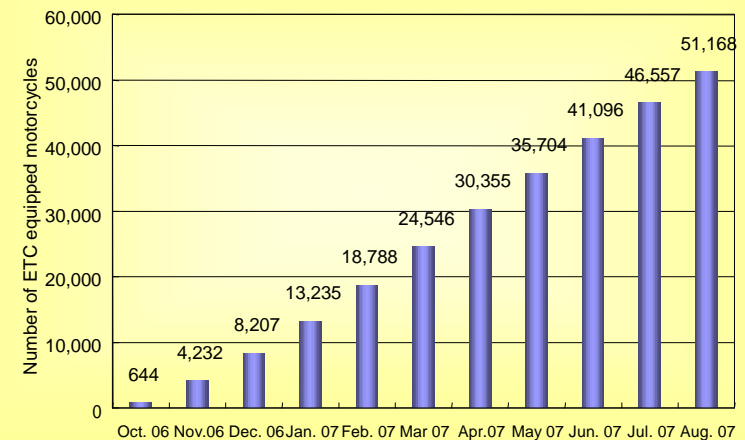
Q. Do you still want to use ETC on your motorcycle after the trial?



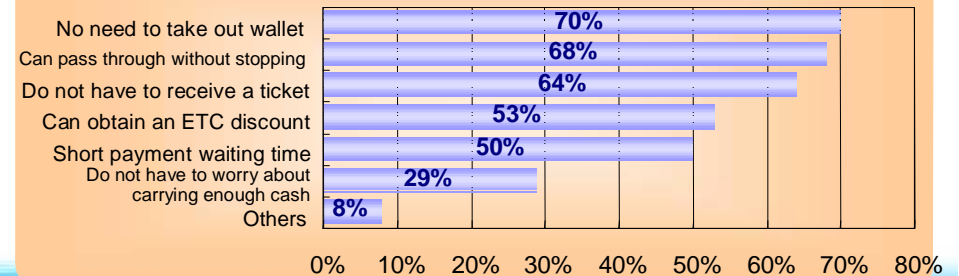
- I probably don't want to use it (0%)
- I definitely do not want to use it (0%)

