



Status of DSRC Applications in Japan

-Smart Communications and other applications-

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CONTENT

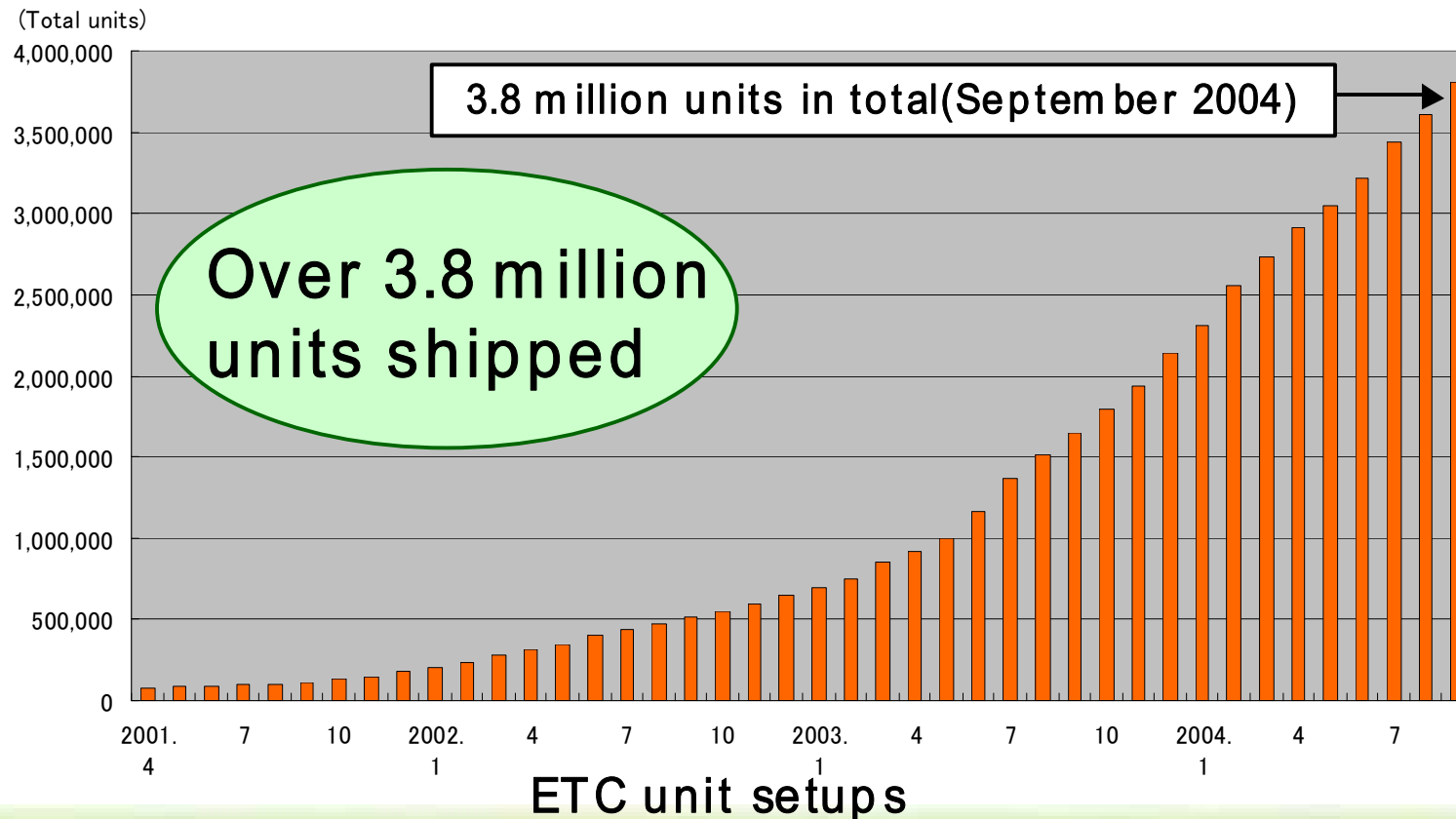
1. Deployment of ETC
2. Summary and Present Situation of DSRC
3. Plan for the future

1. Deployment of ETC*



(1) Spread of ETC

- ETC started commercially in March, 2001
- Over 3.8 million ETC units have been shipped and over 20 % of cars have ETC units now

