3. Measures for the Promotion of Smartway

(1) Promoting Further Acceleration as National Strategy

1) Goals of Smartway

- Four goals of Smartway: reversing the negative legacy of motorization; ensuring mobility for the elderly; developing affluent communities and lifestyles; and improving the business climate.

Goal

Society of smart mobility

Reversing the negative legacy of motorization

Ensuring mobility for the elderly

Developing affluent communities and lifestyles

Improving the business climate

(1) Promoting Further Acceleration as National Strategy

2) Clear targets

- Smartway is positioned as a national strategy and is being implemented with clear targets.

Eliminating all fatal traffic accidents

Making ETC standard equipment

Supporting safe driving by the elderly drivers

Doubling the number of expressway interchanges

Making public transportation more convenient

Ensuring safe road transportation

Implementing Smartway as a national strategy

(1) Promoting Further Acceleration as National Strategy

3) Intensifying efforts in Europe and North America

[Proposed law for new road development in the U.S. : SAFETEA]

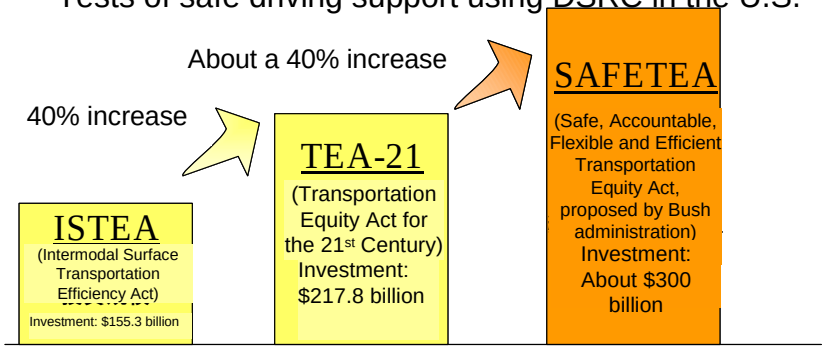
- Under proposed legislation for new road development, including SAFETEA, about ¥30 trillion would be budgets.
- Providing for safety targets and road-vehicle cooperation. ITS-related spending is about 1.2 to 1.4 times the level under current legislation.

[European program for ITS research and development: eSafety]

- R&D is underway on more than 40 programs, including a map database that will cover all of Europe and driver support systems that will include vehicle-highway cooperation systems.
- The target of reducing traffic accident fatalities by half by 2010.

Source: Data from the U.S. Federal Highway Administration (FHWA)

Tests of safe driving support using DSRC in the U.S.



Note: Includes a portion of the gasohol tax, now incorporated into general revenue, which would go to the Highway Trust Fund.

(2) Strengthening Involvement of Public and Private Sectors

1) Transmitting information to the world: World Congress on ITS (Nagoya, Aichi 2004)

- Classes will be held for the general public.
- Exhibits from a wide range of fields and industries will continue after the World Congress ends
- Technical tours to observe leading examples of ITS introduction in Japan and Asia Pacific

Past records for participation in World Congresses on ITS

	Past	Nagoya, Aichi 2004
Congress registration	About 3,000-4,000 persons	5,000 persons
Congress participants	7,000-8,000 persons	50,000 persons (about 6 times more)
Nationwide participation	No past comparison	500,000 persons


Source: ITS-Japan

First-ever events for the World Congress on ITS

First-ever event	Summary
ITS World	The organizer's theme exhibit, a hands-on ITS tour on a full-size street of about 3,000 square meters. The basis of ITS will be explained in the Georama Theater and other attractions.
Tours for the general public	Showcase tours, open to the public.
Classes for the general public	ITS will be explained in an understandable manner to the general public.
ITS Week	A period of about two weeks around the time of the World Congress has been designated as ITS Week. Local events will be held in conjunction with the Congress.
Exhibits open to the public	The exhibits will continue for two extra days, on Saturday, October 23 and Sunday, October 24.




Source: ITS-Japan

(2) Strengthening Involvement of Public and Private Sectors

1) Transmitting information to the world: Expo 2005 Aichi

- At Expo 2005 Aichi, several ITS technologies are to be introduced using hands-on tours. Intelligent multimode transit system (IMTS) and general traffic information center systems.
- Expo 2005 Aichi (March 25 - September 25, 2005) will have 15 million people visitors, 125 countries as official participants, and nine pavilions as house private sector exhibits.

IMTS at Expo 2005 Aichi

Attendance goal	15 million visitors
Official participant countries	125 countries
Private pavilion exhibitors	9 pavilions: The Federation of Electric Power Companies, Central Japan Railway Company, Japan Automobile Manufacturers Association, Mitsubishi Expo Aichi Committee, Toyota Group, Hitachi Group, Mitsui Group Expo 2005 Committee, Joint Pavilion Produced by the Chunichi Shimbun, and the Japan Gas Association.
ITS at Expo 2005 Aichi	IMTS, traffic information system, bus operation management system, parking management system, etc.

Site of Expo 2005 Aichi (Youth Park area)

(2) Strengthening Involvement of Public and Private Sectors

2) Structure for sustained promotion

- The Smartway Project Advisory Committee is the core in an alliance of industrial, academic, and governmental organizations.
- Working groups under the Smartway Project Advisory Committee
- Study meetings involving private businesses to discuss the future services

Smartway Project Advisory Committee

-Follow-up on Smartway promotion
-Proposals based on social and technological trends

Smartway Project Advisory Committee (June 9, 2004)

Working groups under the Smartway Project Advisory Committee

-Composed of persons of learning and experience, related industry groups, and related ministries and agencies.
-Studies from a practical standpoint.

Collaboration

Study meetings involving private businesses

-Composed of private businesses and private organizations
-Study of service models based on public-private cooperation

(3) Conceptualization of ITS Based Services

[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.

