



Session 8: Seamless communications on the move

## Ubiquitous services and applications: needs of mobile users



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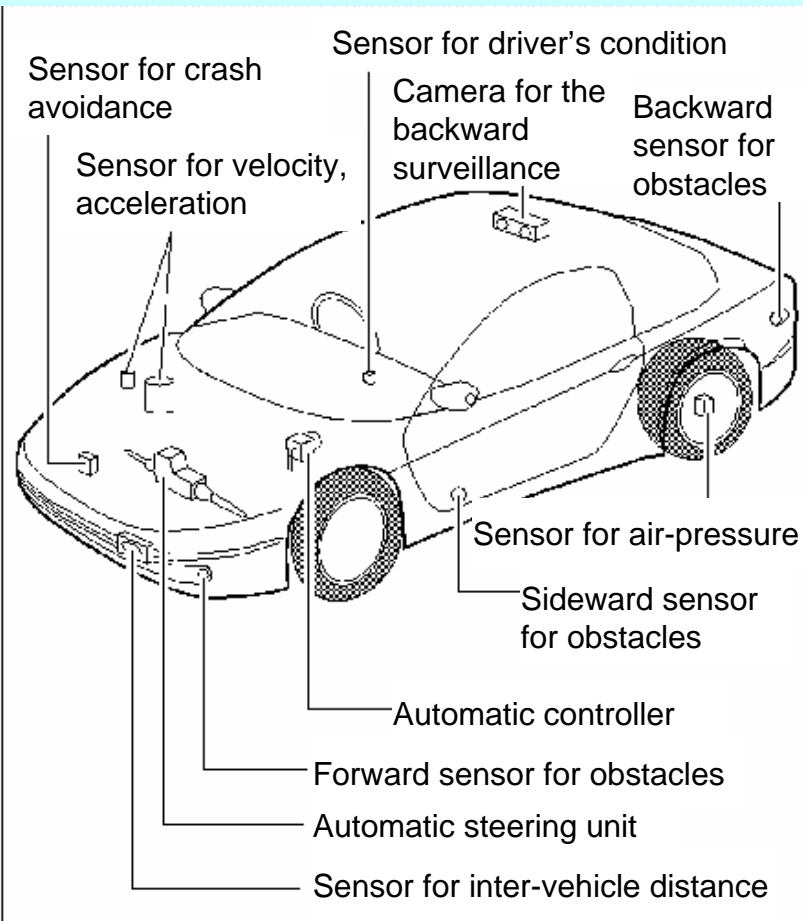
## Background

- o ITU-T SG16 had developed a lot of standardization for Multimedia Services/Applications, Systems and Terminal specifications. By the combination of the technology component, advanced Multimedia Services like e-Commerce, e-Health, e-Government, e-Learning, TDR, etc. have been appeared. The ICT in Vehicles (Telematics), like Mobile Office is also the extension of the current.
- o Mobile Office should make it easier than ever for mobile professionals likes salespeople to be productive anytime, anywhere (Ubiquitous services and applications ), and with any access method or device.
- o In this presentation, from the ICT in Vehicles viewpoint, needs of mobile users related to ubiquitous services and applications are described.

# ICT in Vehicle

- Development of wireless networking technologies
  - Handy phone technologies
  - High Speed Wireless LAN
- Prevalence of sensor technologies
  - Infrared, millimetric sensor
  - Mobile camera
  - RFID
- Advancement over ITS technologies
  - DSRC (ex. ETC, VICS)

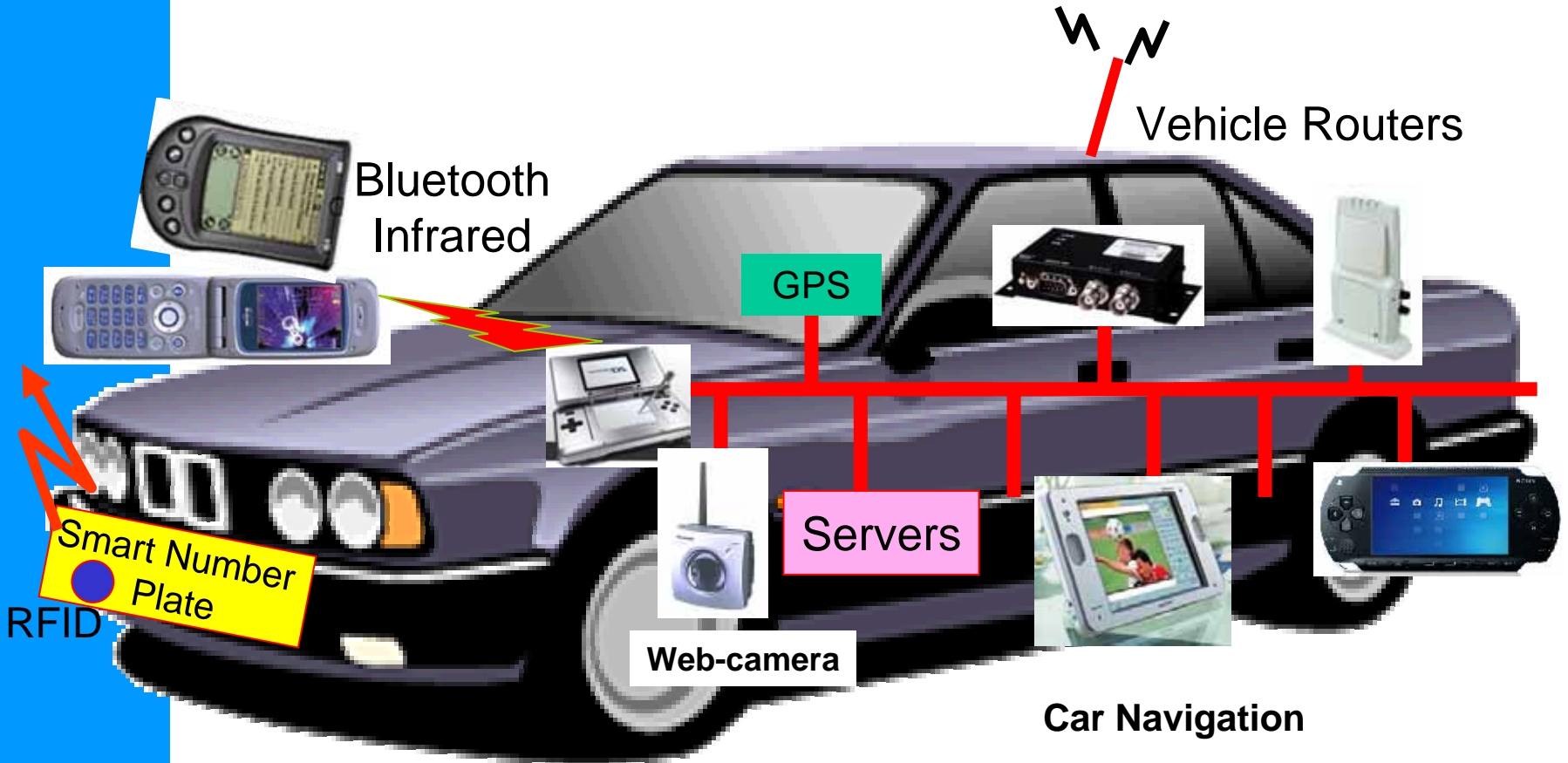
**Main Features of Advanced Security Vehicle (ASV)**





