

Next Generation Broadband Technology Focusing on Usage Environment Improvement



Summary Report of the Study Group on Next Generation Broadband
Technology Focusing on Usage Environment Improvement

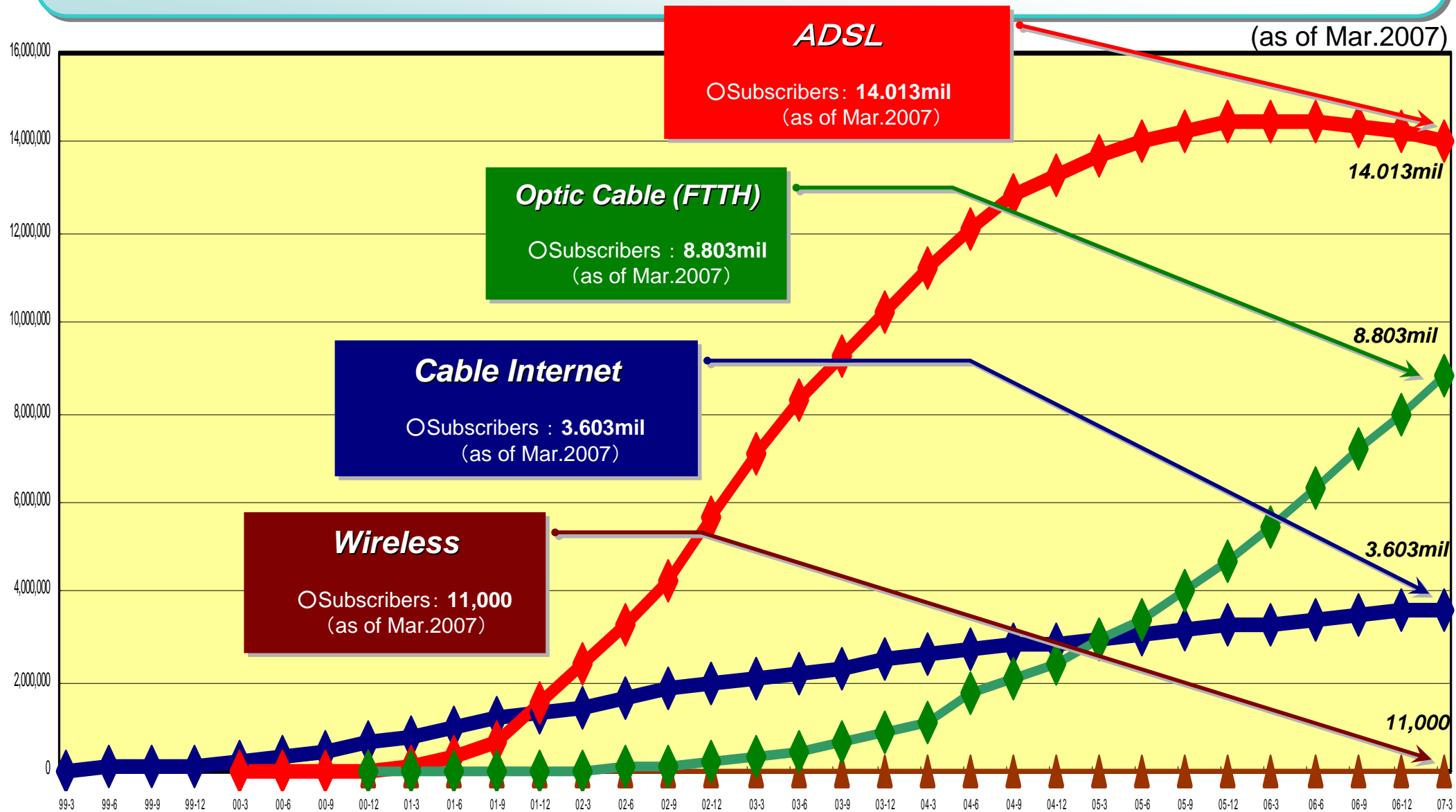
June 2007

— Table of Contents —

- 1 Japan's broadband service subscription situation
- 2 Broadband deployment and Digital Divide occurrence
- 3 Current state of broadband deployment in various countries
- 4 Changes and future prospects of broadband technology
- 5 Next Generation Broadband Technology attracting attention
- 6 Characteristics of existing broadband technologies
- 7 Action for prompting introduction of Next Generation Broadband Technology
- 8 Action for improving utilization environment of Next Generation
Broadband Technology
- 9 Future key issues