Entry/exit management in a facility for commercial vehicles

Fee payment in the drive-through restaurant

Source: NEC

Entry/exit management in an apartment building's parking garage

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

Source: Internet ITS Research Group

Fee payment at a gas station

Source: Internet ITS Research Group

Entry/exit management and cashless payment in a variety of situations

(3) Conceptualization of ITS Based Services

[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

Source: Ministry of Land, Infrastructure and Transport

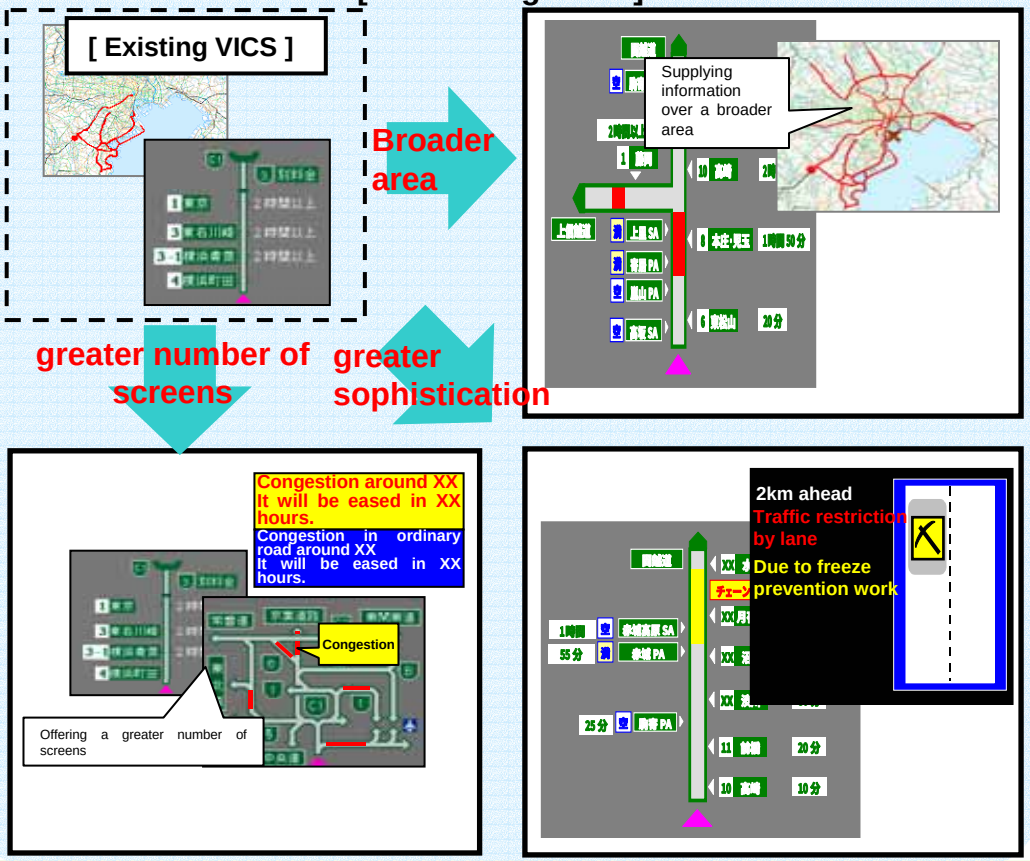
Smart communication testing (JH Moriya Service Area, January 2003)

(3) Conceptualization of ITS Based Services

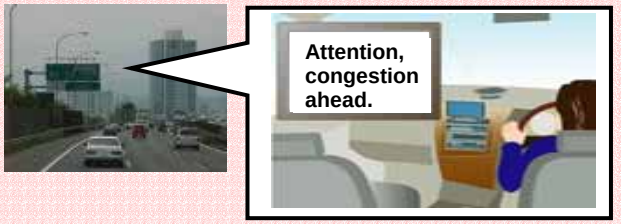
[Timely driving support information]

- 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

[Enhancing VICS]



[Notification when approaching a congested section]



[Information on locations with frequent accidents]

[Support for safe driving on curves]

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

(3) Conceptualization of ITS Based Services

[Bus location systems]

- Promoting the use of public transportation in a region by bus location information
- Promoting development and deployment of highway bus location systems

Approaching bus indicator at a bus stop

On-demand bus systems

Highway bus between Hiroshima and Matsue

Bus stop information accessed by cell phones

How bus location systems work

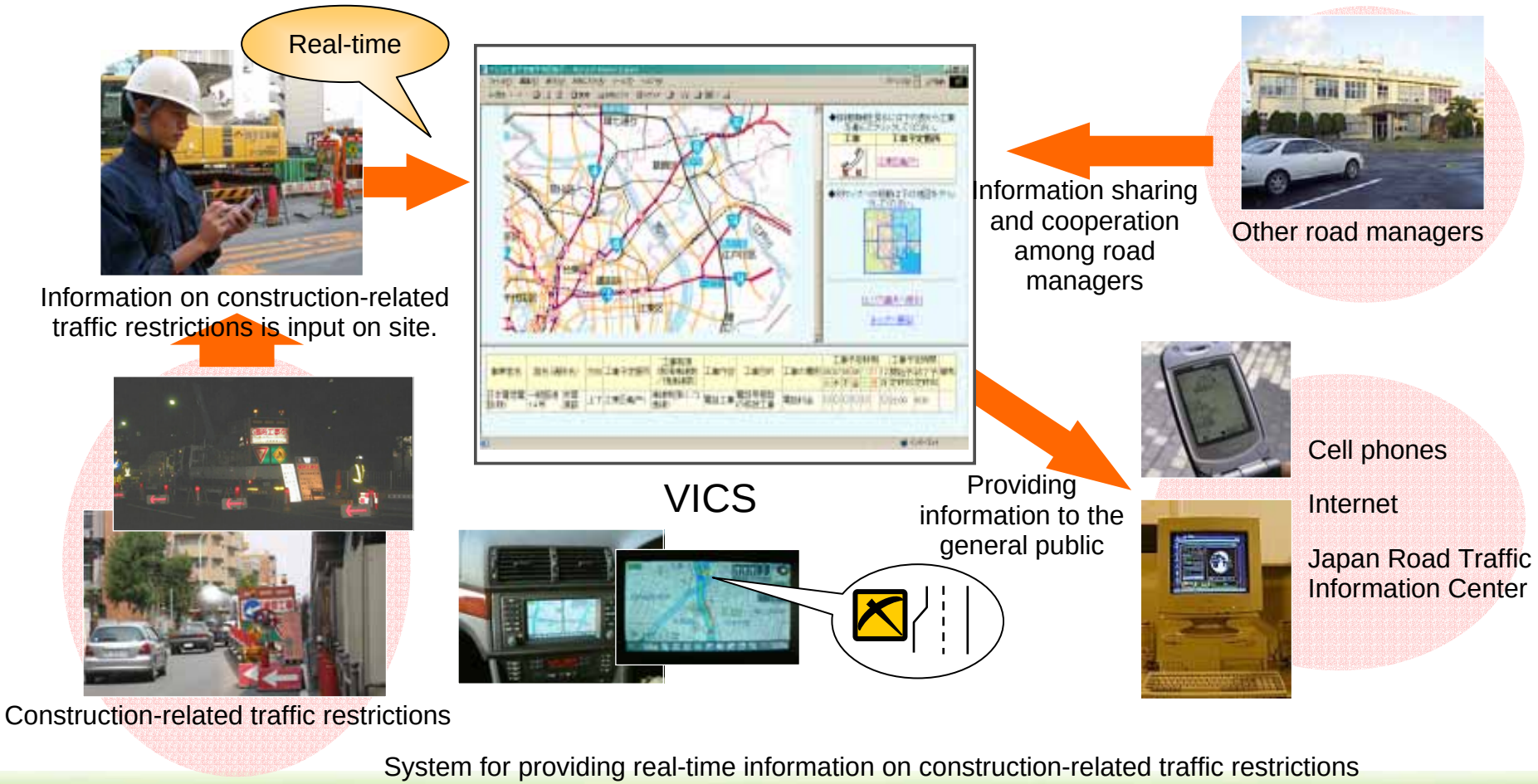
Kyushu highway bus information system (ITS Bus)

Source: Kyushu Regional Development Bureau

(3) Conceptualization of ITS Based Services

[Road construction management]

- Providing real-time information sent out by road workers through web sites or VICS
- Probe cars for continuous monitoring of traffic congestion due to road construction

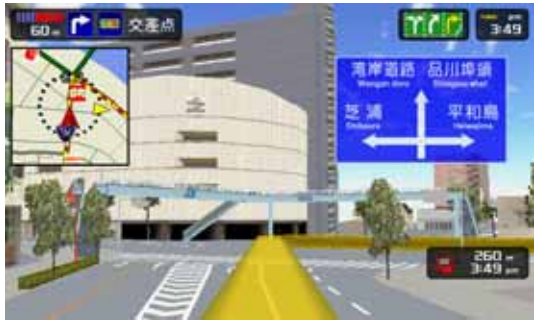


System for providing real-time information on construction-related traffic restrictions

(3) Conceptualization of ITS Based Services

[Information and warning services using digital maps]