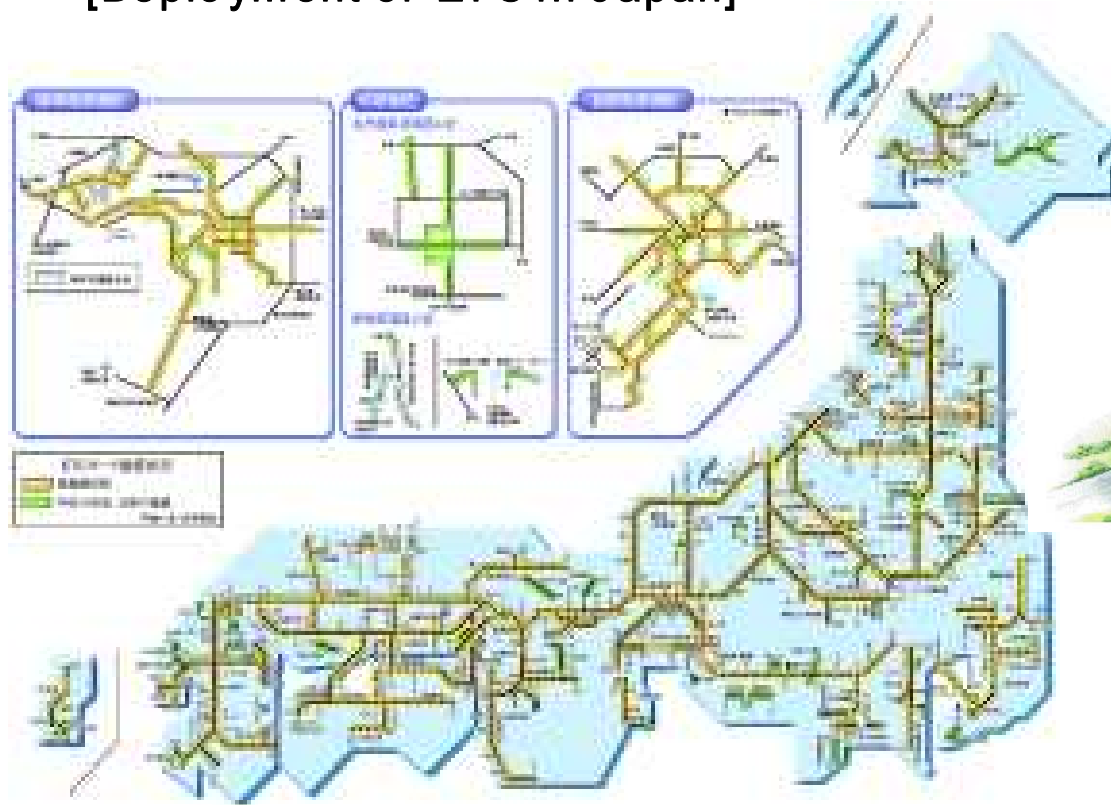


1. Deployment of ETC

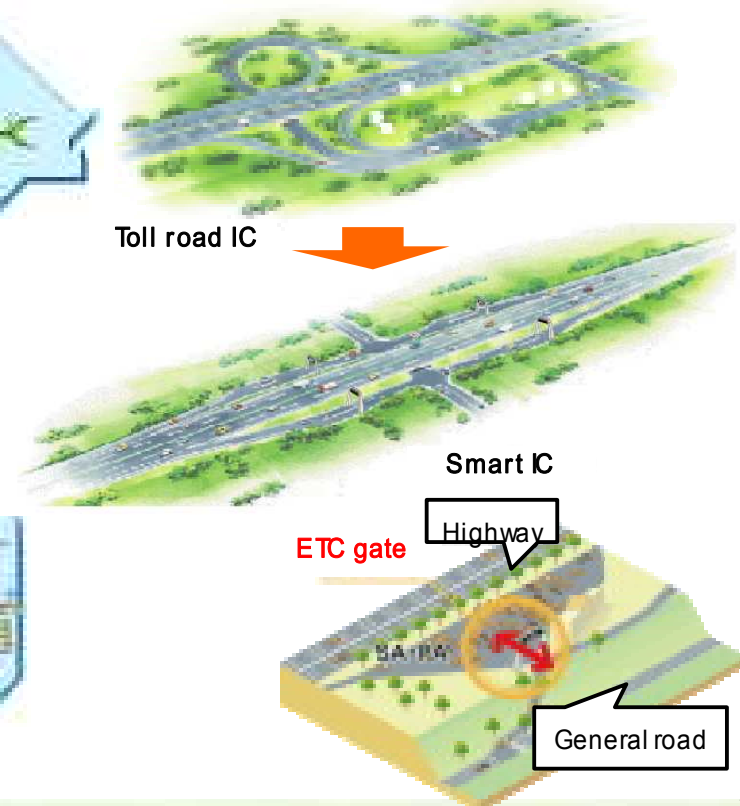
(2) Nationwide deployment of ETC

- 1,150 toll plazas in Japan do ETC services
- New services for ETC-only interchange (Smart IC) are in preparation at 35 points

[Deployment of ETC in Japan]



[Images of Smart IC]