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# Information Platform (Mobile LAN)



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# Overview of ICT in Vehicles

- Broadband Ubiquitous Services and Applications

Vehicle Contents

GS, Taxi, Bus operation, Probe, Emergency, Map, Accessibility, Multimedia Information distribution,

Network Provider

IP Network, NGN

Telephone, Fiber, CATV, Satellite, Government Network

Access Network

Cellular, Wireless LAN, Optical LAN, DSRC

Vehicle Terminals

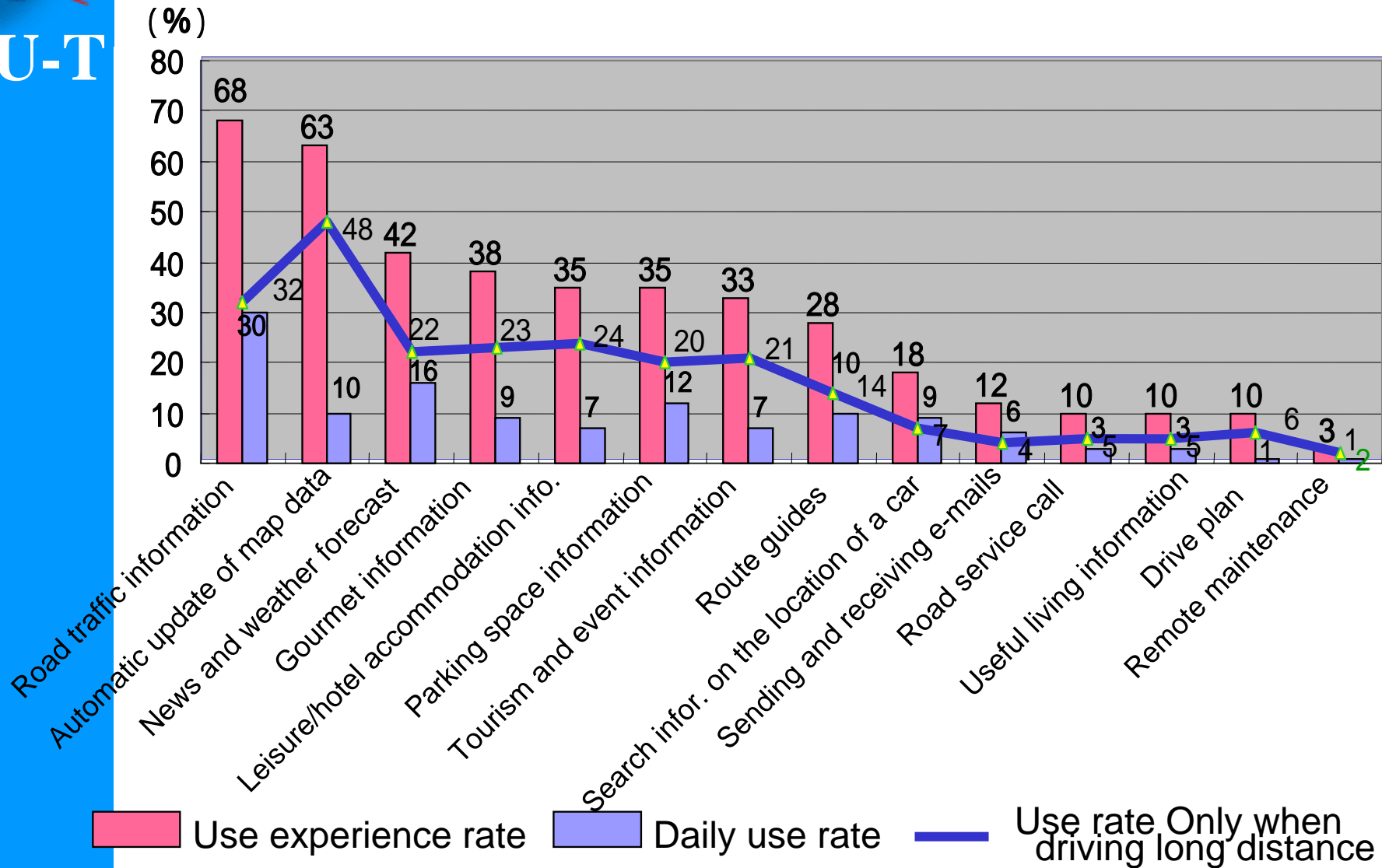


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# Consumer Needs of Current ICT