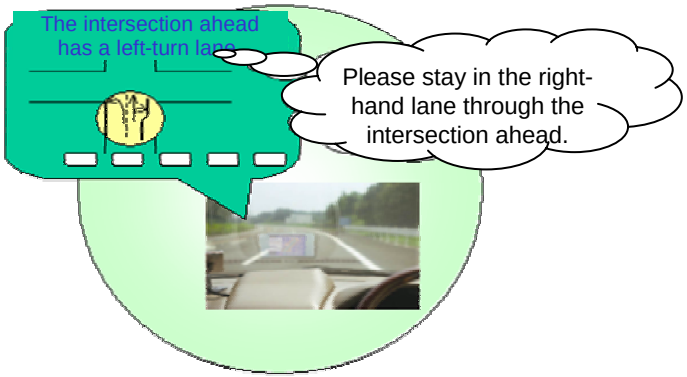
- Car navigation systems supply information on lanes, road structures, and etc.
- Providing information on road structures and on dangerous locations, linked with digital road maps on car navigation systems

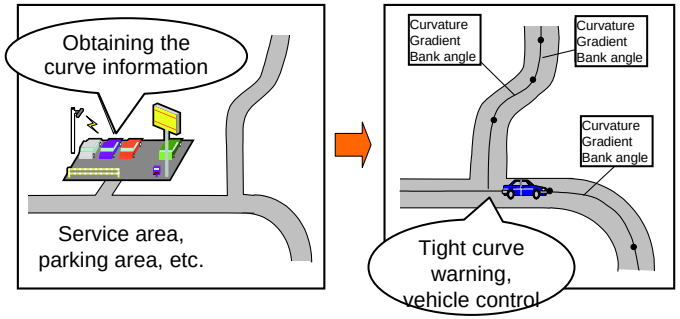


Detailed indication of driving route (with intersection details)

Source: Sony NV-XYZ

New services





Information on road configuration

Examples of information and warning services linked with digital maps

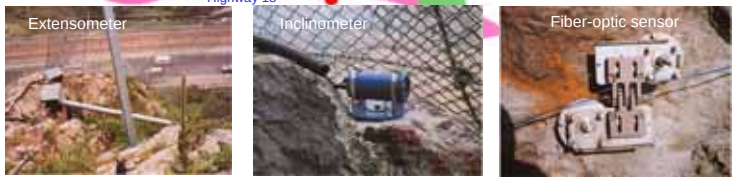
(3) Conceptualization of ITS Based Services

[Providing appropriate information to road users during disasters, etc.]

- Using various sensors with ITS technologies as a disaster safety measure.
- Ensuring safe and reliable road transportation by providing appropriate information to road users during disasters

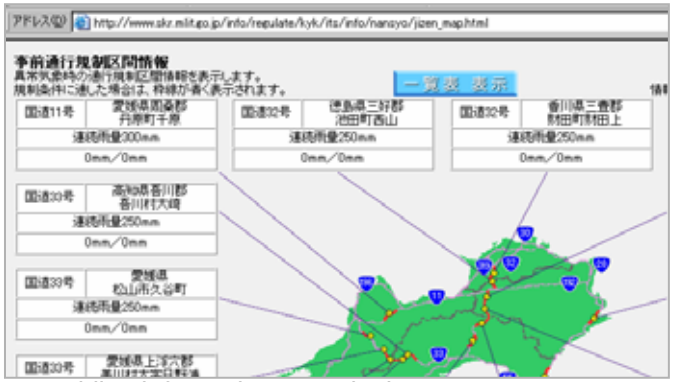
Disaster safety facilities and monitoring system

To improve monitoring and observation, we will install rockfall detection sensors, ITV cameras that can recognize images even by moonlight, and rain gauges and seismometers to measure rainfall or earthquakes



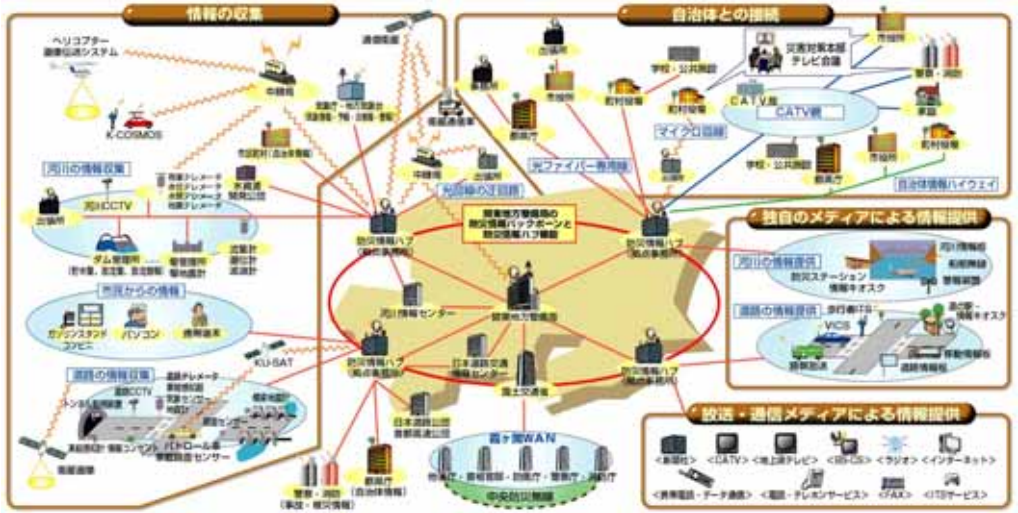
Monitoring with cameras, fiber-optic cables, etc.

Providing information with road information boards, etc.



Providing information on web sites

Source: Web site of the Ministry of Land, Infrastructure and Transportation



Broad-area information network to facilitate the collection and supply of information

(3) Conceptualization of ITS Based Services

[Measures for distribution]

- On-street parking for loading/unloading causes congestion and burdens the environment.
- Providing the facilities for loading/unloading, and introducing ITS to promote their utilization.
- Using ITS for more advanced joint collection and delivery systems.

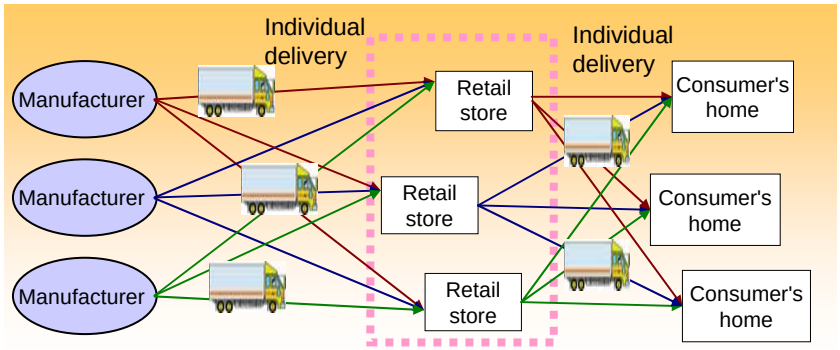
On-street parking is harmful to the roadside environment.