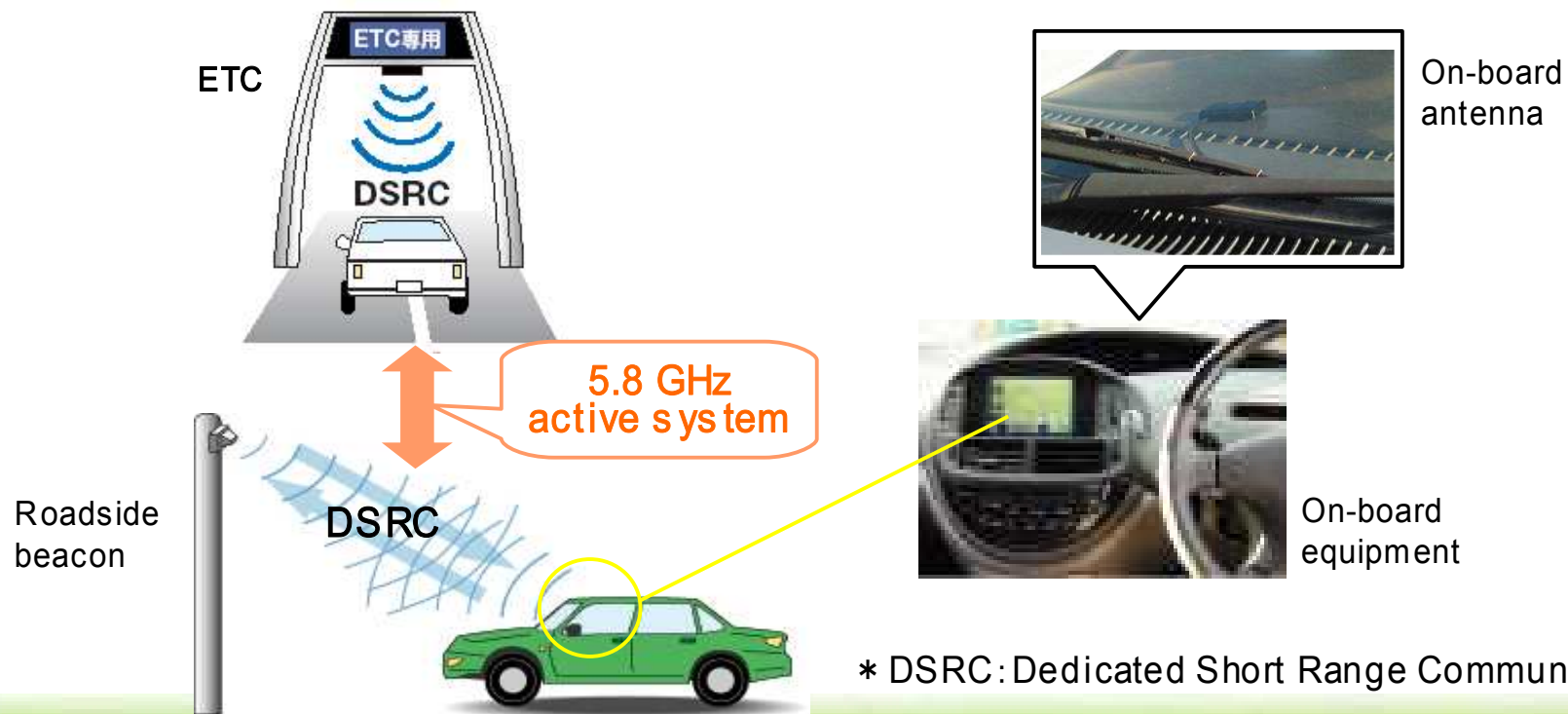


2. Summary and Present Situation of DSRC

(1) DSRC used in ETC

DSRC is standardized in Japan as ARIB STD-T75, based on ITU-R and ISO standard