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# Current telematics user needs

Guide to vacant lot at a car park

Receive data magazines to car navigation system's HD with DSRC-based hot spot-type communication mode

Accumulate information, e.g. map updates

Receive highly functional next generation traffic information by DSRC.

Instantaneously receive videos and high-quality music

Receive applications to support safe driving

Automatic payment at fee-charging car parks of department stores and shopping Centers

Automatic payment at drive-through and self-service gas stations



# User's needs

- Broadcasting was not able to meet all the needs drivers have.  
Consumers on the road are "Moving Targets"
  - Specific destinations, departure time and allowance for travel time.
  - Different objectives and purposes.
  - Can't manipulate OBU like they use PC at home.
- What are the needs of "Moving Targets? How can we meet them?
- Consumers complain about the cost - "Too expensive to use"
- "My specific needs" "situation based " "just in time"
- **Drivers demand increased relevance in media contact--- new services, new media and new concept are needed.**





# New Market

The need for the creation of new content mix for the drivers

- More than 10 million cars equipped with DSRC and Navigation by 2010:
- Low cost network connectivity and access, Lower content cost

The new opportunities emerge ...

- One 2 One information, transaction and communication services based on time, place and situation
  - Most appropriate delivery of services by selecting the best one among the available modes
  - Comprehensive integration of PUSH and PULL channels
- Necessary conditions

- All devices have the same basic units as standard OBU and then Greater connectivity can be added to the devices
- (DSRC+CAR Navigation systems) --- WLAN, browser phones

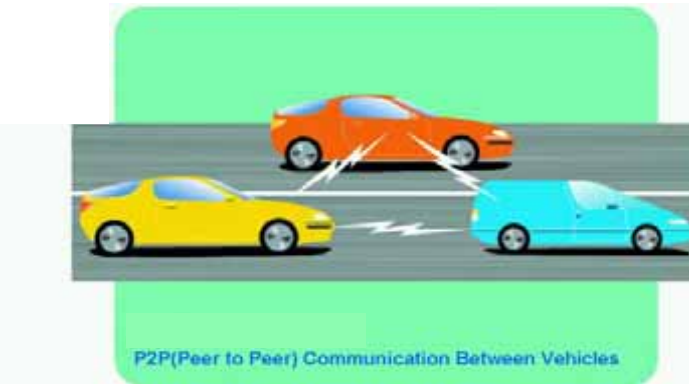


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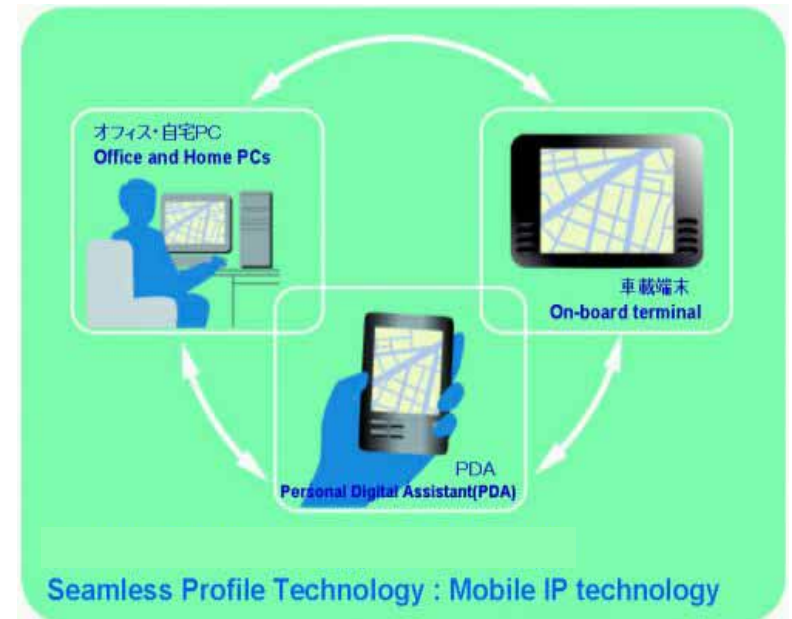
# New Services and Applications



DSRC Consecutive Radio Zone Configuration Technology



Peer to Peer Communication Between Vehicles Technology



Mobile IP Technology



# Network Technology options

## 1. Wireless communications over Mobile Networks (ex.3G)

The most flexible solution and the only one that supports fully mobile, 'always-on' solutions. Data can be pushed from the main systems to the remote device at any time.

## 2. Wireless hotpots (WiFi)

Becoming increasingly prevalent appearing in coffee shops, airports, hotels and motorway service stations. WiFi is a wireless LAN product based on IEEE 802.11 specification.

## 3. Short distant connectivity via docking station (Bluetooth/Infrared/Wired)

The final approach to mobile solutions is to load data onto the mobile device, work off-line and synchronize when available.