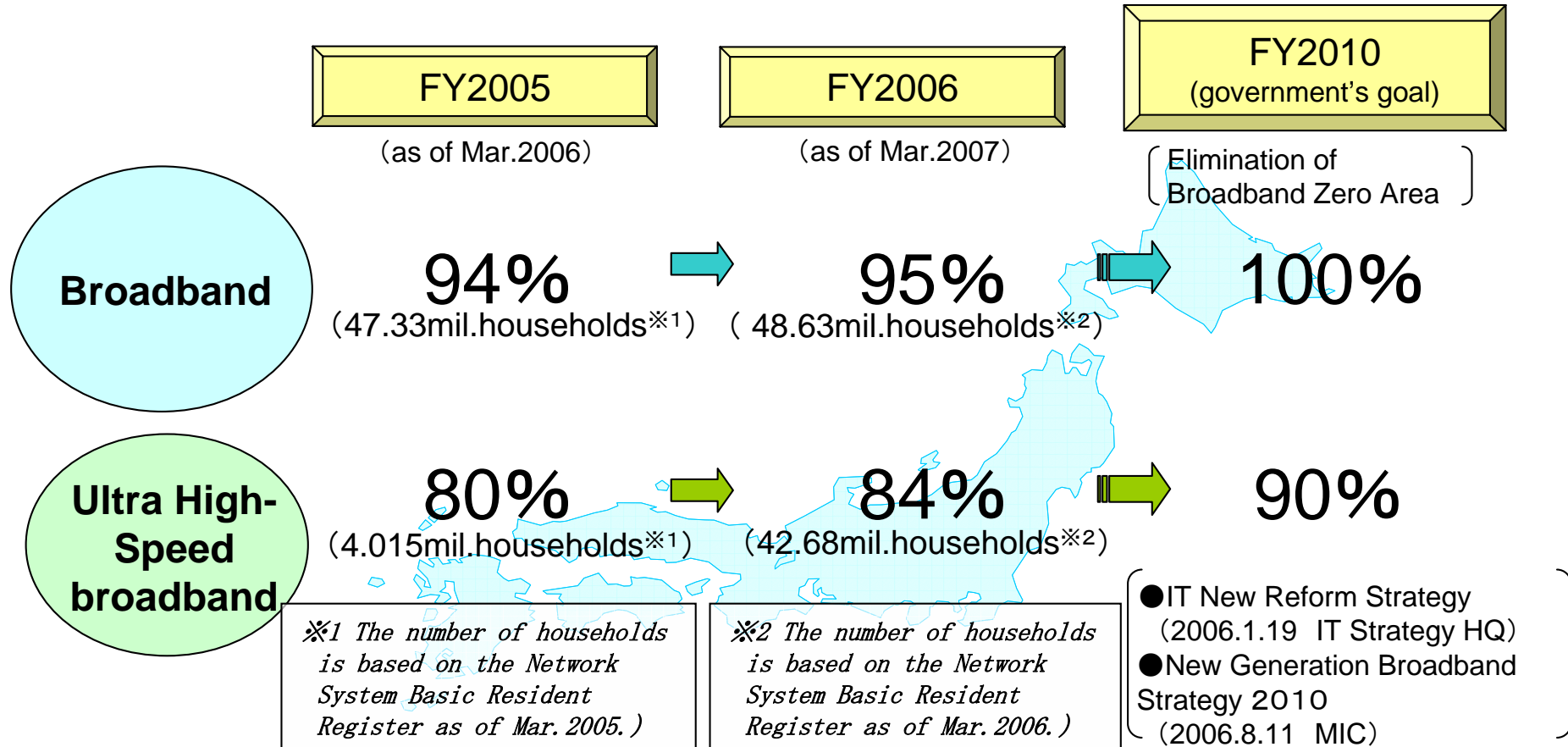
1 Japan's broadband service subscription situation

