10th World Congress on ITS in Madrid

Development of ITS in Japan

— Focusing on DSRC —

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Key-points

- New applications require a platform.

- New applications offer a new platform.

- A new platform promotes further applications.

Two platforms in Japan

- Car navigation systems and ETC offer platforms.

1. Car navigation system : H M I

2. ETC : DSRC

Car navigation system (1)

- **Digital road maps**

  - Route guidance
  - Safety information
  - Information on tourist attractions, local communities, and facilities

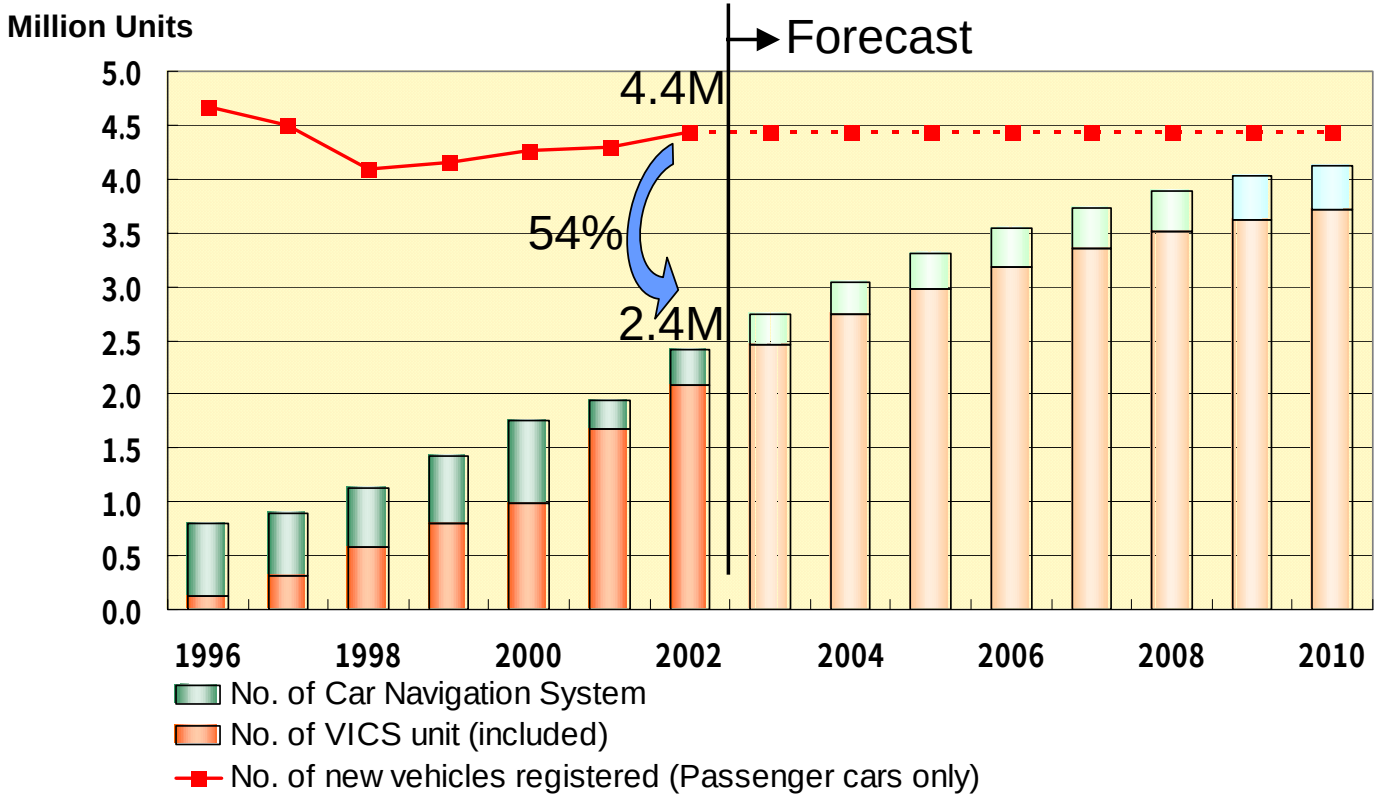
- **VICS** (Vehicle Information and Communication System)

  Real time information,

  - Congestion, Road surface conditions
  - Accidents, Obstacles, Road Works, Restrictions
  - Parking lot vacancy

Car navigation system (2)

- Car navigation systems are becoming standard equipment for vehicles.