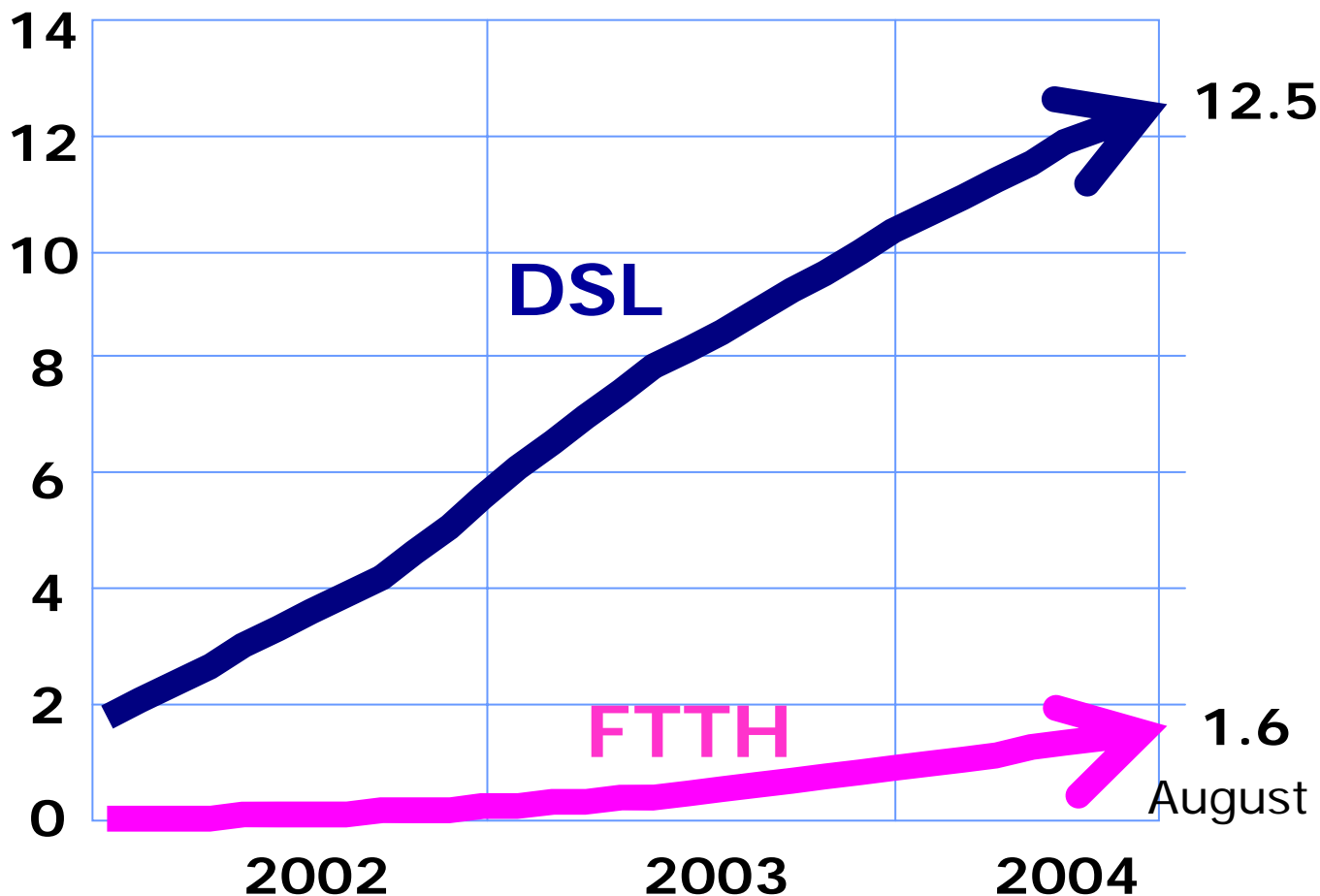


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# ICT Service and Applications Trend