- User choice of broadband service shifts from ADSL to FTTH.
- Private Businesses are working on installation of Next Generation Technology by horizontal integration at network level; for example, integrating Fixed Communications with Mobile Communications, while considering prospective broadband services.



2 Broadband deployment and occurrence of Digital Divide

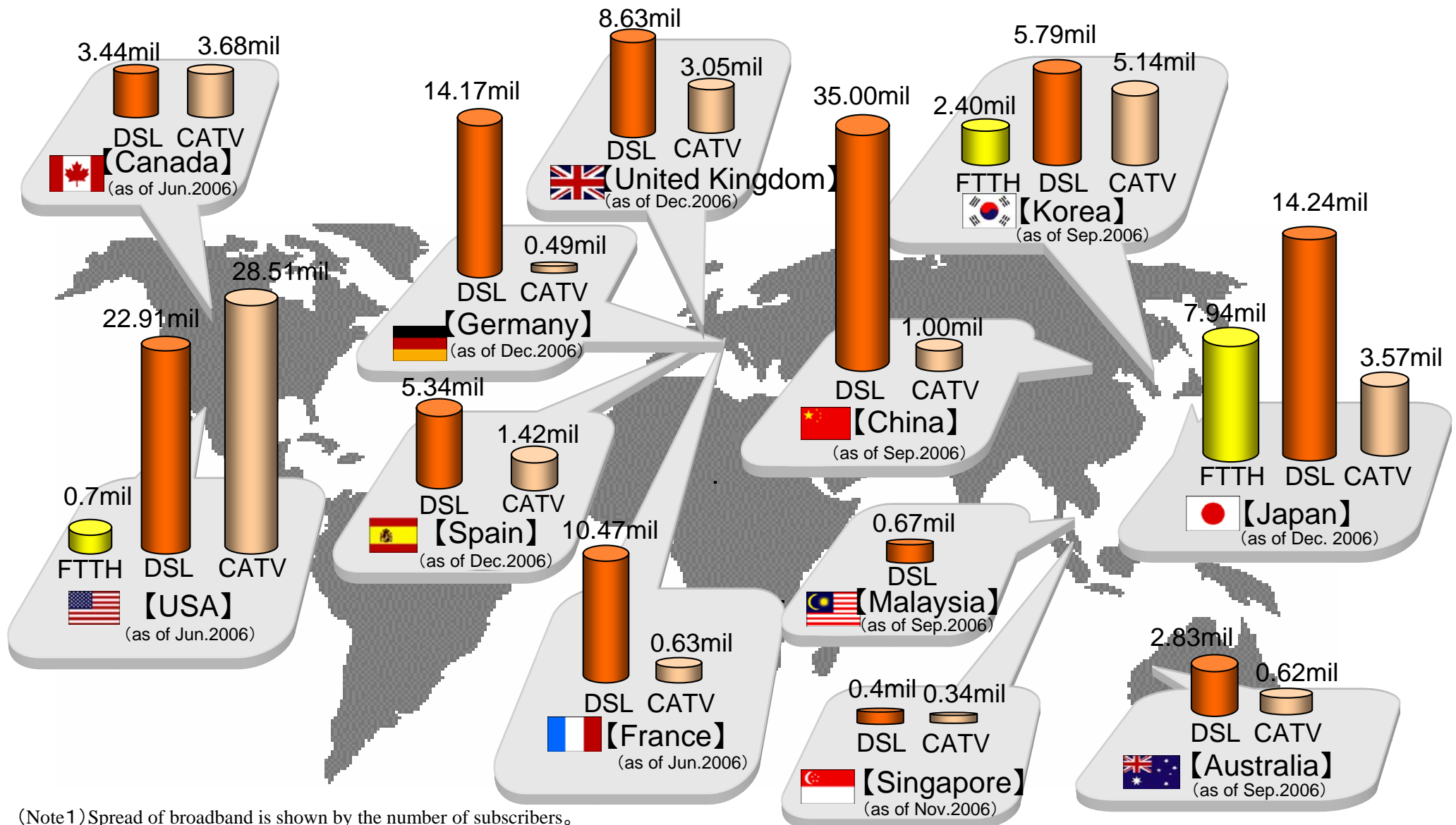
- In disadvantaged, less-invested areas such as underpopulated regions, solitary island and intermediate and mountainous areas do not yet have an advance broadband infrastructure, occurring Digital Divide .