Car navigation system (3)

- The wide-spread use of car navigation systems has two meanings.

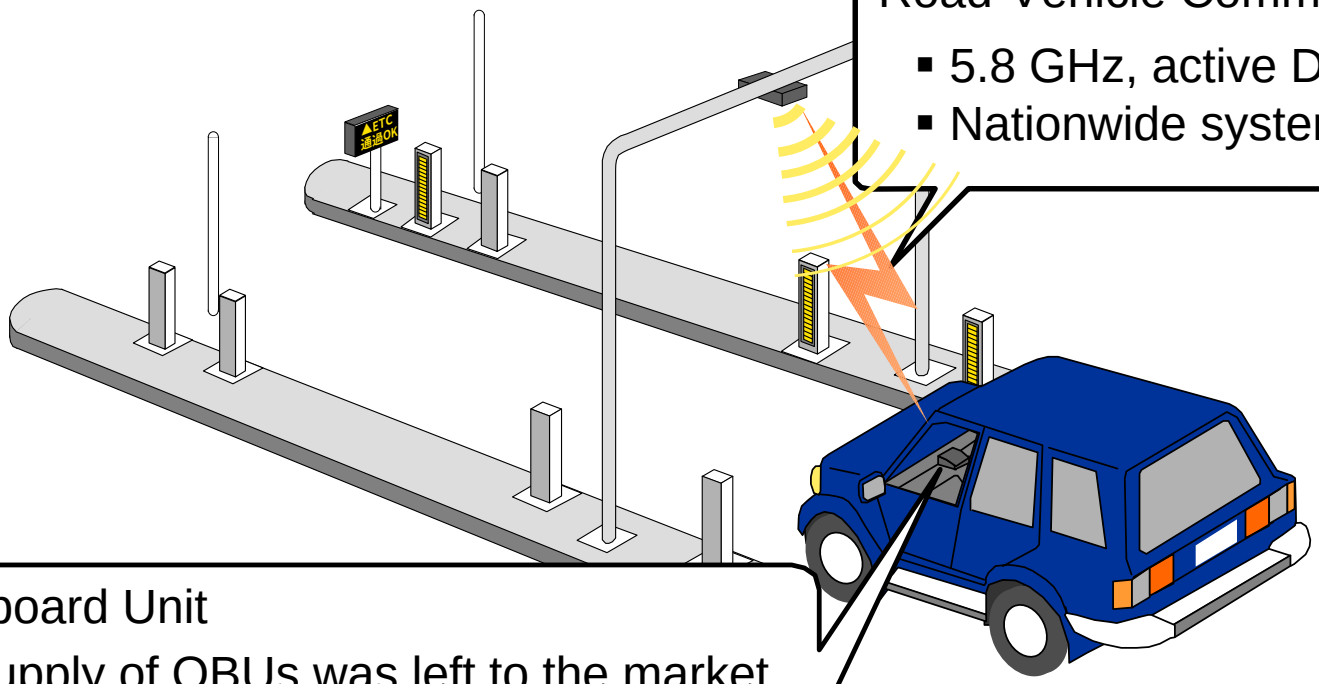
1. HMI as a platform in vehicles

- Displays
- Speakers
- Microphones
- Input devices, etc.

2. Relationship between driver and system

ETC (1)

- Launched in March 2001



Road-Vehicle Communication

- 5.8 GHz, active DSRC
- Nationwide system

On-board Unit

- Supply of OBUs was left to the market.
  - Lower prices
  - Wide selection of products

ETC (2)