On-street loading/ unloading at convenience stores

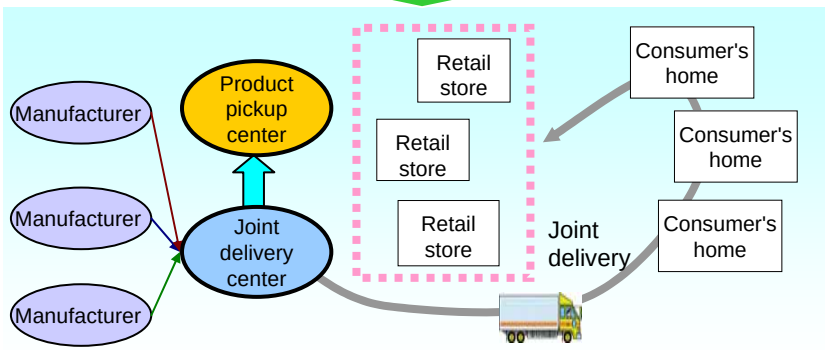
Establishment of off-street parking areas for loading/ unloading

Checking for vacancies in off-street parking areas for loading/unloading and making reservations

More efficient joint collection and delivery systems using ITS



- Separate transport by individual manufacturers and retail stores



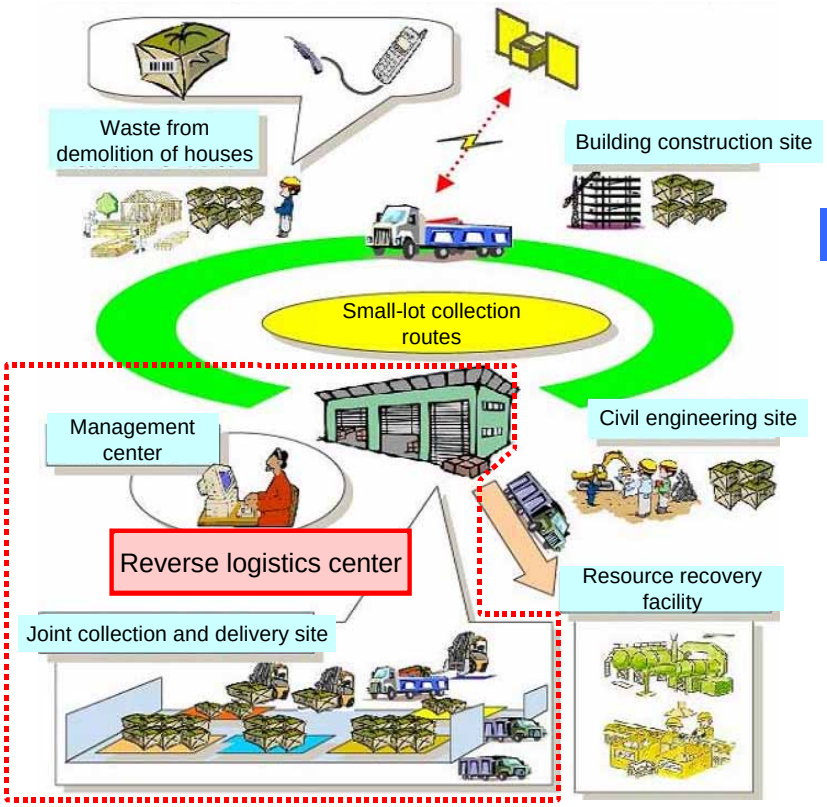
-Product delivery is combined at joint delivery centers and product pickup centers.
-Electronic tags are used for product management.

Electronic tag

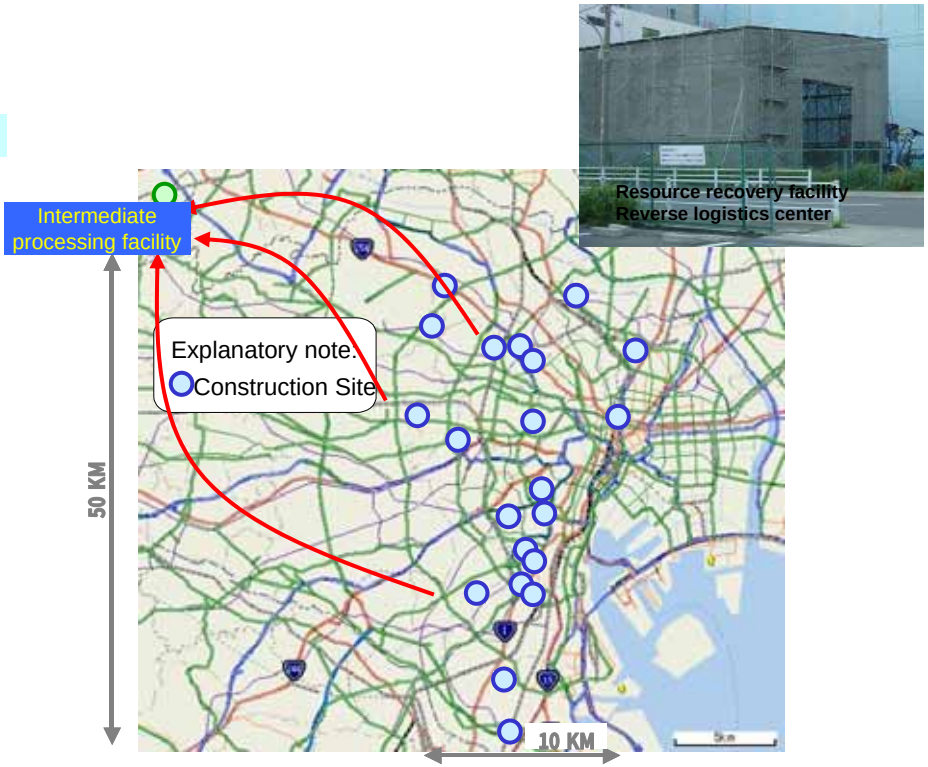
(3) Conceptualization of ITS Based Services

[More efficient reverse logistics]

- Logistical measures for growing stream of recyclable waste are needed.
- Reverse logistics can be made more efficient by building the distribution centers and establishing joint collection routes using ITS.



Proving tests of small-lot collection route system for building by-products



Facilities participating in proving tests
(21 construction sites, intermediate processing facility, resource recovery facility, reverse logistics center)

(4) Full-scale Adoption of ITS by 2007

1) Development of diverse ITS services

- Developing diverse services by using and combining basic services such as vehicular information transmission, fee payment, information and warning, and information provision.

Benefits of services

1) Safety and safe driving

2) Affluence and the environment

3) Comfort and convenience

Basic services

Vehicular information transmission

- Identifying the vehicle or individual driver and providing services for that vehicle or individual.

Fee payment

- Services to allow cashless payment of various types of fees that may be charged while riding in a car.

Information provision

- Services to provide various types of road traffic information or information on roadside facilities.

Information and warning

- Services that provide drivers with information and warnings to support their driving.