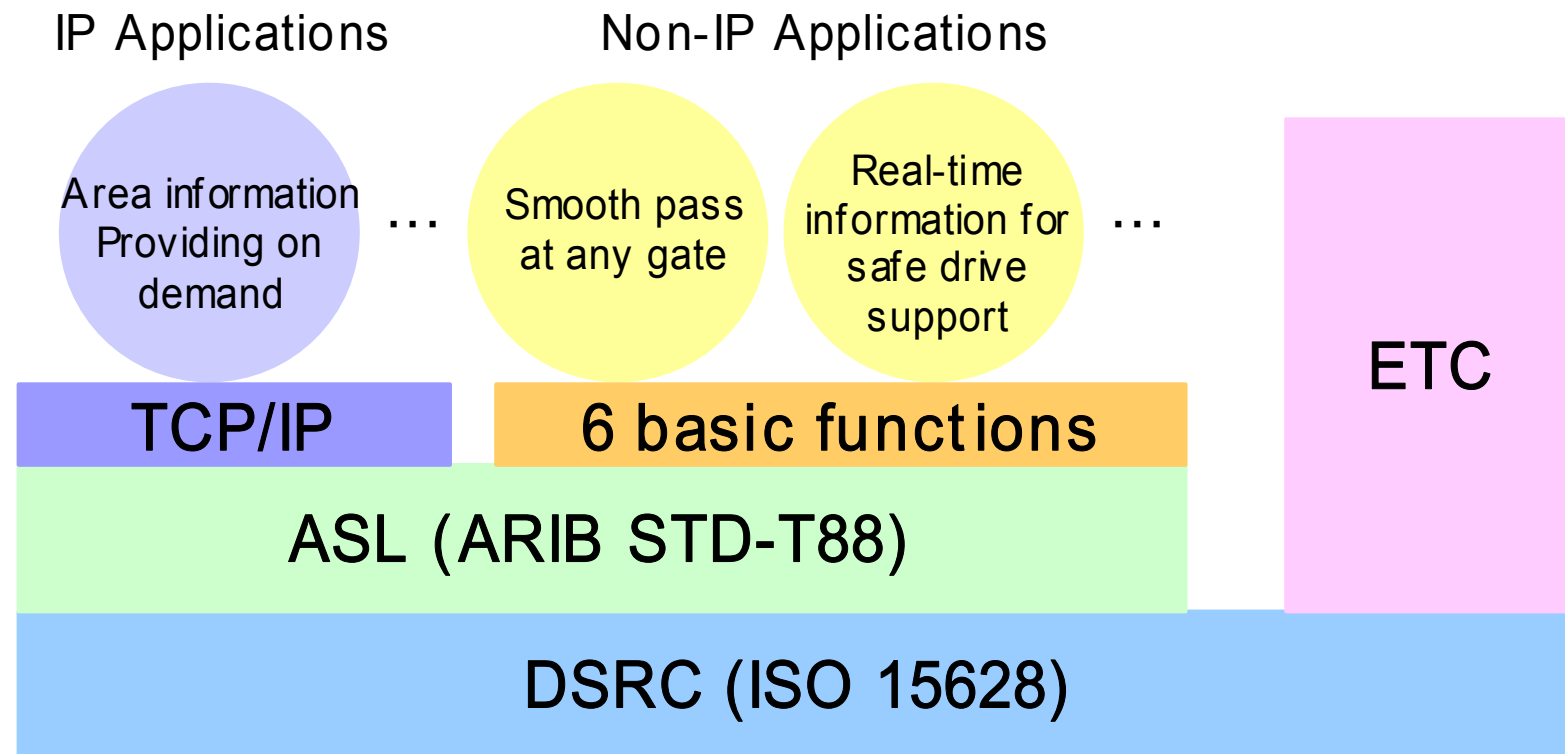
- 5.8GHz active system (ITU-R basis)
- ISO15628(FDIS)basis
- Multi application
- High-speed, large capacity