- Concerning broadband services to eliminate the Digital Divide, it is necessary to accelerate development of ultra high-speed broadband technology such as acceleration of use of various technologies with the fusion and geographical condition and utilization of Cable system and Wireless system technology.

3 Current state of broadband deployment in various countries

● In foreign countries, various efforts are being taken for broadband provision even though most broadband service users have still DSL or cable internet.



(Note1) Spread of broadband is shown by the number of subscribers.

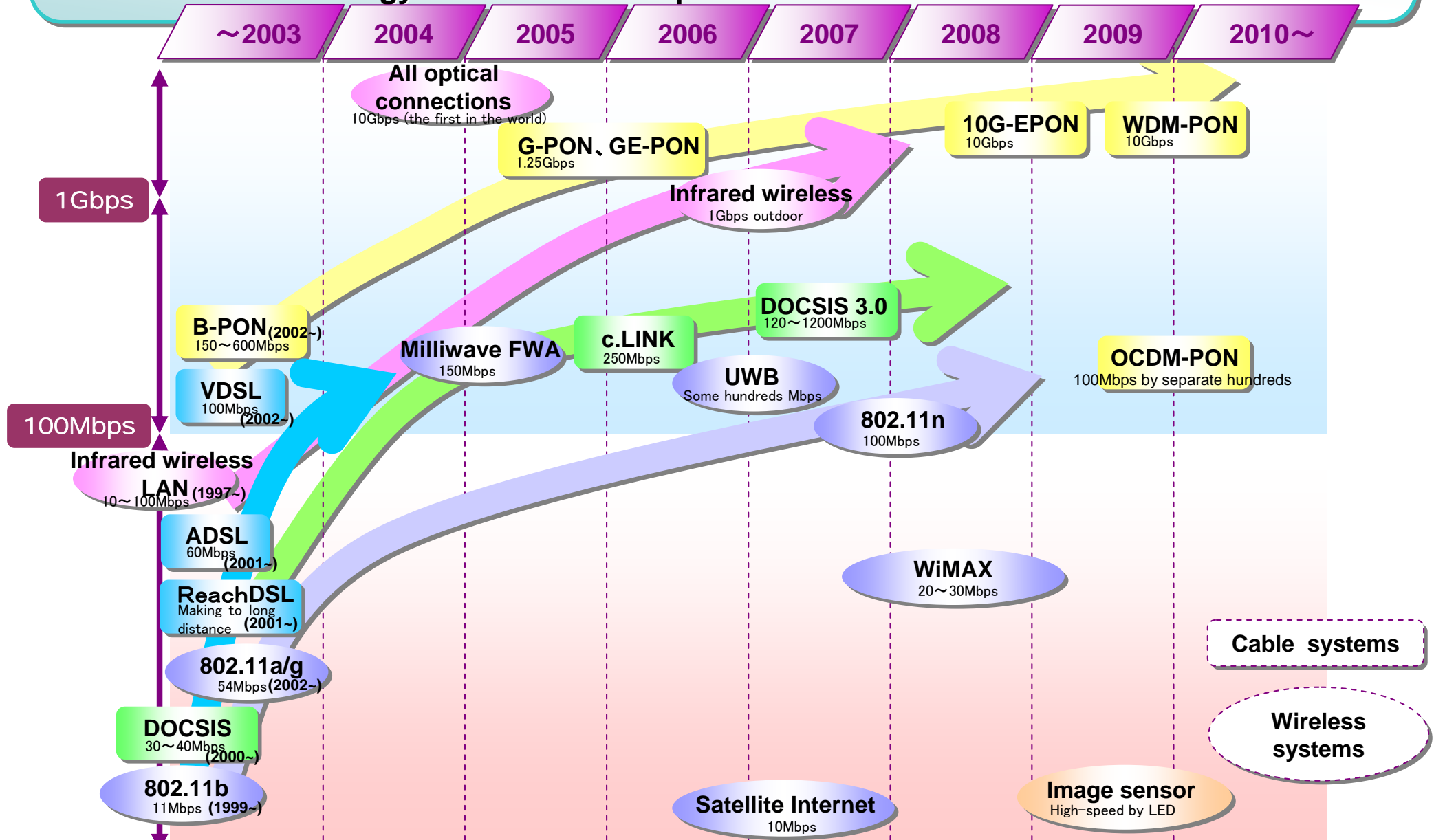
(Note2) 「CATV」 is high speed Internet service which utilizes CATV network.