- Internet Access Users in Japan -

million



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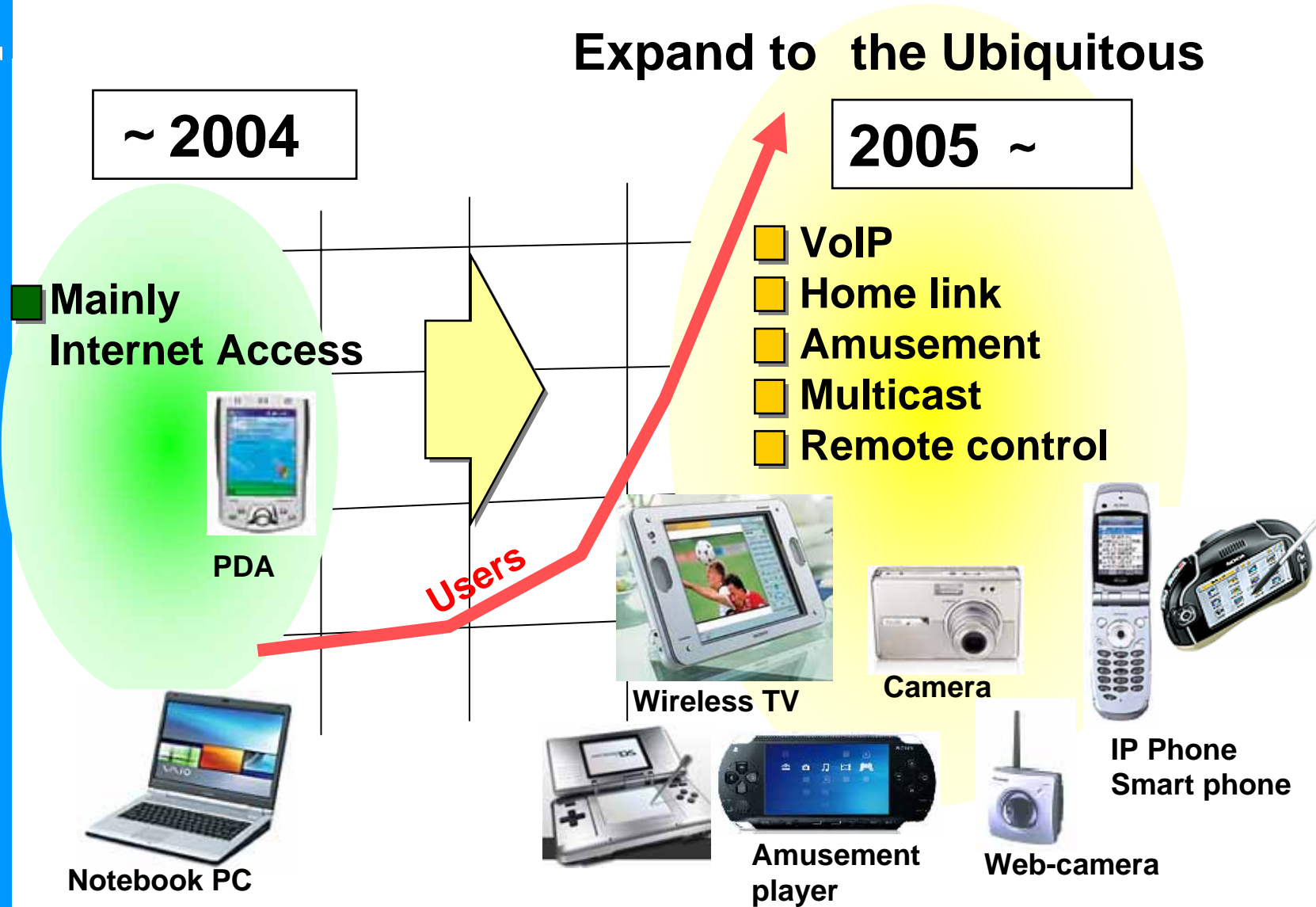
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The Ministry of Internal Affairs and Communications (MIC)<sup>12</sup>



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# Development of Wireless LAN



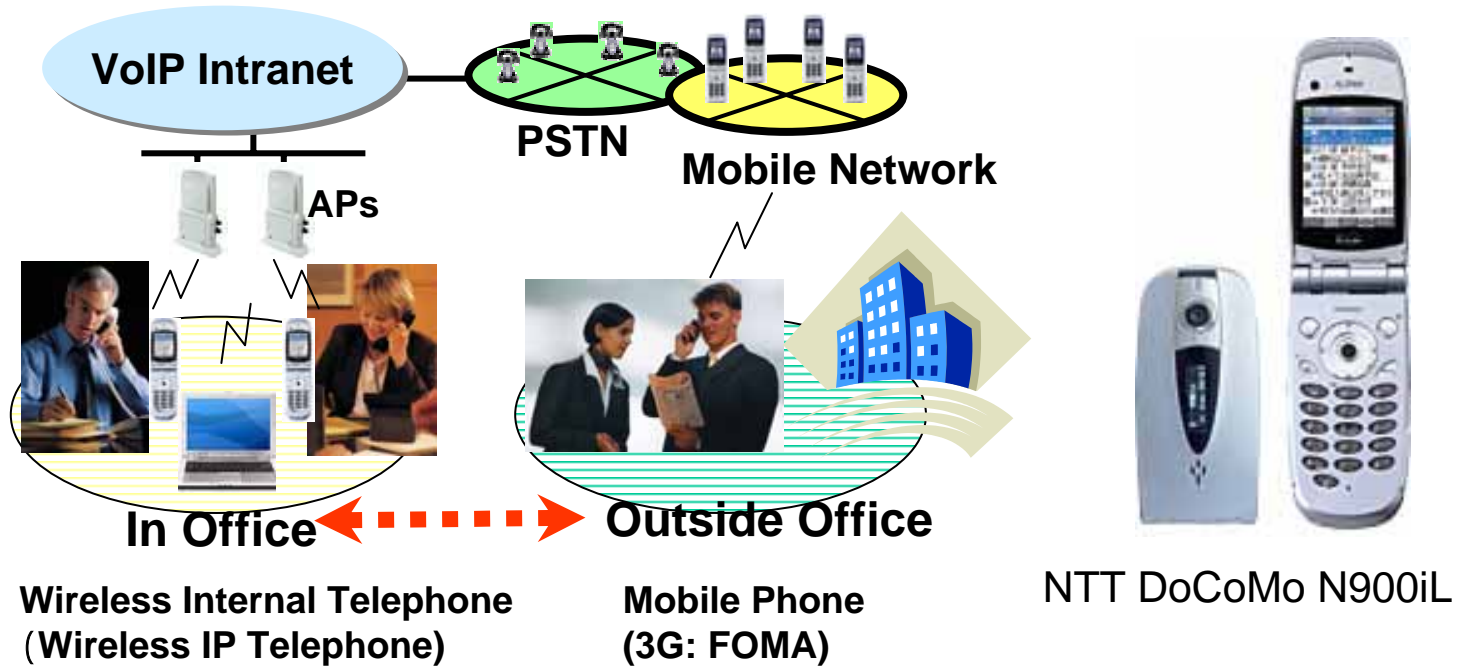
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Wireless LAN products



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# Dual Wi-Fi, 3G phone ships



- ✓ VoIP calls over the corporate wireless network
- ✓ switch over to 3G outside offices
- ✓ browser can be used both inside and outside
- ✓ users always have access to Internet
- ✓ Instant messaging on a Wireless LAN is also possible.