Source: Highway Industry Development Organization

### Cumulative number of ETC equipped motorcycles



### Benefits of motorcycle ETC



Source: Highway Industry Development Organization

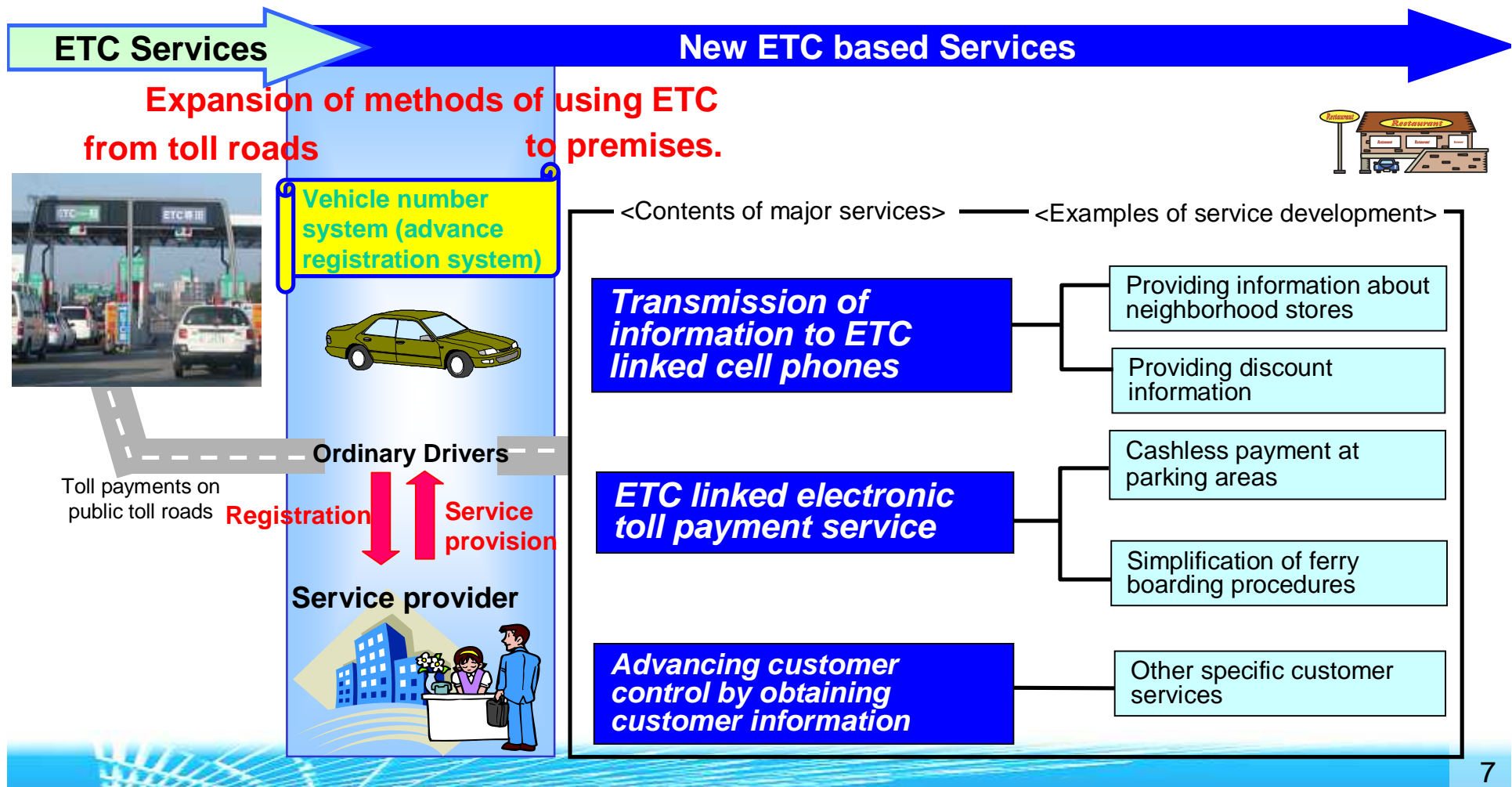


## 2. Efforts to promote the increased use of ETC



### 1) Multi-purpose use (overall service image)

- Since April 2006, private companies etc. can use ETC on-board systems that had formerly only been useable on public toll roads.