(Note3) Reference: USA (FCC)、UK (Ofcom)、Germany (OECD)、France (OECD and ARCEP)、

China • Korea • Malaysia (ASIA com January 9, 2007)、Singapore (IDA)、Australia (ACCC)

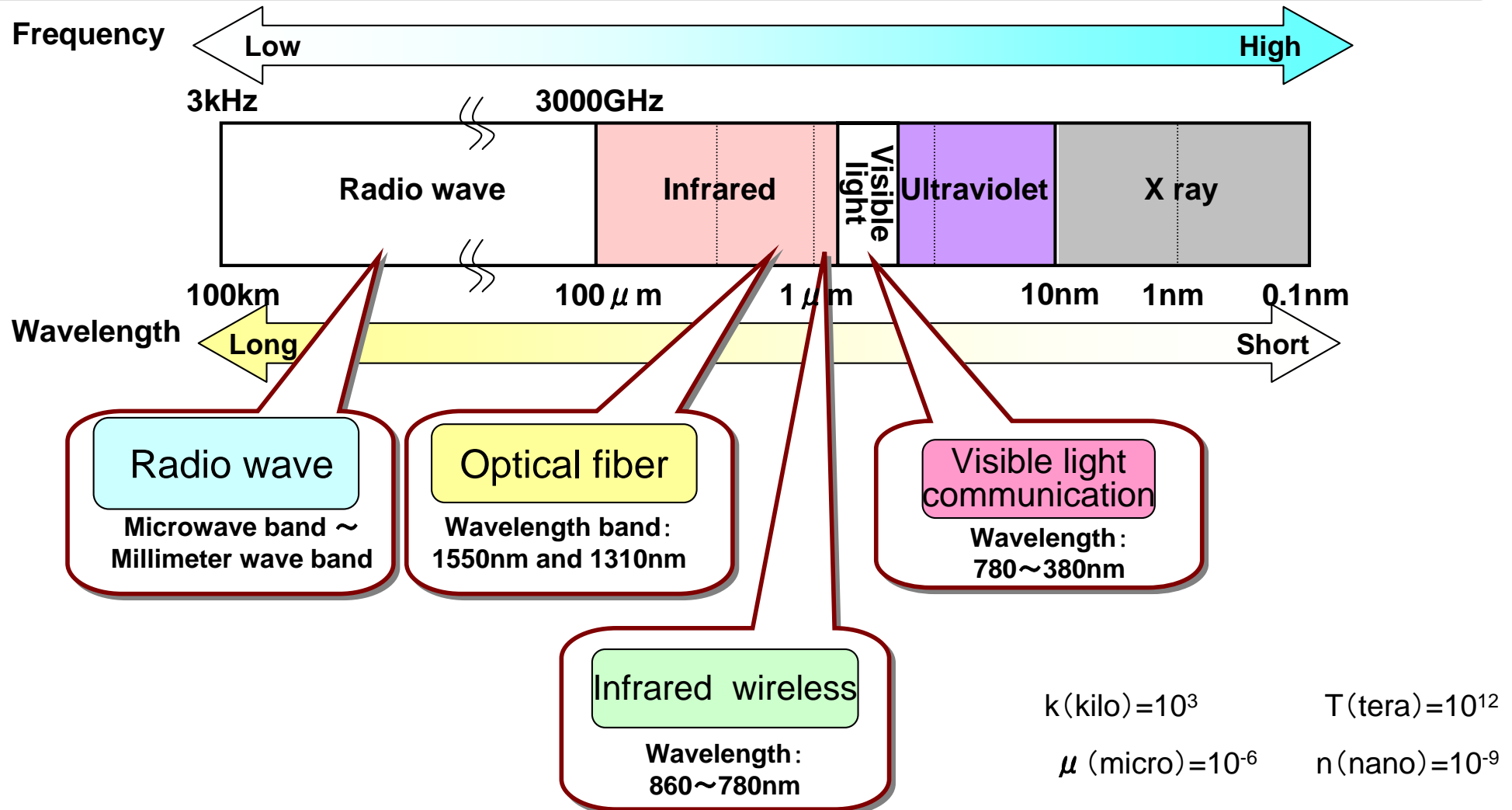
4 Changes and future prospects of broadband technology