(4) Full-scale Adoption of ITS by 2007

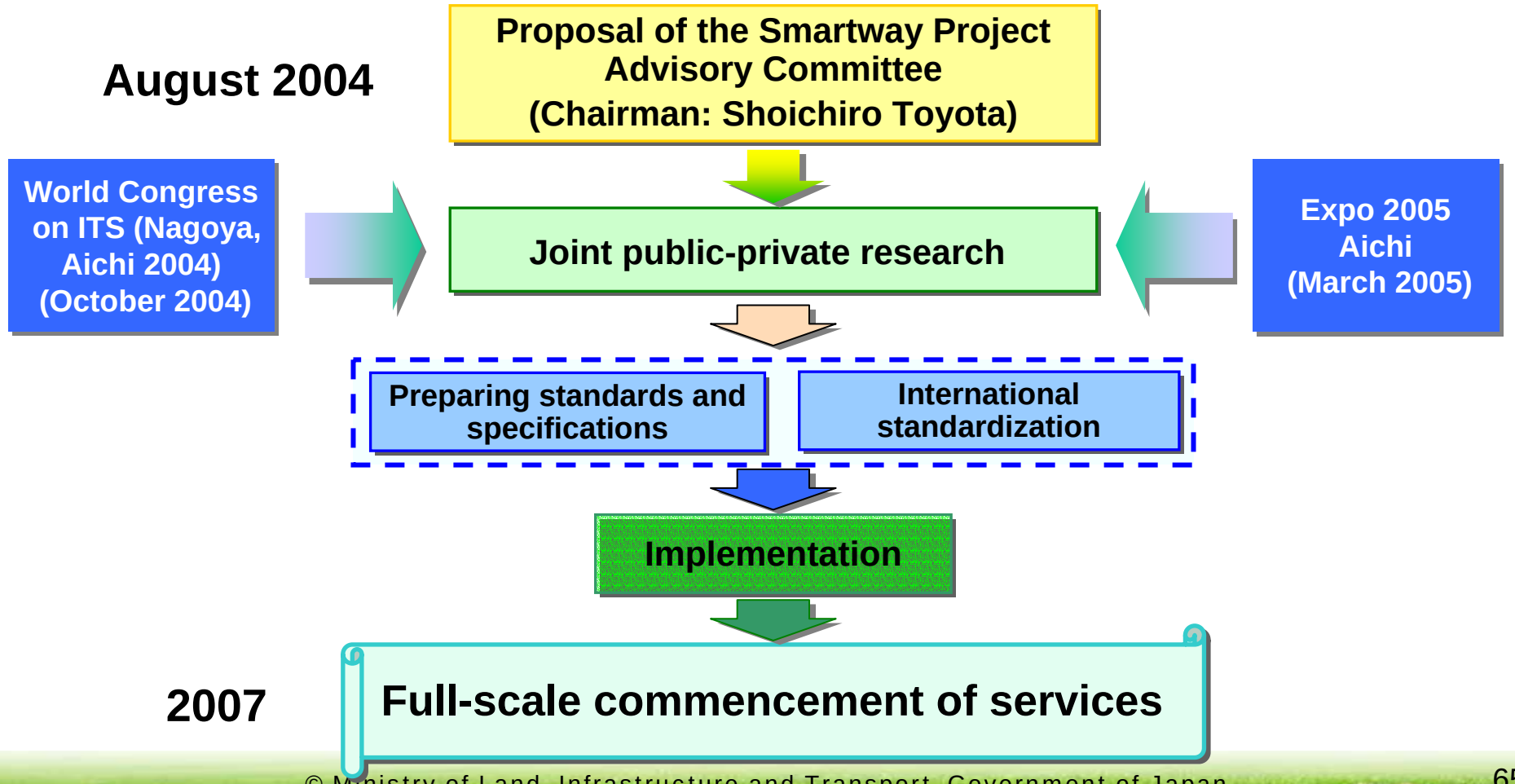
1) Development of diverse ITS services: Basic services and their content

Basic services	Explanation		
(1) Vehicular information transmission	1)Probes		Services that send information on vehicle ID, speed, ABS activation, etc. to a central facility.
	2)Facility entry/exit management		Vehicle IDs and the like are used to determine whether a vehicle may enter a parking garage or other facility, and to activate a control bar to control entry and exit.
(2) Fee payment	3)Multi-purpose payments		Services for the cashless payment of parking charges and various other fees by credit card or prepaid card.
	4)ETC		Services for automatic toll collection on toll roads.
(3) Information provision	5)Internet connection		Services that connect on-board units to the Internet to visit web sites, read and write e-mail, etc.
(4) Information and warning	6)Driving support information	Push-type data transmission	Services to provide text, voice, and image data, singly or in combination, to moving vehicles.
		VICS	Services to provide VICS information to moving vehicles.
	7)Warnings and vehicle control	Providing safety information	Services to provide information that helps drivers make accurate decisions, including the existence of tight curves or obstacles.
		Vehicle controls	Services that directly order the vehicle control system to brake sharply or change steering in order to ensure safety.
		Automatic driving	Services that directly send the vehicle control system information that contributes to automatic driving.
(5) Other	8)Pedestrian support		Services that send information on barrier-free routes or other topics to pedestrians' cell phones.
	9)Applications for inter-vehicle communication		Services for the direct exchange of route information, etc. from one on-board unit to another.
	10)Applications using fixed-line communications		Services to access and exchange information using home or office computers by means of ADSL, dedicated lines, etc.

(4) Full-scale Adoption of ITS by 2007

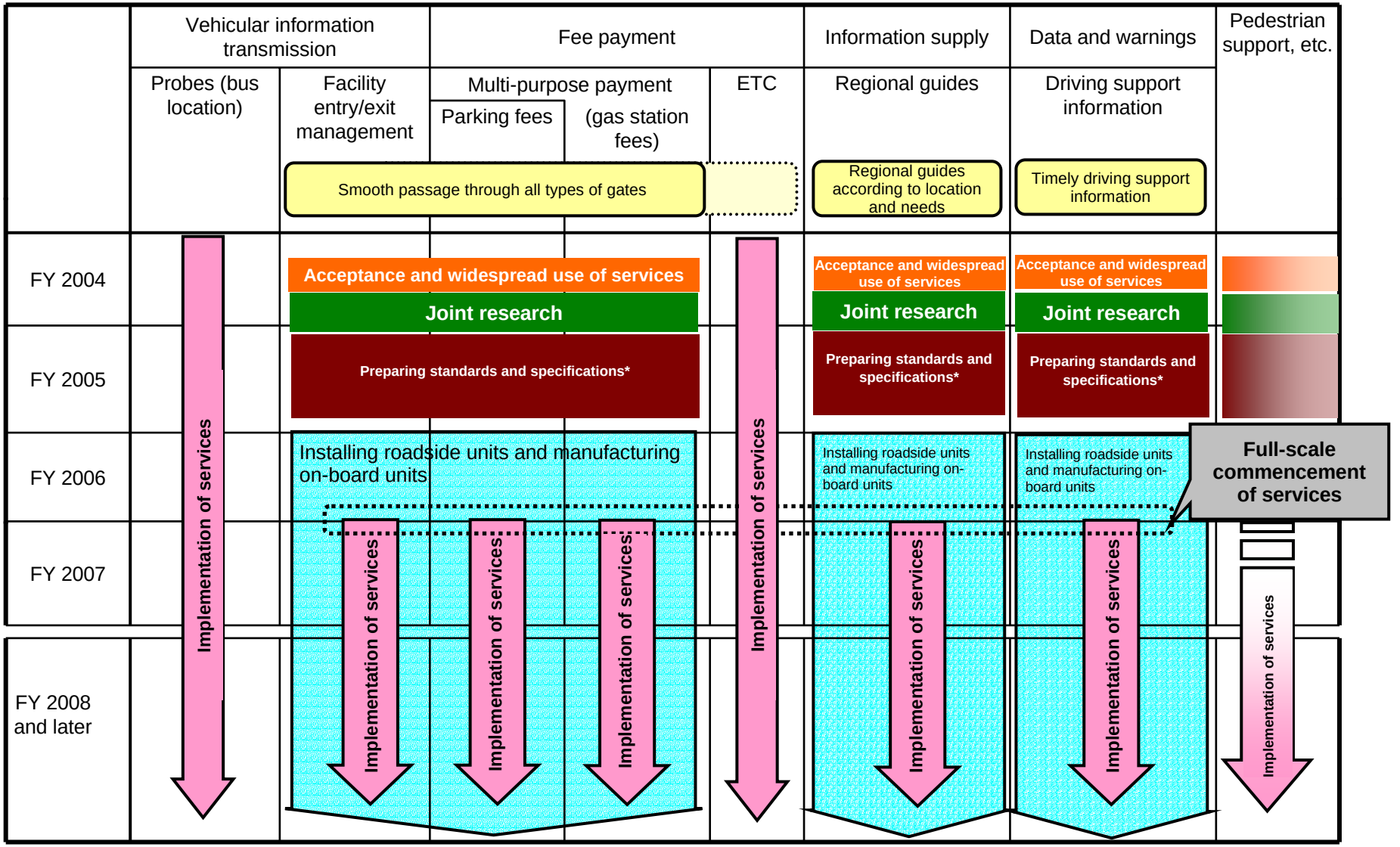
2) Deployment scenario

- Standards and specifications are being prepared with joint public-private research.
- International standardization will be considered when preparing the standards.
- Infrastructure will be developed in preparation for the commencement of services in 2007.