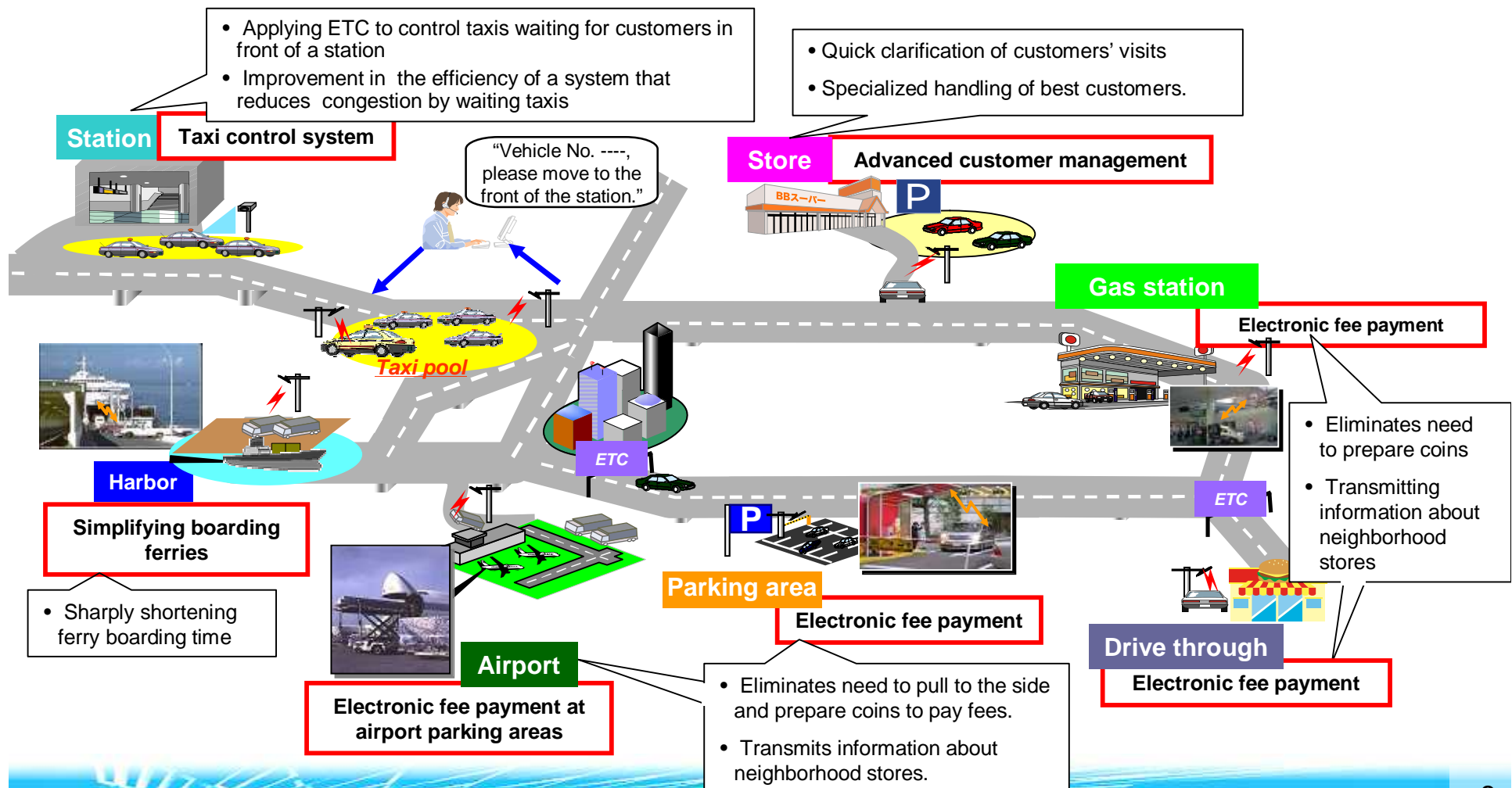


## 2. Efforts to promote the increased use of ETC



### 1) Multi-purpose use (service development image)

- Services using ETC at parking areas, gas stations, and at ferries are being developed.



## 2. Efforts to promote the increased use of ETC



### 2) Field trials of ETC at public parking areas

- Public trials of fee payment service using ETC on-board equipment have been carried out since 2005 at public parking areas in four locations (Tokyo, Osaka, Nagoya, and Sapporo).
- Almost all users state that the ticketless payment service is convenient.



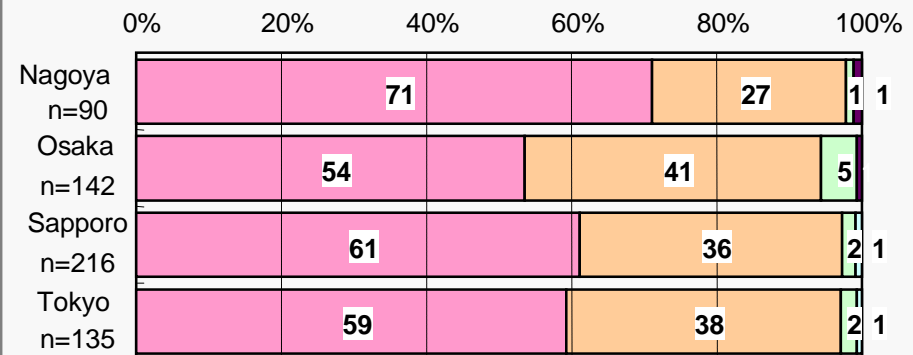
No. 4 Parking Area in Nishi-shinjuku in Tokyo



Sakura-bashi Parking Area in Osaka



#### Evaluations of ticketless payment service



Source: Japan Parking Facility Provision Organization

Legend

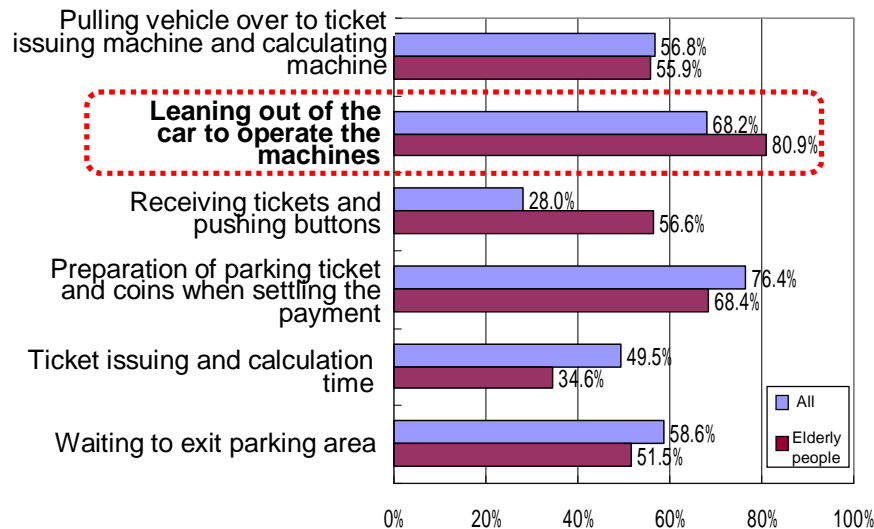
<span style="display:inline-block; width:15px; height:15px; background-color: #FFB6C1; border: 1px solid black;"></span> Extremely convenient	<span style="display:inline-block; width:15px; height:15px; background-color: #FFDAB9; border: 1px solid black;"></span> Somewhat convenient
<span style="display:inline-block; width:15px; height:15px; background-color: #90EE90; border: 1px solid black;"></span> Not very convenient	<span style="display:inline-block; width:15px; height:15px; background-color: #ADD8E6; border: 1px solid black;"></span> Inconvenient
<span style="display:inline-block; width:15px; height:15px; background-color: #800080; border: 1px solid black;"></span> No response	