- Variety of OBUs
  - **On dashboard**

  - **Integrated with car navigation system**

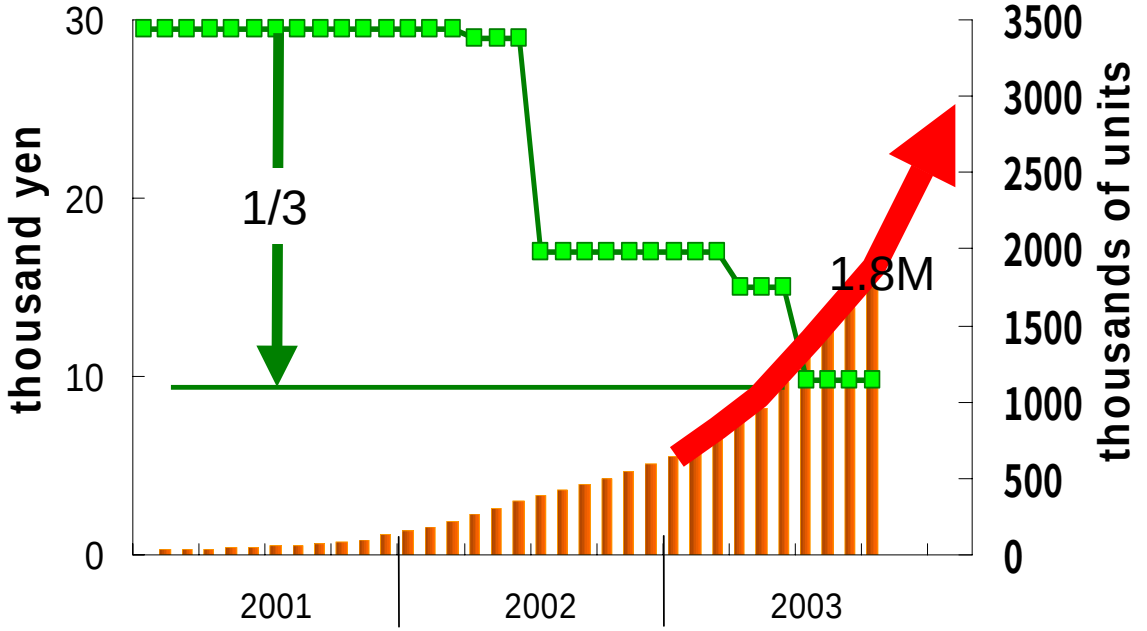
  - **Built-in**

  - **Overhead**

- Almost all of OBUs are compatible with car navigation systems.

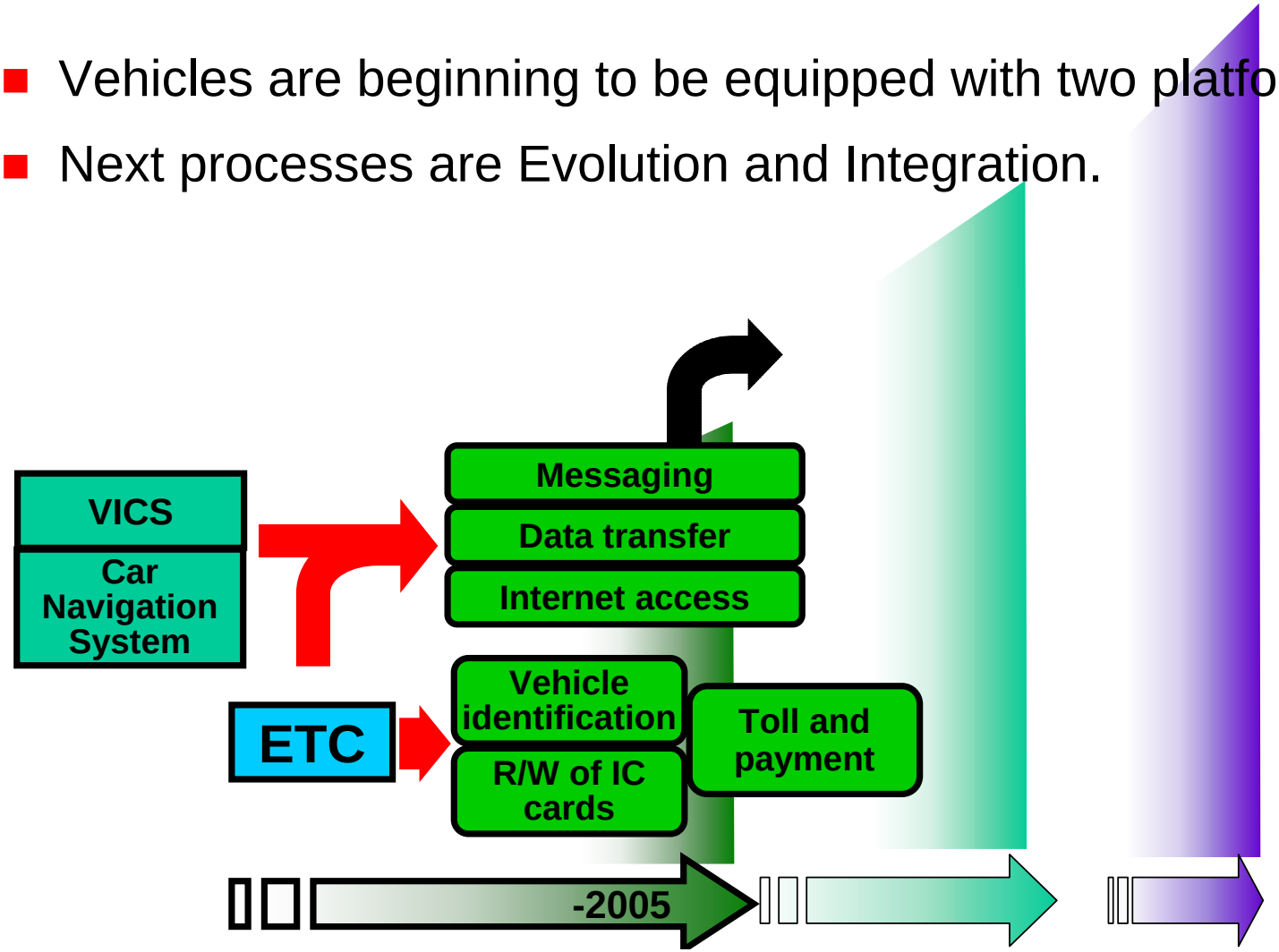
ETC (3)