2. Summary and Present Situation of DSRC

(2) Multi-application using ASL*

- The ASL is standardized in Japan as ARIB STD-T88, which can realize multi application using with ISO15628
- The ASL can handle both IP and non-IP application
- New system can realize various applications with 6 basic functions in non-IP application is being investigated

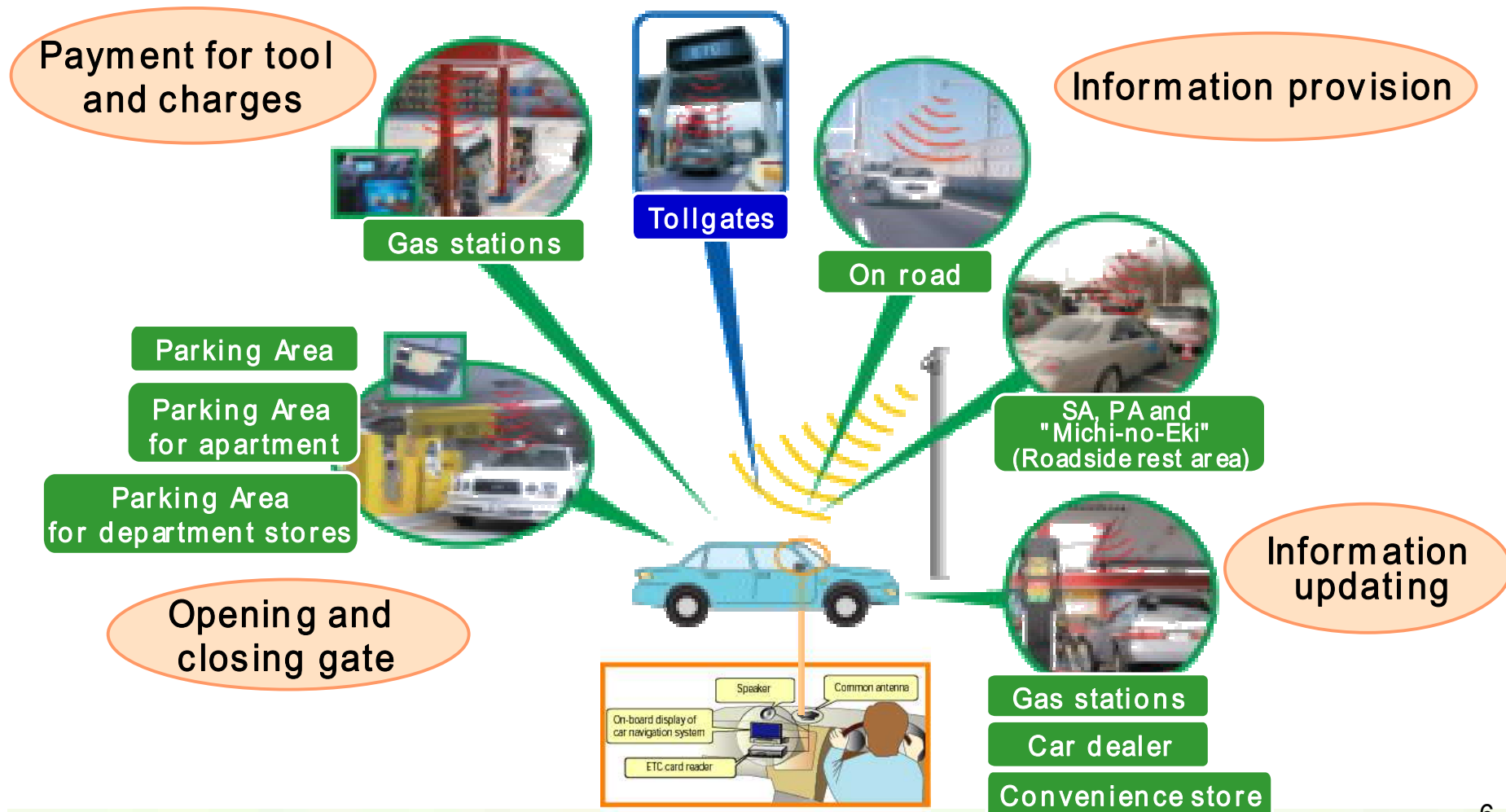


* ASL: Application Sub-Layer

2. Summary and Present Situation of DSRC

(3) Examples of multi-application with ASL and examination situations

Various applications are under development; payment, information services



2. Summary and Present Situation of DSRC

a) Information services with IP application

- Experiment was done at Moriya Service Area, on January 29 and February 2, 2003
- About 300 users conducted the experiment with 4 experimental cars



Opening ceremony at the information booth for the experiment.