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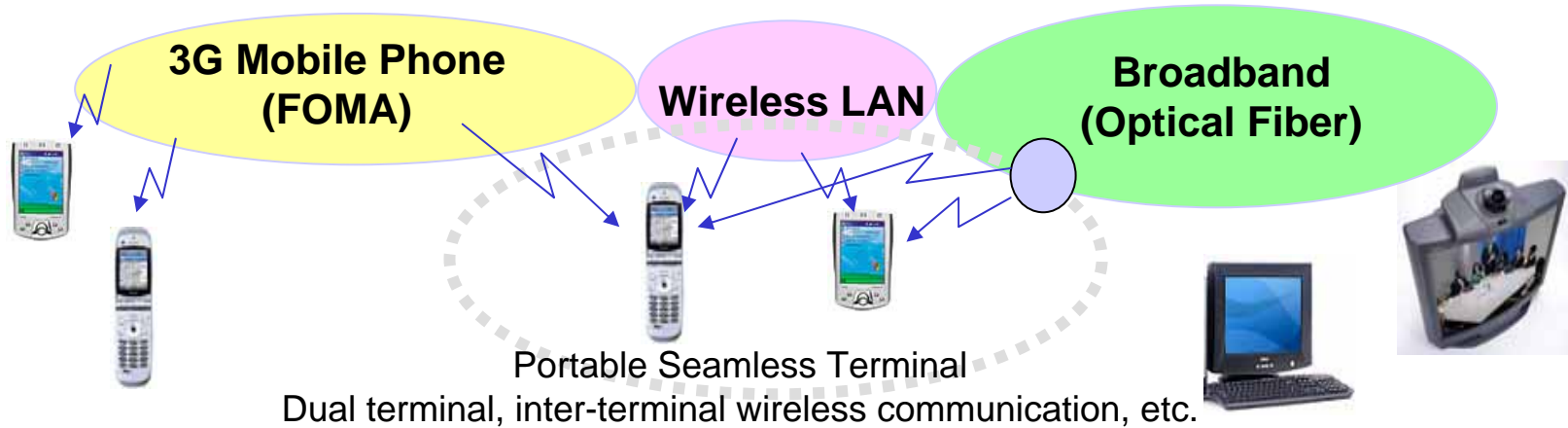
# Seamless Services Accessible by Broadband and Mobile

NTT Group's Medium-Term Management Strategy

**Portal/ Contents/ Applications**  
 Common services for information search, music, movies, games  
 Linked services using QR codes

**Platform**  
 Common services such as standardized ID, authentication, and electric money, etc.

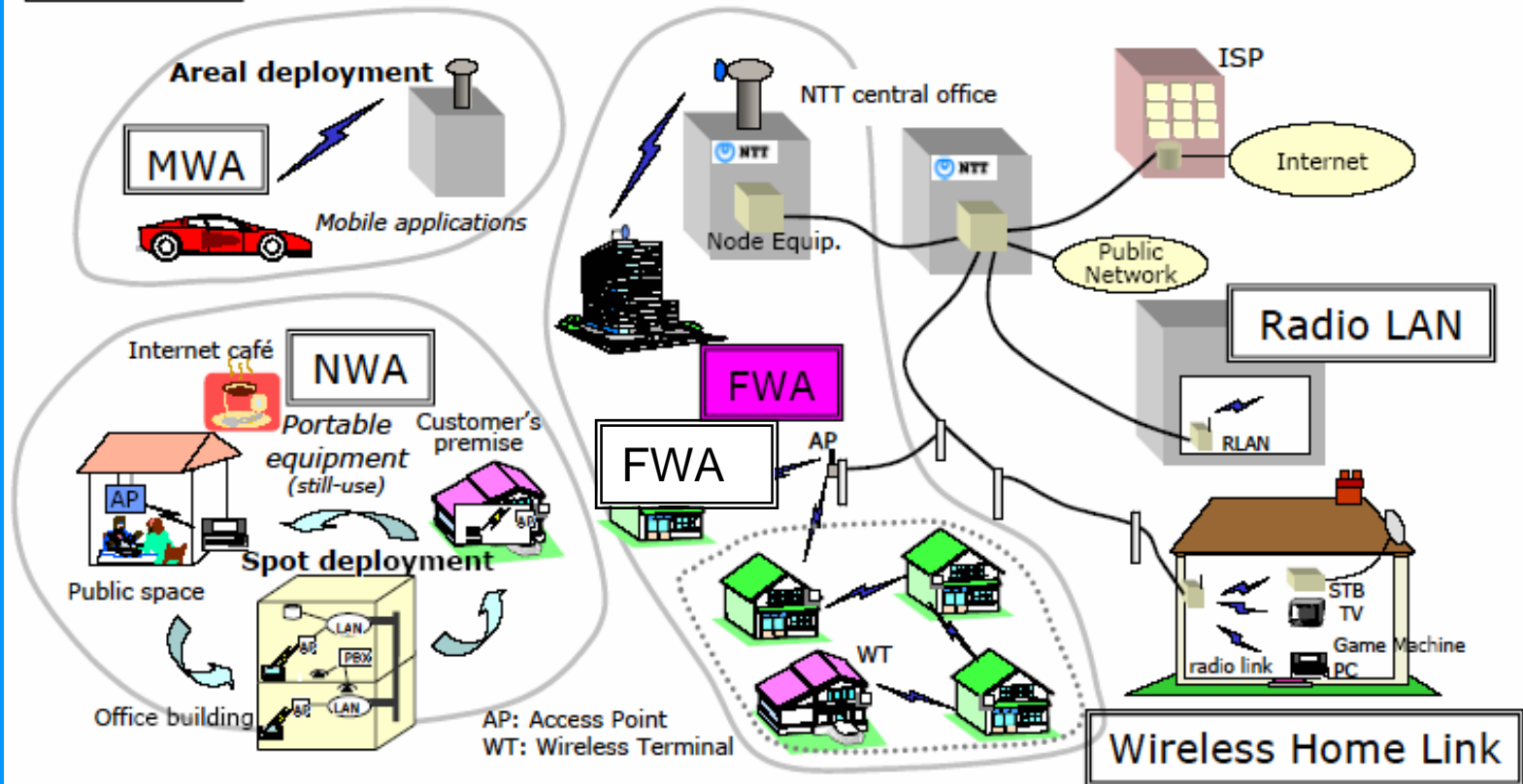
**Communication Service**  
 Connection service to exchange video, voice, and data between fixed line telephones and mobile phones  
 Conference service to which multiple fixed line telephones and mobile phones can be connected  
 Convenient service to transfer calls to mobile phones during unattended time