- 1.8M units are installed in only 2.5 year.
- Price has dropped to 1/3.
- 10M units by 2007.
- DSRC is becoming a platform in vehicles.



Evolution and Integration(1)

- Vehicles are beginning to be equipped with two platforms.
- Next processes are Evolution and Integration.



Ongoing preparations(1)

- Vehicle identification to open a gate
- Deployed into a parking-lot in Nagoya (Jan. 2003)

Ongoing preparations(2)

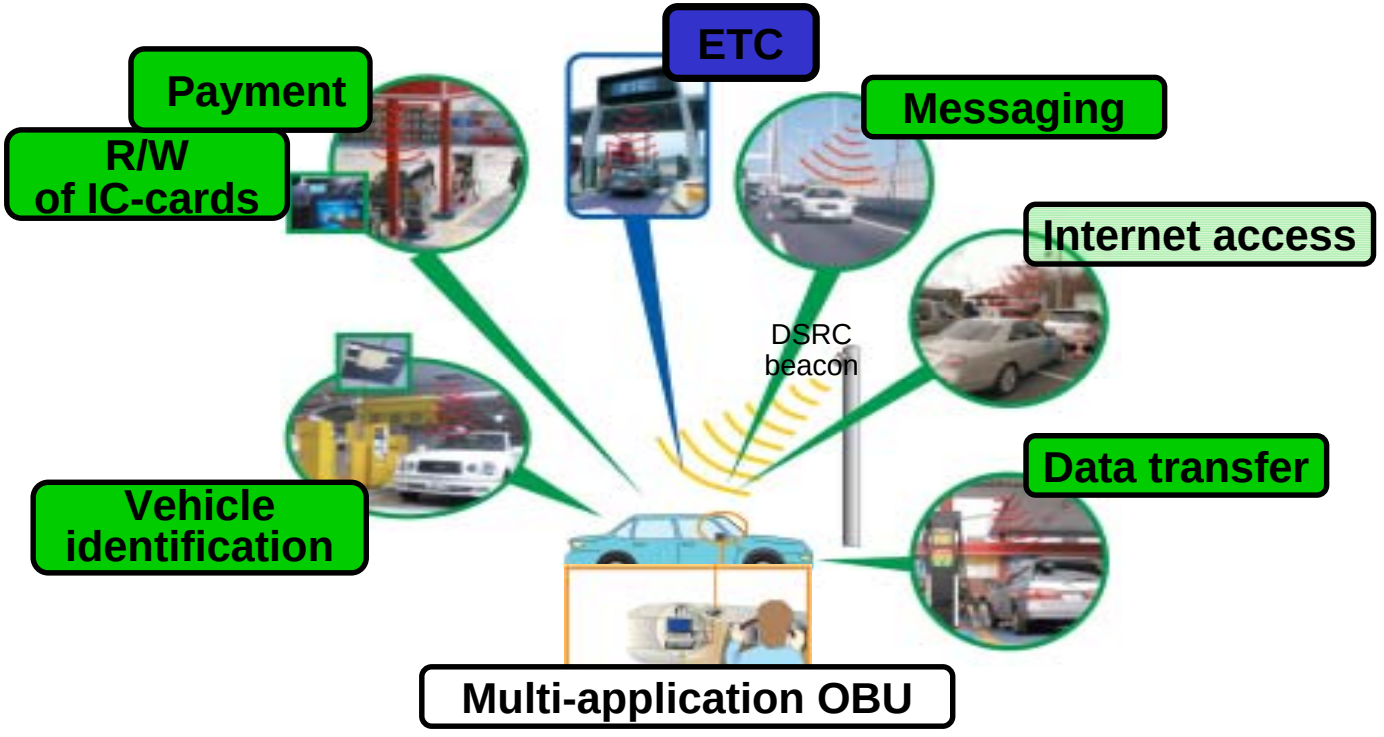
- Payment (Using IC card)
- Messaging
- Data transfer (Images, Music)
- Demonstrated at gas station in Atsugi (Jan. 2003)