(4) Full-scale Adoption of ITS by 2007

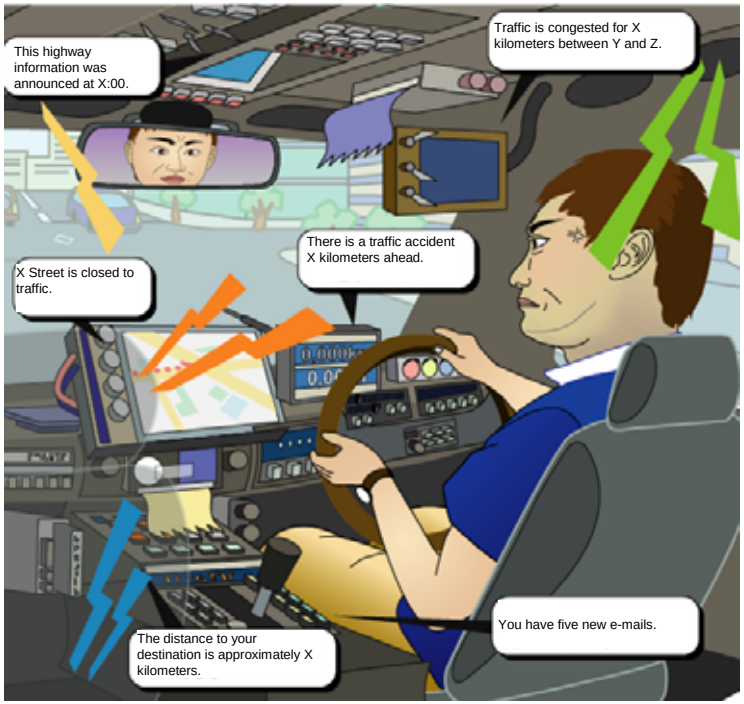
2) Deployment scenario



(4) Full-scale Adoption of ITS by 2007

2) Deployment scenario

- A variety of services will become available from a single ITS on-board unit.
- A seamless information environment will be developed by linking to various devices.



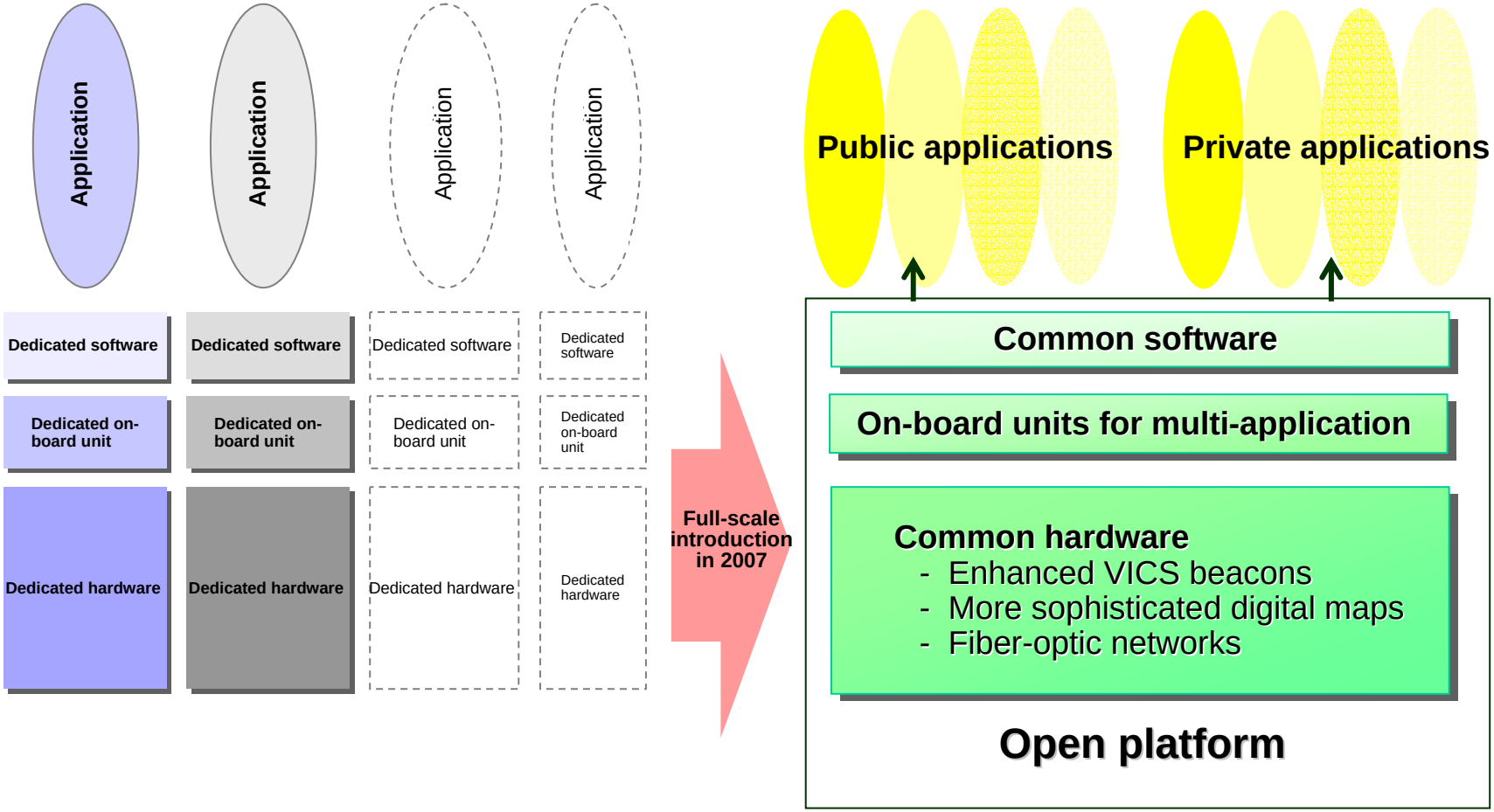
It is not convenient for users if a different device is needed for each application.

Using multiple applications with a single ITS on-board unit

(4) Full-scale Adoption of ITS by 2007

3) Establishing a common infrastructure

- The elements of infrastructure (open platform) are to be established in order to enable shared use by many operators.