● Ultra high-speed broadband means FTTH is mainstream; other Cable systems and Wireless systems which can equal or better performance than FTTH are required aiming in the near future at construction of a broadband environment and effective, new broadband technology should be developed.



5 Next Generation Broadband Technology attracting attention

● Next Generation Broadband Technology is creating Cable Systems and Wireless Systems that achieve a transmission rate above 100Mbps in answer to the user need for ultra high-speed broadband service; for example, technology such as infrared technology and visible light technology of frequency band above 3000GHz, besides optical fiber.



6 Characteristics of existing broadband technology

● It is necessary to promote installation of broadband infrastructure efficiently and rapidly, using various broadband technologies alone and in combinations, considering the characteristics of existing broadband technology.

	Cable			Wireless		
	ADSL	Cable Internet (Coax, HFC, Optical fiber)	FTTH	Wireless access	Satellite communications	Optical Wireless communications
Transmission rate (Best effort)	Downlink: 1.5M~60Mbps Uplink: some hundreds kb~10Mbps	Downlink: some hundreds kbps ~160Mbps Uplink: some hundreds kbps~10Mbps	Mbps~1Gbps	Several Mbps~156Mbps	Some hundreds of kbps~some Mbps	100Mbps~1.25Gbps
Possible transmission distance	About several km	The coaxial cable: about 10 km HFC: inferior to FTTH Optical fiber: equal to FTTH	20 km~100 km	About some hundreds m~some km	—	About 4km
Quality stability	Depends on distance and noise	Stable	Stable	Depends on obstacle, weather, etc.	Depends on obstacle; weather, etc.	Line of sight, weather, etc.
Geographical suitability (Main feature)	Possible to use existing telephone lines (copper lines)	Possible to use cable Internet network	Possible to use a longer distance than ADSL and Cable Internet	Network deployment to cover wider areas is possible	Possible to offer links between remote islands	Effective for crossing buildings, rivers, valleys, etc.
Others	Possible to provide	Broadcast and unified use is possible	Multipurpose use such as telephone and broadcast use is possible	Easy deployment, cost effective compared with FTTH	Running cost is high (compared with initial cost)	No need for licensing

7 Action for promoting introduction of Next Generation Broadband Technology

- In advancing the introduction promotion of Next Generation Broadband Technology including “Japan Premium Technology” , the following three issues must be addressed.

Three issues for promoting introduction of Next Generation Broadband Technology.