5.8 GHz DSRC roadside antenna



Various services examined through the two-way active communication system.

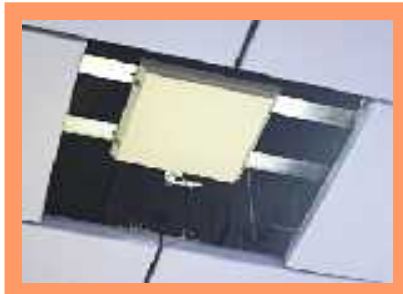


Built-in on-board equipment

2. Summary and Present Situation of DSRC

b) Car discrimination system at parking areas

- Car discrimination system already started at private parking areas in January, 2003
- DSRC authenticates the ID number of the on-board ETC equipment of an approaching car and opens the gate



DSRC
antenna



DSRC authenticates the ID
number of the onboard ETC
equipment

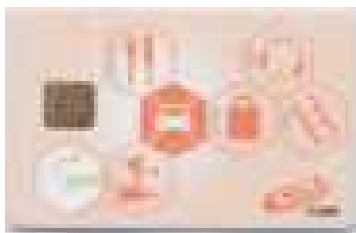
2. Summary and Present Situation of DSRC

c) Demonstration of payment at gas station

- The demonstration was made at a private gas station on January 22 to 24, 2003
- Experiment of payment and information services were done at self-service gas machines and automated car-washing machines



Requesting the type and amount through the screen, and electronic payment of the charge



Prepaid type IC card used in the demonstration



The demonstration was made at an actual shop doing business.



DSRC antenna on the roof of the car-washing machine

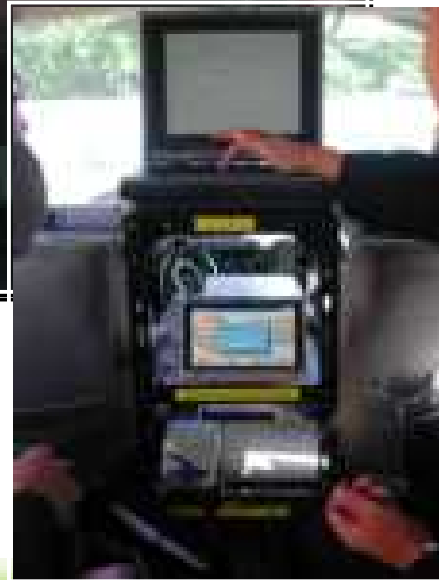


User can choose the menu and the charge is electronically paid.

2. Summary and Present Situation of DSRC

d) Experiment of payment at hamburger shop

- The experiment was made at a hamburger shop from September 25 to 28, 2001
- The experiment was to send the menu and the order between in-store machine and on-board unit, and to pay online



source:NEC

3. Plan for the Future

(1) Development of ITS on-board units

One on-board unit will be able to use the following services in 2007

- Smooth passage through all types of gates
- Regional guides according to location and needs
- Timely driving support information



The case where each application needs an exclusive on-board unit



The case where one on-board unit can use several applications

[Smooth passage through all types of gates]

- Smooth passage by cashless fee payment other than ETC, including parking fees
- Voice announcement services when entering and leaving a facility.

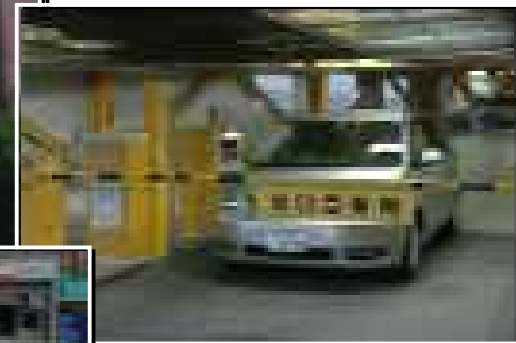
Entr y/ex it management i n a facility for commercial vehicles