(4) Full-scale Adoption of ITS by 2007

3) Establishing a common infrastructure: Promotion of ITS on-board units

- Determining standards and specifications through joint public-private efforts
- Ensuring security and mechanisms to provide safety from the user's standpoint
- Looking to international standards in project implementation
- Giving thorough consideration to traffic safety

Joint public-private efforts

A vehicle cluttered with on-board units

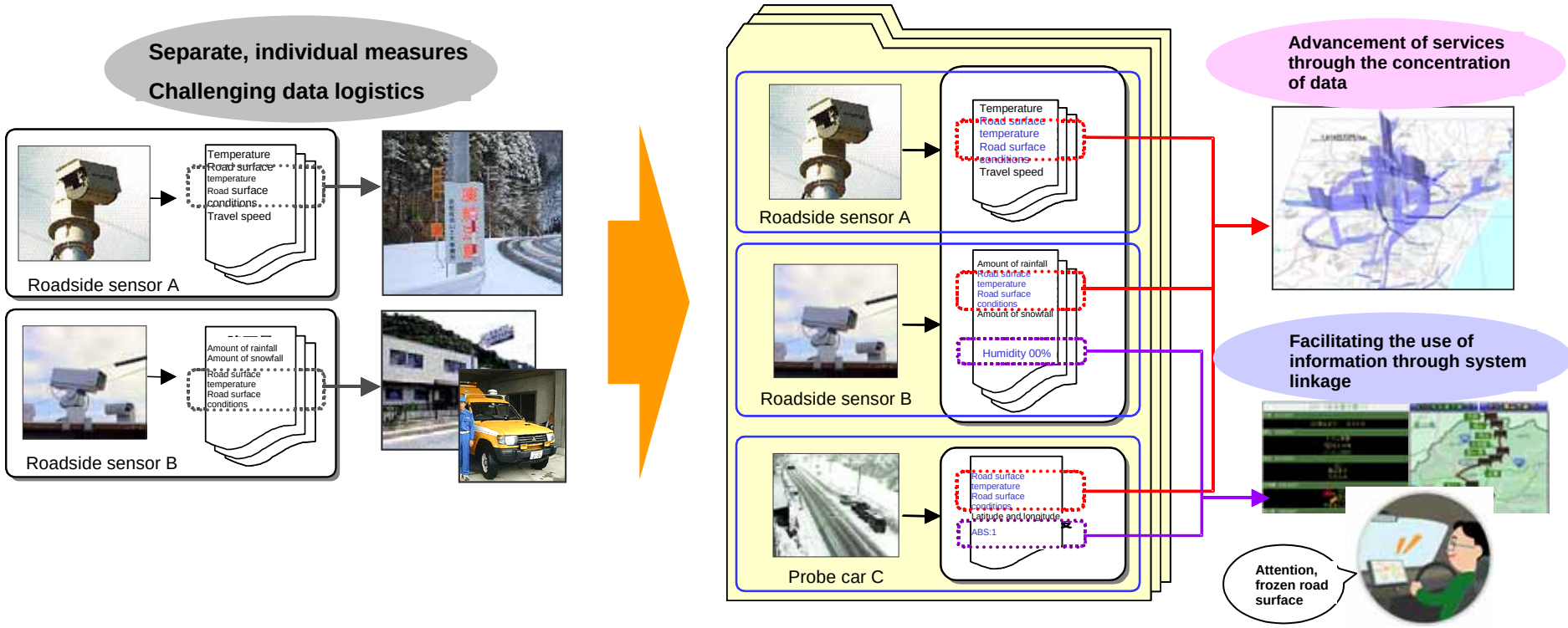
A neat and streamlined vehicle interior

Joint public-private testing

(4) Full-scale Adoption of ITS by 2007

3) Establishing a common infrastructure
[Promoting a unified data structure with open, shared data]

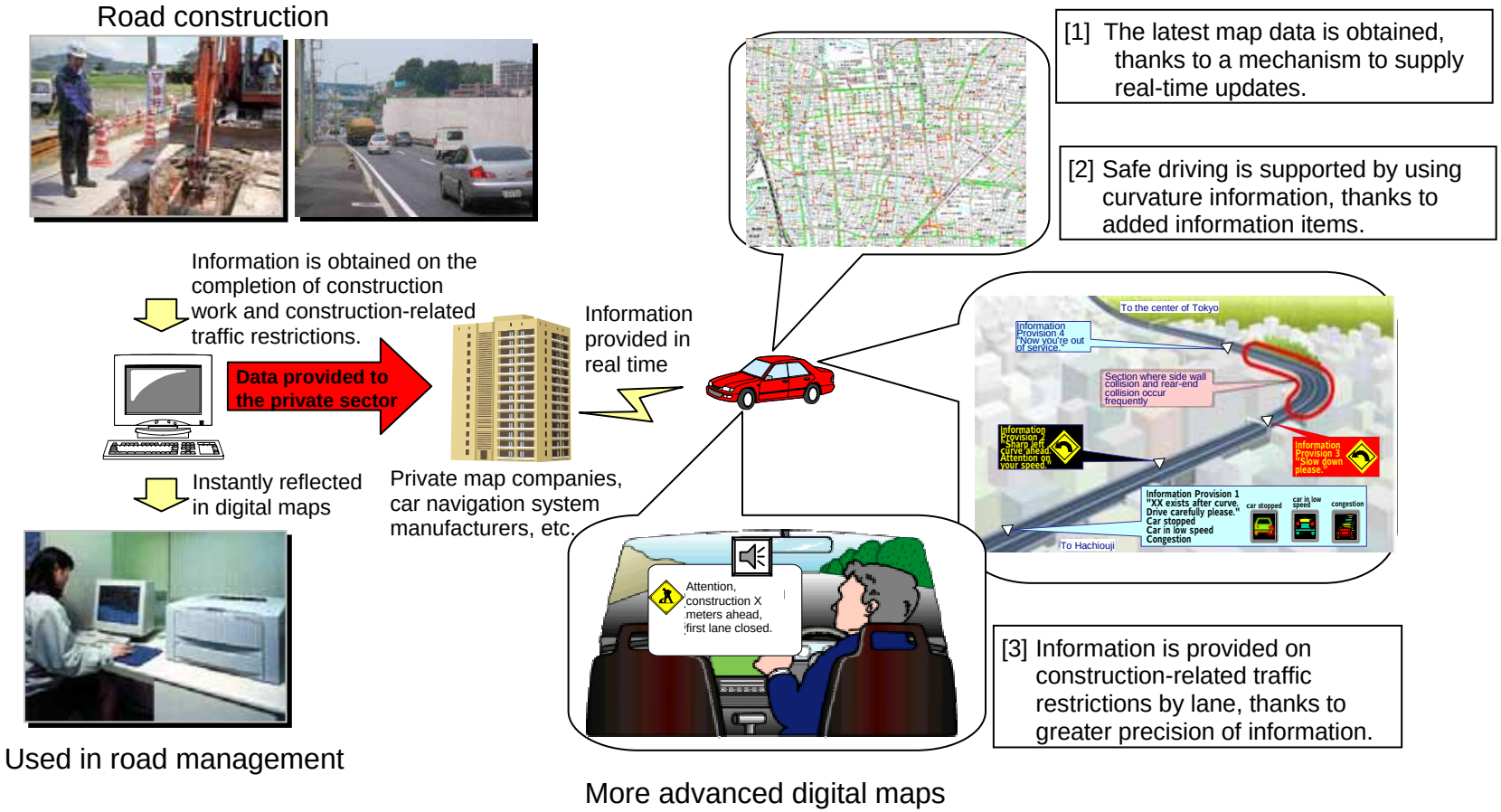
- Promoting data collection using probe cars and sharing of the collected data.
- By ensuring that data formats for roadside units, on-board units, and operators are universally applicable, promoting the enhancement of data, services, and the use of information through system linkage.