Ongoing preparations(3)

- Internet access services
  - Congestion, Road conditions, Tourist info.
- Proving tests at SA on the Expressway (Jan. 2003)

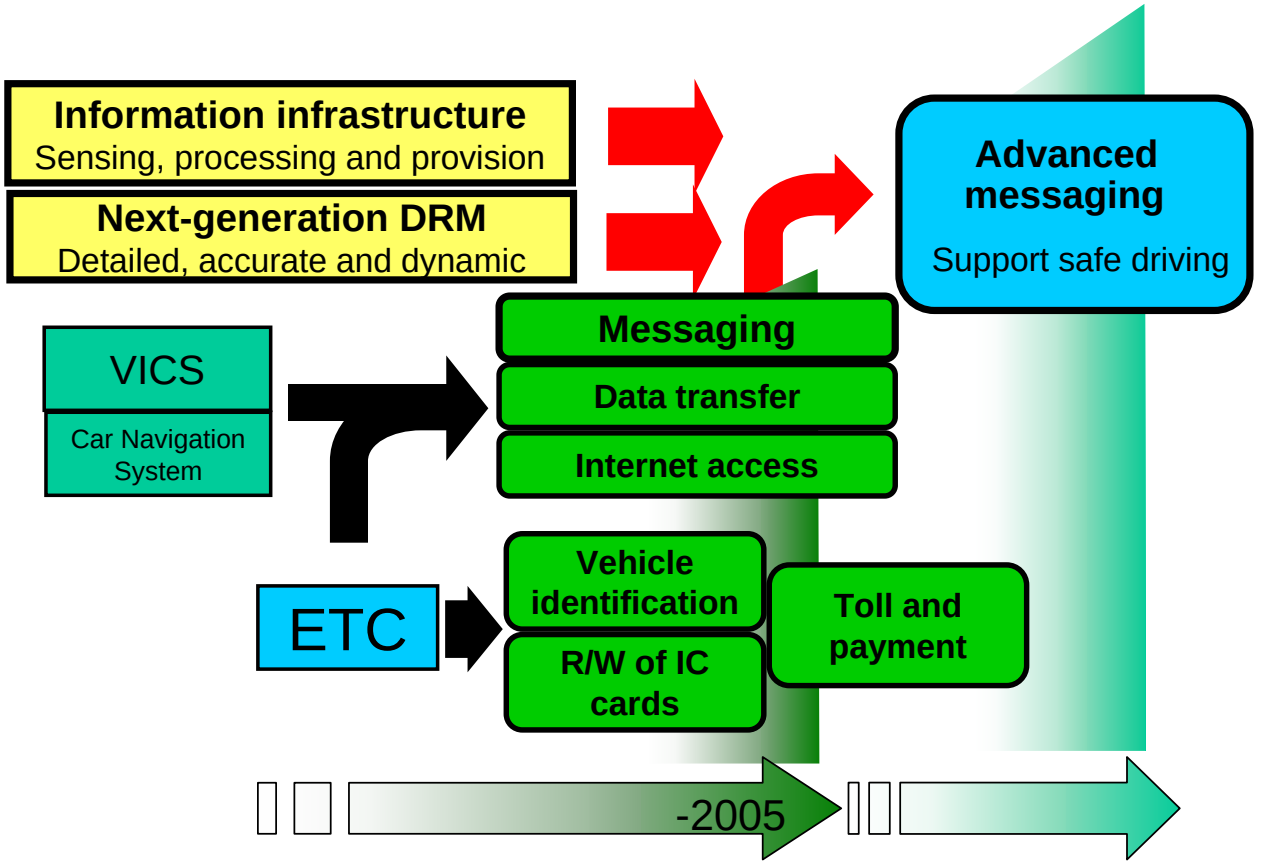
Multi-application OBU

- Services are to be provided on a common platform.
- The goal is to realize ITS services with a common, multi-application OBU.