Fee payment in the drive-through restaurant



Source: NEC



Fee payment in a pay-by-the-hour parking garage

Entr y/ex it management in an apartment building's parking garage



Fee payment at a gas station

Source: Internet IT S Research Group

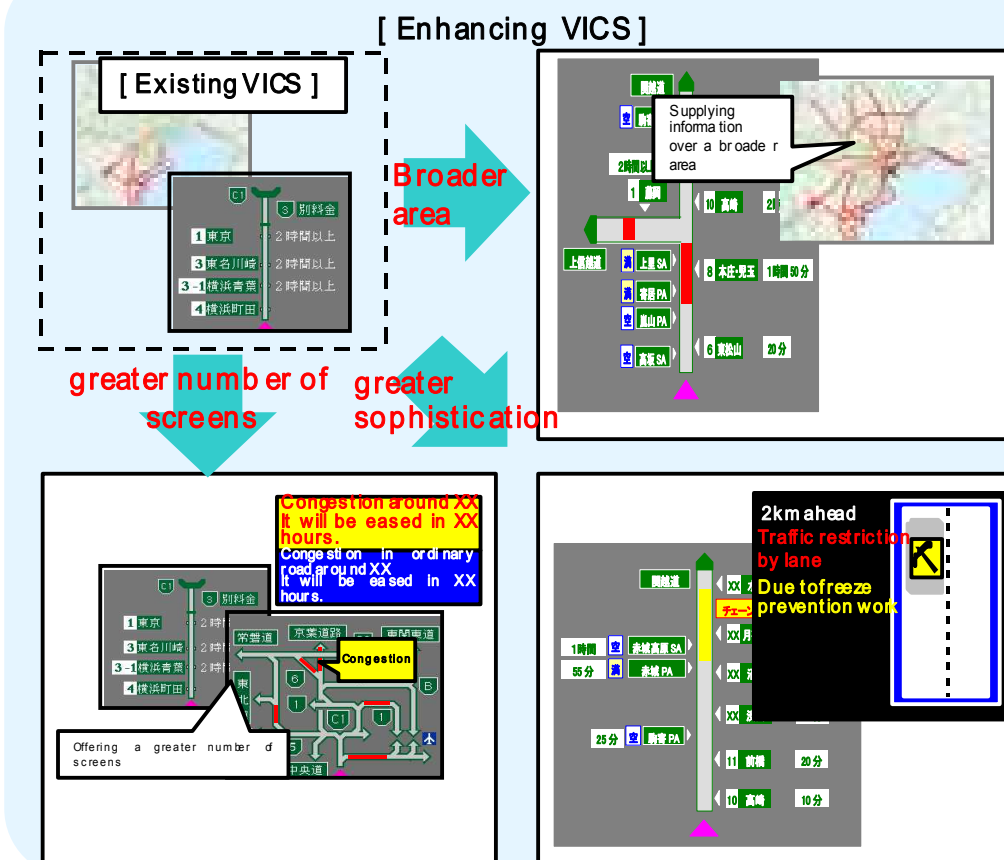
[Regional guides according to location and needs]

- Providing area road information and regional or tourist information at roadside stations and expressway service areas or parking areas
- Offering a wider range of opportunities to obtain information in the car



[Timely driving support information]

- Improving safety by providing various information instantly while driving
- Enhancing the existing VICS services
- Establishment of infrastructures such as roadside units based on international standards and multi-modal application of on-board units



[Notification when approaching a congested section]

Attention, congestion ahead.

[Information on locations with frequent accidents]

Attention, frequent accidents when making a right turn.

[Support for safe driving on curves]

Testing a curve entry warning system (Sangubashi, Metropolitan Expressway)

3. Plan for the Future

(2) Development scenario

For the services with ITS on-board units, joint researches by public and private sectors and settlement of standards and specifications are promoted