(4) Full-scale Adoption of ITS by 2007

3) Establishing a common infrastructure [More advanced digital maps]

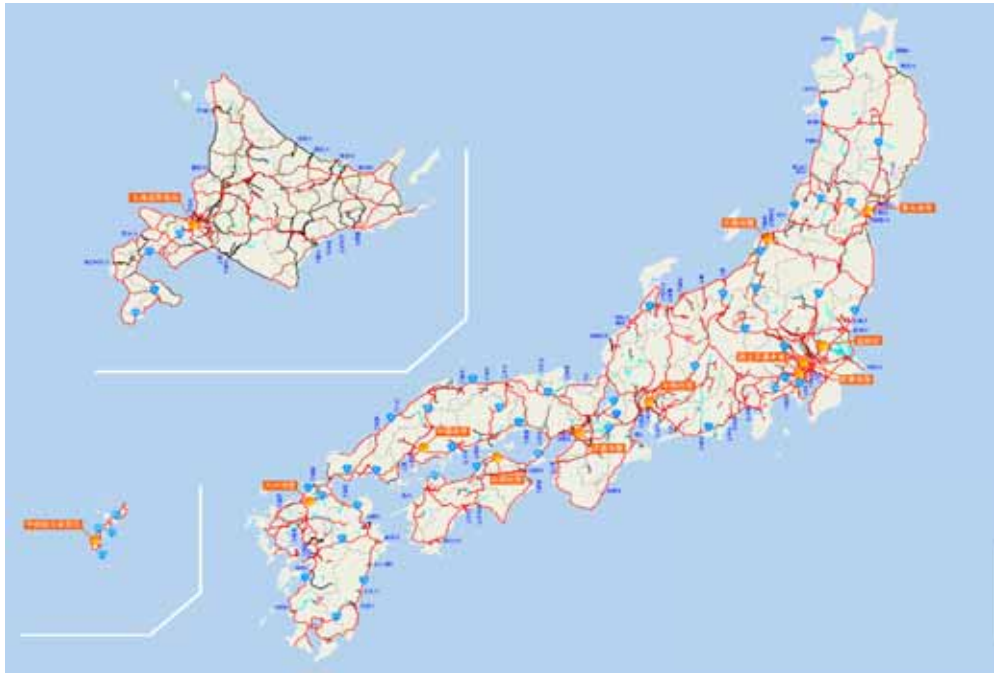
- Enhancing the digital maps by rapidly supplying the latest maps, adding more information items, and improving the precision of information



(4) Full-scale Adoption of ITS by 2007

3) Establishing a common infrastructure[Establishment of fiber-optic cables, etc.]

- Providing fiber-optic cables for road management for use by general businesses in addition to their regular use by road managers
- Promoting the establishment of a fiber-optic network as a high-speed, high-capacity, stable information infrastructure and ITS hardware for common use



Source: Data from the Ministry of Land, Infrastructure and Transport

Current fiber-optic network

e-Japan Priority Policy Program, 2004

II. Focusing on Measures to Achieve 2005 Targets, Improving Systems, and Strategic Moves for 2006 and Beyond

[1] Focusing on Measures to Achieve 2005 Targets

[1-3] Infrastructure

(2) Specific Measures

Providing fiber-optic cables for public facility management and opening use of the spaces housing fiber-optic cables (Ministry of Land, Infrastructure and Transport, Ministry of Agriculture, Forestry and Fisheries, National Police Agency, Ministry of Public Management, Home Affairs, Posts and Telecommunications, and Ministry of Economy, Trade and Industry)

By the end of fiscal 2004, about 36,000 kilometers of spaces to house cables will have been established in conjunction with efforts to lay fiber-optic cables for public facility management under roads, rivers, ports, etc. and to bury electric cables underground by adding multipurpose electrical ducts. By the end of 2005, all zones lacking continuous information boxes are to be eliminated, basically completing the nationwide network. Also, to further facilitate network building by private businesses, the spaces housing fiber-optic cables for public facility management and fiber-optic cables for river and road management will be successively opened for use, to the extent that this does not interfere with facility management.

Source: Translated into English from the web site of IT Strategic Headquarters

Plan for fiber-optic measures

(5) Promoting Mutual Cooperation and Collaboration

1) Promoting technological research and development

- Consistently implement cutting-edge technological research and development based on new concepts, with cooperation by industrial, academic, and governmental organizations.
- International collaboration through workshops, joint research, and cooperative testing

200 private companies participated in a general conference to establish a study group on the spread and promotion of DSRC.
(February 2004)

Source: Highway Industry Development Organization

DSRC testing by private companies

Source: Keio University

University research on driving characteristics

Technical exchange involving the public and private sectors

(5) Promoting Mutual Cooperation and Collaboration

2) Collaboration with communities and the public

- Improving regional mobility by cooperating with the local governments, national highway offices, and local economic circles
- Promoting understanding and agreement among users by cooperative educational programs by local NPOs and citizens' groups

Model of collaboration between Okayama National Highway Office and local government organizations, local economic circles, and NPOs

Source: Web site of Okayama National Highway Office

Classification	Member
District	Lieutenant Governor of Okayama Prefecture(Chairman)
Economic organization	Secretary General of ITS Japan Director General of Okayama Prefecture Chamber of Commerce and Industry Union Chairman of Okayama Prefecture Trucking Association Director General of Okayama Prefecture Tourism Federation Managing Director of Okayama Prefecture Council of Social Welfare
Others	Editorial Office Chief of Sanyo Newspaper Okayama City FM "YUM YUM DIARY" Main Host and total 20 persons from administration, economic organization, private company and the like.

Members of the Okayama Prefecture ITS Promotion Council

Observation of proving tests by the Niigata Prefecture IT & ITS Promotion Council

Source: Web site of the Niigata Prefecture IT & ITS Promotion Council

Classification	Member
District	Niigata Prefecture Director Deputy of Department of Policy and Planning Niigata Prefecture City of Niigata Niigata Prefectural Police Headquarters Japan Highway Public Corporation Hokuriku Branch
Administration	Kanto Precinct Police Bureau Shine'tsu Bureau of Telecommunications Kanto Bureau of Economy, Trade and Industry Hokuriku Regional Development Bureau Hokuriku-Shin'etsu District Transport Bureau
Economic Organization	ITS Japan Niigata Association of Corporate Executives Niigata Prefecture Chamber of Commerce and Industry Union Niigata Commerce Association Union Niigata Truck Association Niigata Limousine and Taxi Association
Men of learning and experience	Professor of Keio University Professor of Niigata University

Members of the Niigata Prefecture IT & ITS Promotion Council

Web site of the ITS Kids' Corner

Source: Web site of the Hokkaido ITS Forum

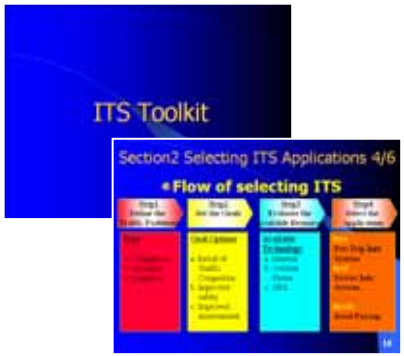
ITS pamphlet for children

Forum held by the Aomori ITS Club (NPO)

(5) Promoting Mutual Cooperation and Collaboration

3) Promoting international cooperation

- Early determination of the international standards needed for Smartway is desirable. It is important to actively participate and contribute to international standardization activities .
- Continuing efforts for technological and human exchange both within Japan and with other countries, alliances in the area of human resource development, and education and training related to systems.



ITS Toolkit –Application menus

- -Multi-Cast Traffic Information system
- -Multimedia Kiosk System for the Handicapped
- -Mobile Data Collection System
- -Probe Car System
- -Traffic information collection BBS
- -Road management data collection using volunteers
- -ETC System using mobile terminals
- -Car Sharing System
- -Incident reporting system using PDA

Source: Data from the Ministry of Land, Infrastructure and Transport

ITS explanation kit for Southeast Asia

ISO International Organization for Standardization

IEC Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

Work meeting on international standards (ISO, TC204)

Road traffic scene in Bangkok