(1) Execution of Proof Experiments of System that combined Cable Systems and Wireless Systems

Present the system construction model of combination plural technologies and introduction cost, Execute Proof Experiment to extract various problems.

(2) Promotion of Research and Development of Next Generation Broadband Technology.

Dissolve the Digital Divide and Develop Next Generation Technology corresponding to a new network.

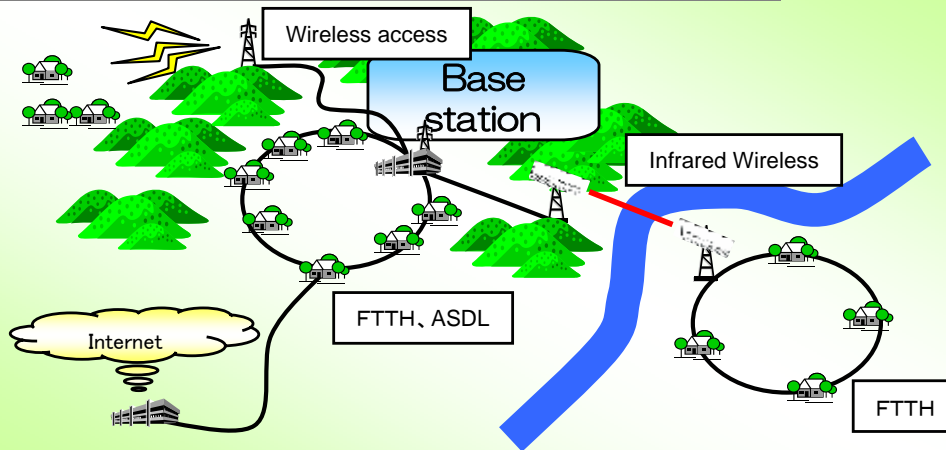
(3) Promotion of the Prevalence and Practical Use of Next Generation Broadband Technology around the world.

Draw up Guidelines of Promotion for Next Generation Broadband technology, called “Japan Premium Technology” and Publicize by Civilian Organizations.

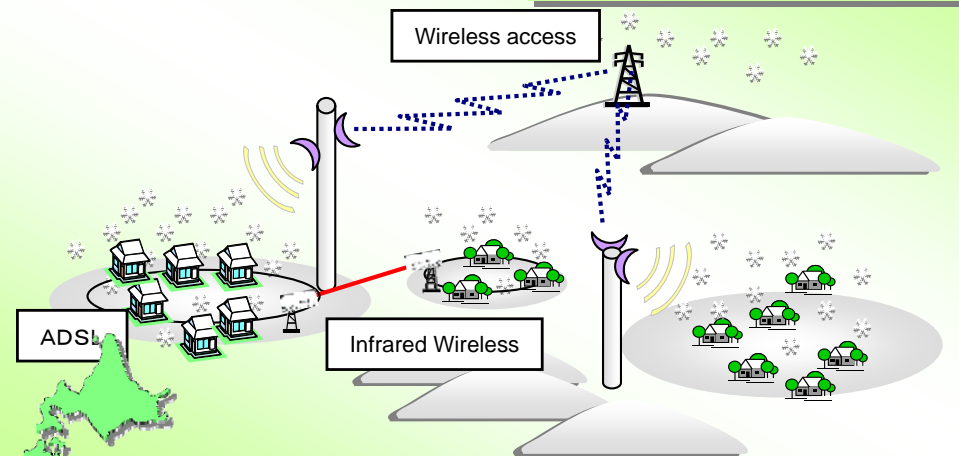
8 Action for improving utilization environment of Next Generation Broadband Technology

● The proof experiments of systems that combine cable systems and wireless systems were executed for use environment maintenance of the Next Generation Broadband Technology