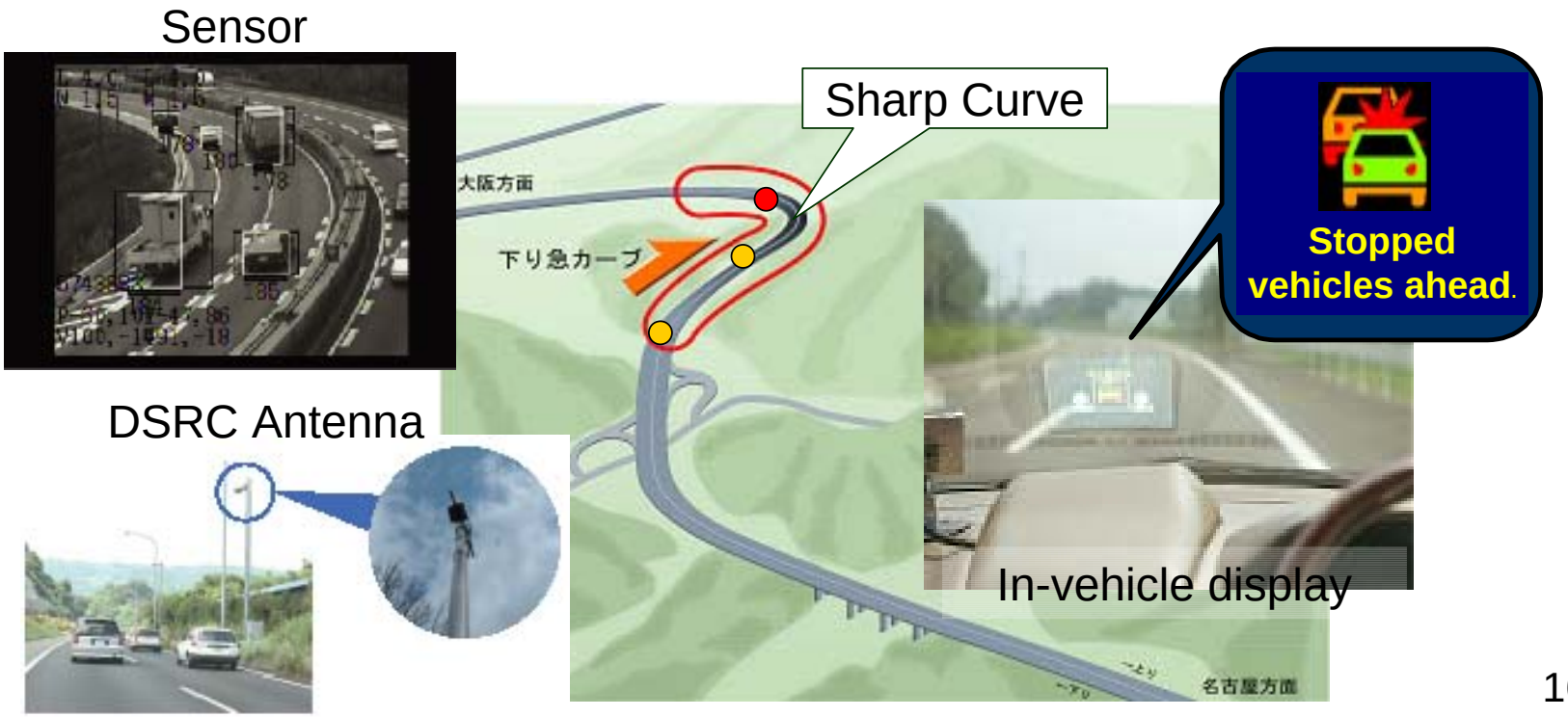
Evolution and Integration(2)

- Next-generation DRM and Information infrastructure will make message services advanced.



Ongoing preparations(4)

- Proving tests on actual roads in 2002-2003.
  - Prevention of collisions with obstacles ahead
  - Prevention of Overshooting Curves



Smart cars in Japan

- Smart cars with control functions are already on the market.