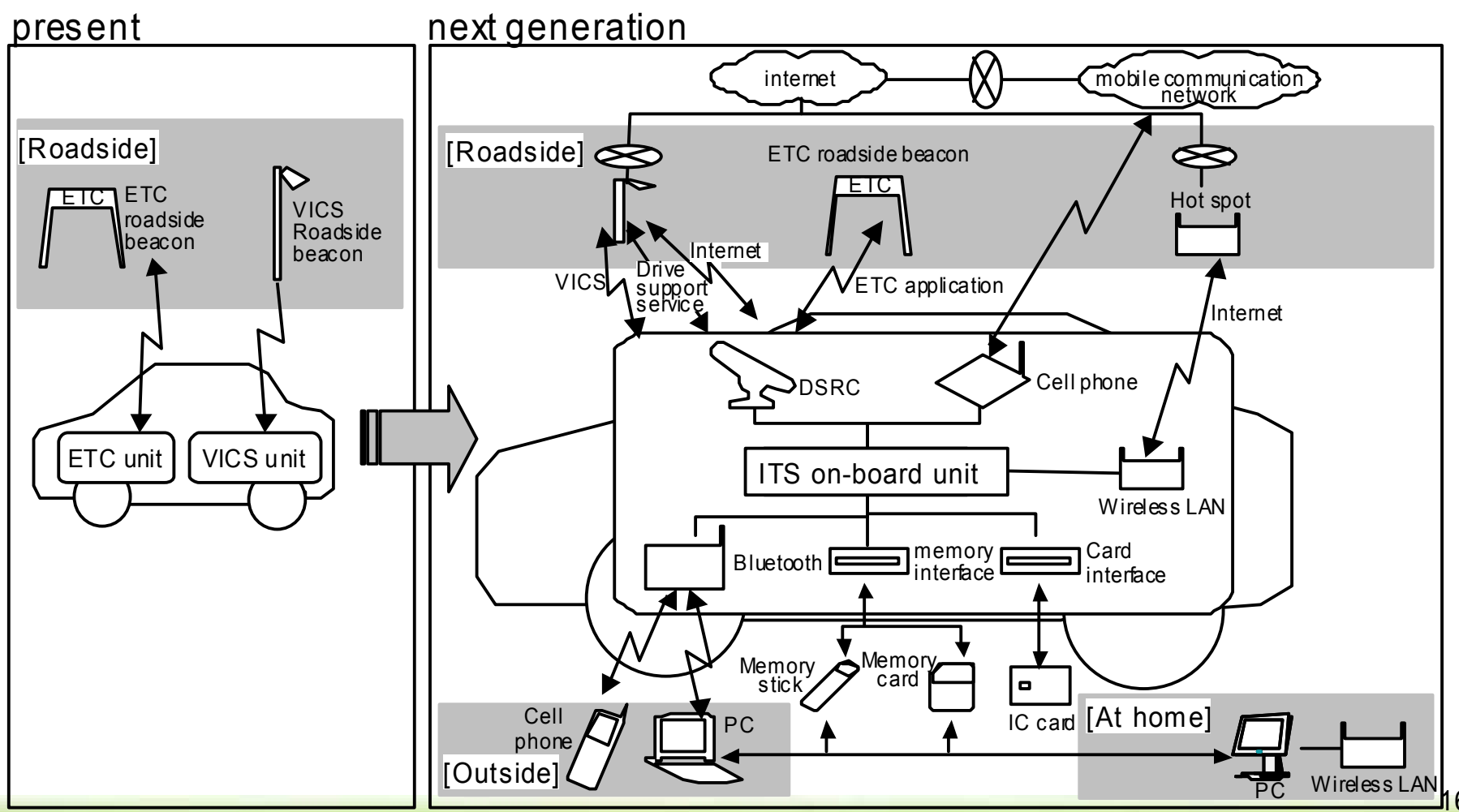
	Vehicle info. transmission	Fee payment		ETC	Info. provision	Info. and warning	Pedestrian support
	Probe	Entrance and exit management	Multi use payment Parking garage		(Payment at gas stations)	Area information	
		Smooth passage through all types of gates			Regional guides according to location and needs	Timely driving support information	
2004	To practical use	Definition of service		To practical use	Definition of service	Definition of service	
		Joint research			Joint research	Joint research	
2005		Settlement of standards and specifications *1			Settlement of standards and specifications *1	Settlement of standards and specifications *	
2006		To set roadside equipments and make on-board units			To set roadside equipments and make on-board units	To set roadside equipments and make on-board units	Services start
2007							
2008 and after		To practical use	To practical use	To practical use	To practical use	To practical use	To practical use

*1 included mutual connection scheme settlement

3. Plan for the Future

(3) Targeted world with ITS on-board units

Media free communication environment with not only DSRC but cell phone and wireless LAN





END