# Classification of Wireless Access

Network Service System	OFWA (Fixed Wireless Access)	... ex. WIPAS
	ONWA (Nomadic Wireless Access)	... ex. "Hot Spot" service
	OMWA (Mobile Wireless Access)	... ex. Cellular phone
Customer System	ORadio LAN	... ex. RLAN for office (indoor)
	OWireless Home Link	... ex. RLAN for home user, Bluetooth





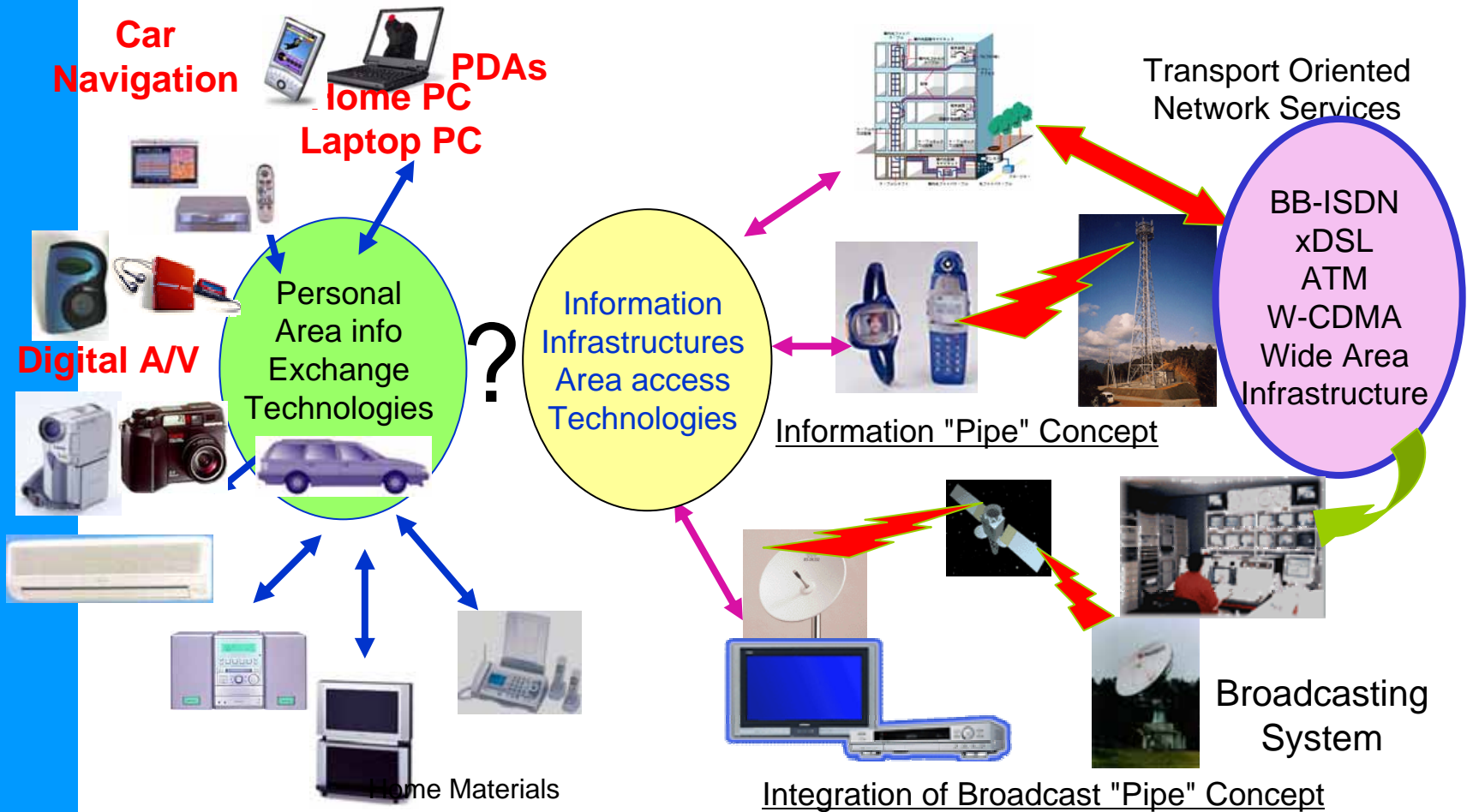


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# Short distant connectivity