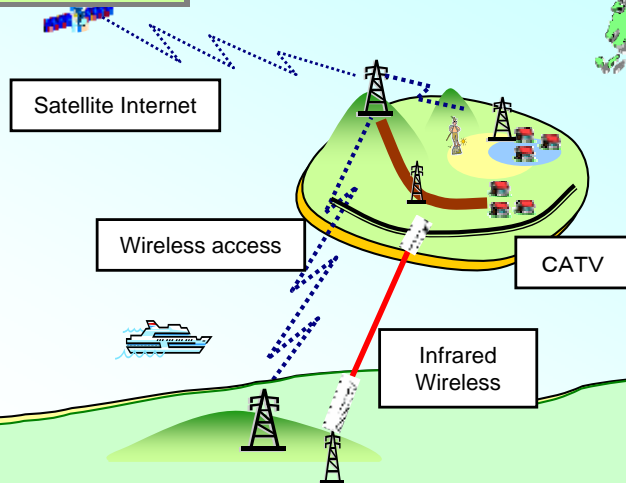
Intermediate and mountainous areas



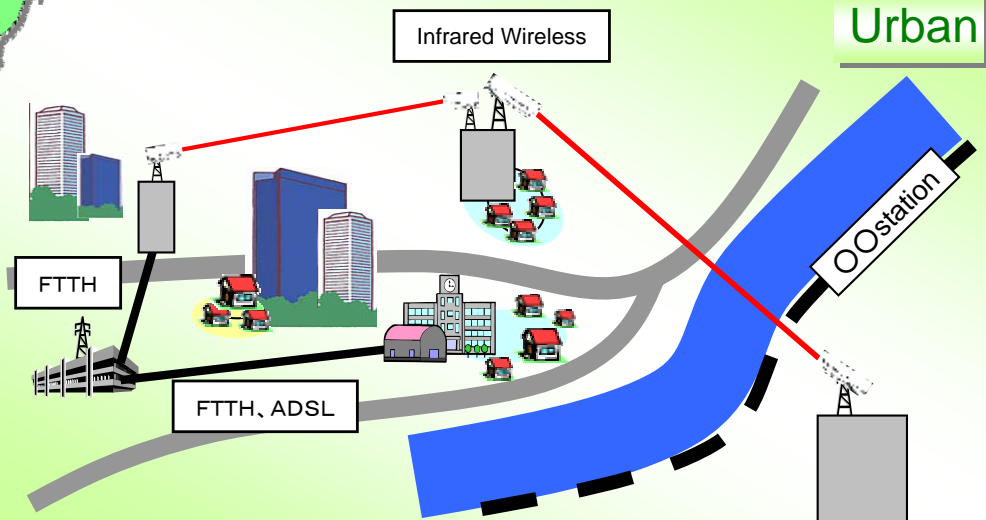
Heavy snowfall area



Isolated island



Urban



9 Future key issues

● It is important to work toward introduction and promotion of Next Generation Technology that combines Cable systems and Wireless systems by the cooperation of Government, Local Administrations and Private Businesses, to eliminate the Digital Divide in disadvantaged areas such as underpopulated regions, isolated islands and intermediate and mountainous areas.

Government

- Execute Proof Experiment , Present model of Broadband Infrastructure.
- Enhance the Support for Research and Development of Next Generation Broadband Technology .
- Draw up the Guidelines of Technology by coordination with Civilian Organizations and Academic Society.
- Expand the Support Measures for Maintenance of Next Generation Broadband Technology .
- Promotion of measures to maintain of broadband that uses optical fiber at country and local administrations level and Next Generation Broadband technology.

<The issues>

- ① Execution of proof experiment of system that combines Cable systems and Wireless systems.
- ② Promotion of research and development of Next Generation Broadband Technology.
- ③ Propagation and practical-use promotion of Next Generation Broadband Technology.

Local Administrations

- Promotion of broadband maintenance along a road map of administrative divisions.
- Examination, positive introduction and promotion of broadband maintenance.
- Expansion of support measures to broadband infrastructure.

Private Businesses

- Active participation and cooperation concerning drawing up the guidelines of promotion for practical use.
- Execution of propagation activities of Next Generation Broadband Technology.
- Active participation and cooperation working on broadband infrastructure.