## 2. Efforts to promote the increased use of ETC

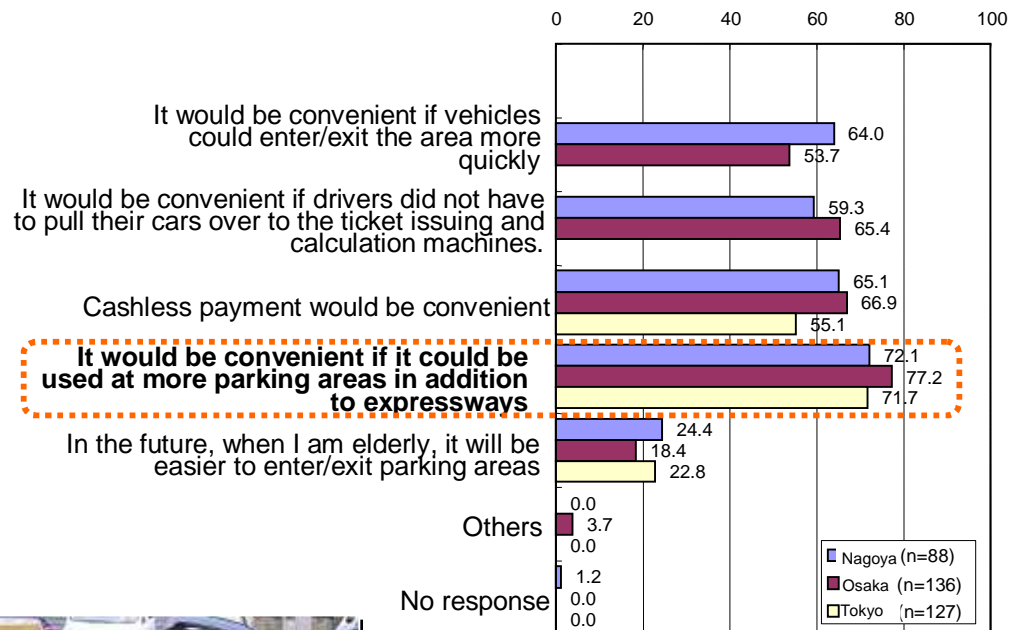


### 2) Field trials of ETC at public parking areas

- Reduction in the burden on elderly drivers.
- Strong expectations of more convenient use of parking areas.



Points considered to be a burden when using parking areas



Reasons for wanting ETC use to spread to parking areas





## 2. Efforts to promote the increased use of ETC



### 3) Examples of expected multi-purpose uses of ETC (parking areas, gas stations)

- Development of parking area payment services and gas station payment services etc. by private sector service providers

#### Department store etc. parking area payment service



- Controlling entrance/exit of vehicles in parking areas at departments stores or shopping centers
- Automatic parking fee discount services



#### Gas station payment service



- Payment for refueling or car washing, etc.
- Provision of stamp rally, campaign information etc.



Source: ITS Business Applications

## 2. Efforts to promote the increased use of ETC



### 3) Examples of expected multi-purpose uses of ETC (Private toll road)

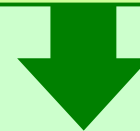
- A service will be introduced to collect tolls on this private toll roads and at the same time to transmit information about discount rates at nearby hotels etc. and discount admission fees to tourist facilities to user's pre-registered cell phones.

#### Privately operated toll road payment service and information distribution service



##### Discount information for users of a privately operated toll road service

- Gasoline discount 3yen/l
- Lodging cost discount 1,000yen
- Same-day return hot spring discount 100yen
- Museum admission discount 50~200yen



Discount information and coupons are transmitted to cell-phone mail address registered when the user first used the service