[Lane-keeping]

- In-vehicle - camera detects lane
- Assist the appropriate amount of steering
- Maintain the vehicle in the lane

[Pre-crash safety]

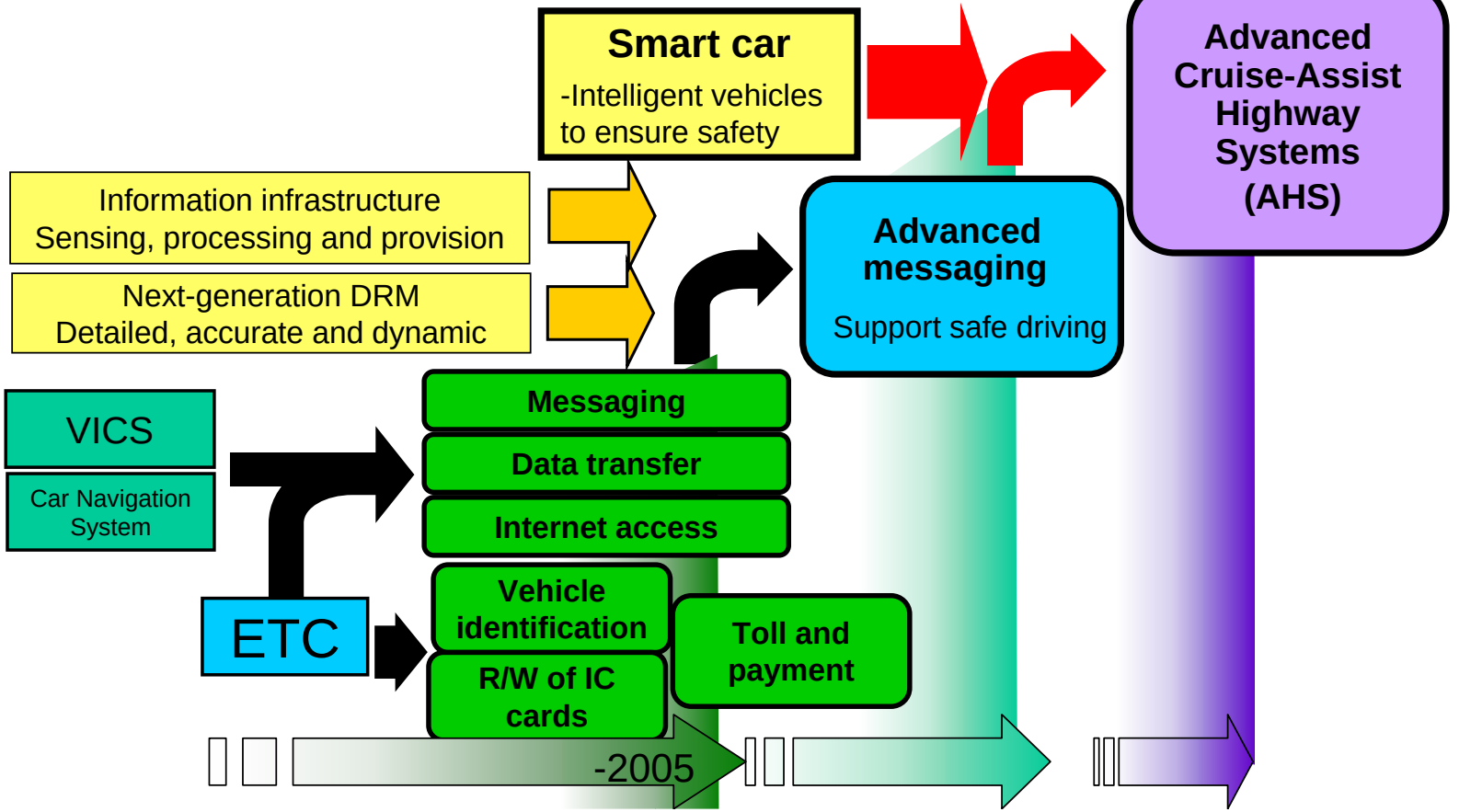
- Millimeter-wave radar detects vehicles and obstacles ahead
- Assist brake lowering the collision speed

[Advanced cruise control]