## Last 1 meter solution

### - Bluetooth/Infrared/RFID -





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# Standardization

Government takes initiatives in building infrastructure and most importantly makes it open to private sectors

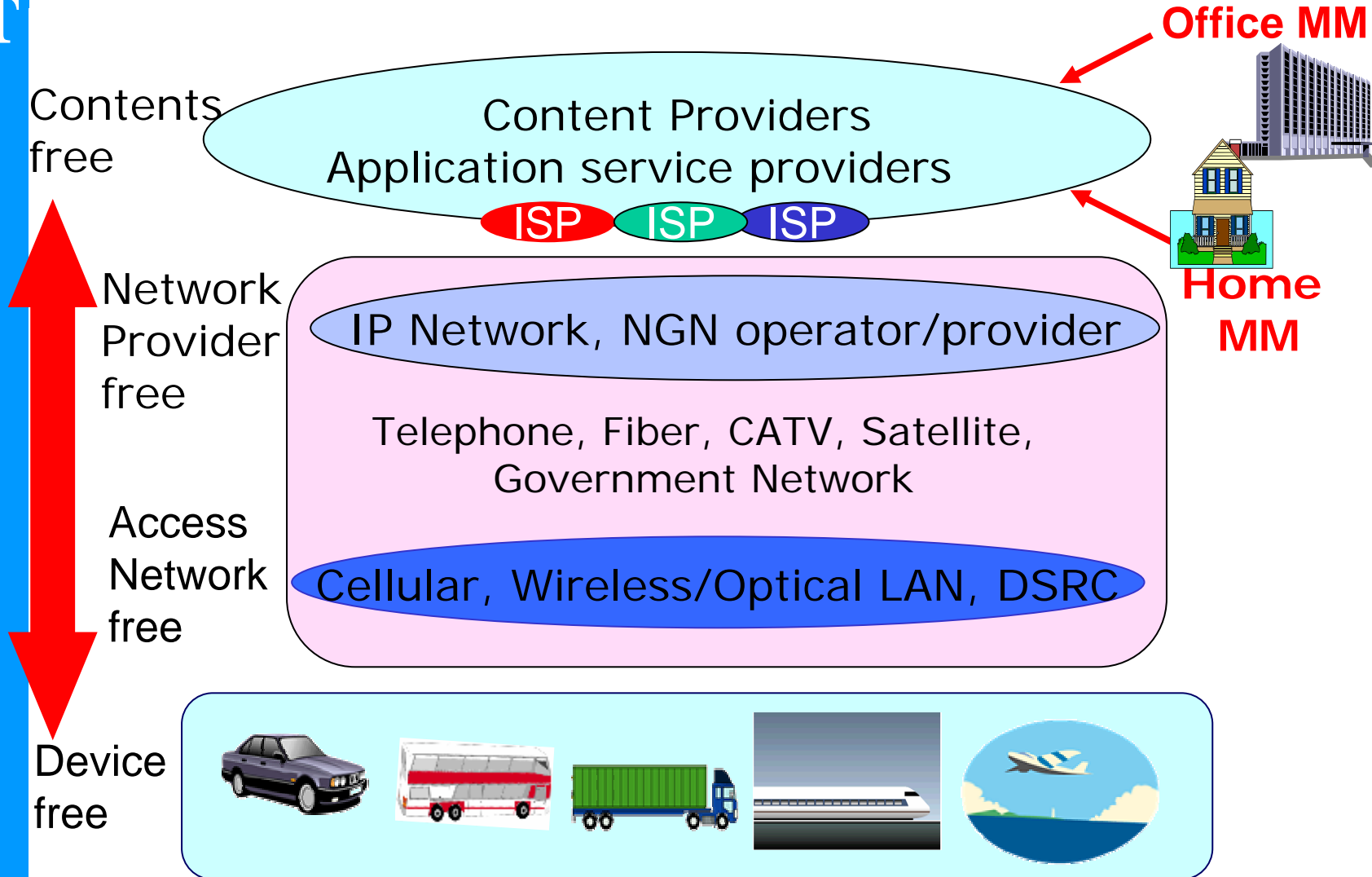
- DSRC/VICS format
- Implementation of DSRC format
- Rules of indications on OBU-displays
- Data structures of software for ITS services for traffic management, billing and collecting payments, dispatching information, etc.



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# Standardization ICT in Vehicles

· Broadband Ubiquitous Services and Applications



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# Conclusion

- In this document, from the ICT in Vehicles viewpoint, needs of mobile users related to ubiquitous services and applications are described.
- The realization of the Service/Applications in the vehicles are structured by many players.
- In order to use the services and applications in this environment seamlessly and interoperable, contents, devices and database in the network should be standardized.
- In the wireless access network, wireless LAN, optical LAN and DSRC-based hot spot-type communication mode network in addition to the Cellular Network will be increased. Therefore it is necessary to realize the interoperability and connectivity between those Network and Vehicle devices and between network systems.



- In particular, Mobile Office is Extensions to the existing e-mail and calendar applications and should make secure mobile access, simpler and easier than ever by:
- The following requirements will be necessary.
  - Automatic service detection
  - WiFi access
  - Contextual controls
  - Auto-launch of Application and VPN
  - Simple User Interface