## 2. Efforts to promote the increased use of ETC

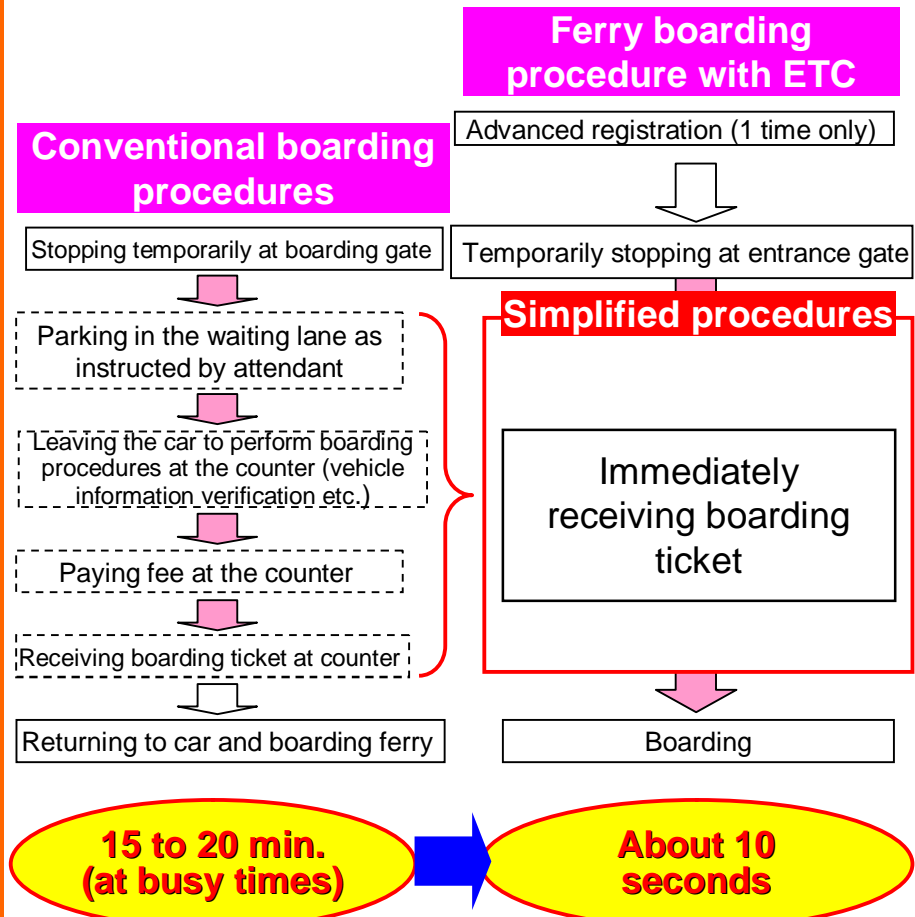


### 3) Examples of expected multi-purpose uses of ETC (car ferry)

- ETC ferry boarding procedures has been carried out on a car ferry.
- Using pre-registered ETC information sharply simplifies procedures.



#### Sharply shortening procedure time

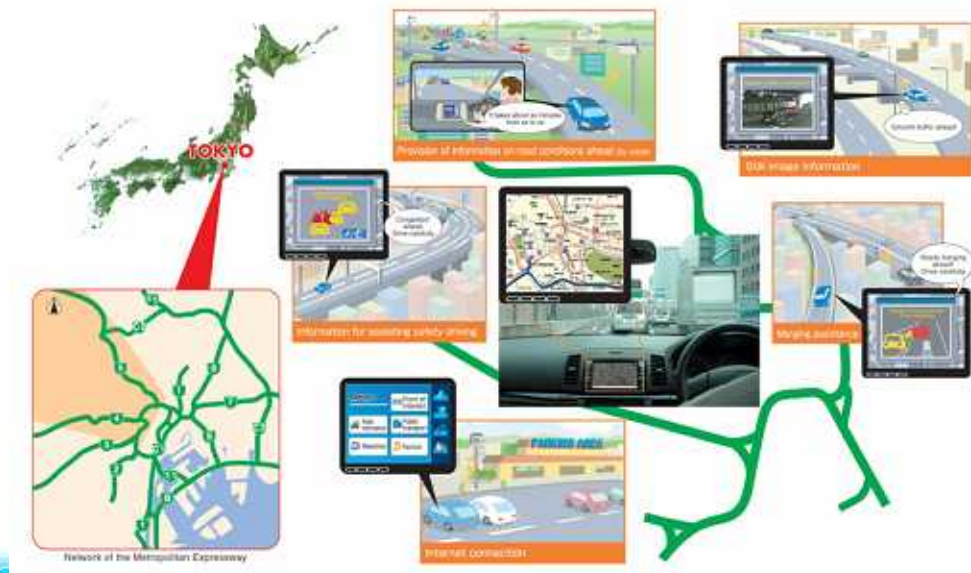




# Smartway 2007



- The Technical Tour (TT-5) will be held from October 15 to 17, 2007



***Thank You !***