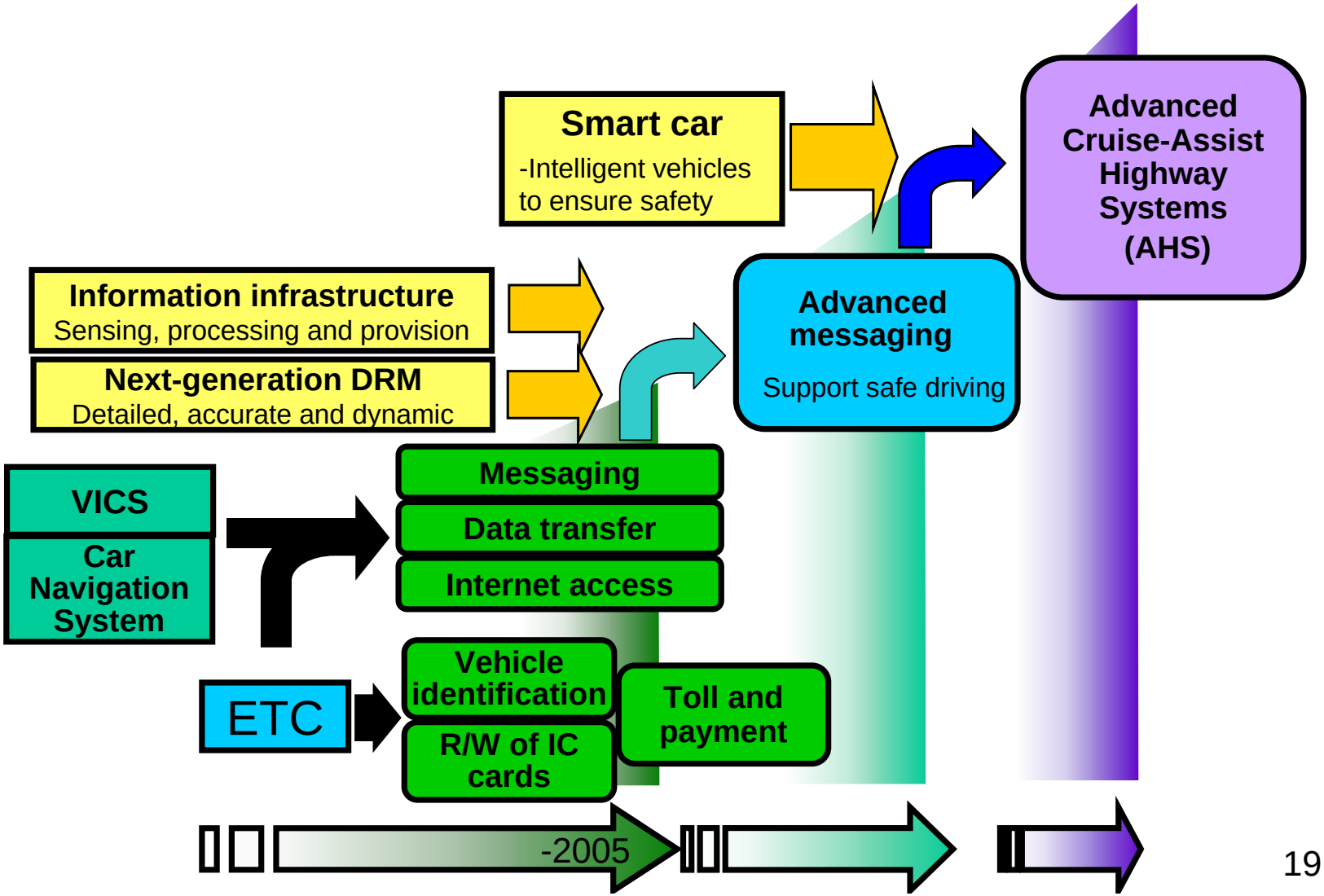
- Millimeter-wave radar detects vehicles ahead
- Control the throttle and brake

Evolution and Integration(3)

- Smart cars and advanced message services lead to road-vehicle cooperation systems.



Conclusion


Smart car
-Intelligent vehicles to ensure safety
Advanced Cruise-Assist Highway Systems (AHS)
Information infrastructure
Sensing, processing and provision
Next-generation DRM
Detailed, accurate and dynamic
Advanced messaging
Support safe driving
VICS
Car Navigation System
Messaging
Data transfer
Internet access
ETC
Vehicle identification
R/W of IC cards
Toll and payment
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