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STATISTICS

Outline of 2007 Information and Communications in Japan White Paper

MIC announced the 2007 Information and Communications in Japan White Paper on July 3, 2007. The special theme of this year's white paper was the "Advancement of Ubiquitous Economy and Globalization," with an analysis of the potential capacity of ubiquitous networks for social and economic development, and the new possibilities brought about by the globalization of information and communications networks. The outline of the special feature of the white paper is as follows.

The advancement of ubiquitous networks and economic growth

A ubiquitous index was developed as an index to show the state of development of ubiquitous networks, from the two angles of the growth of penetration and the deepening of usage.

Looking at the movement of the ubiquitous index, one can see that Japan's ubiquitous networks have grown rapidly since about 1995, but this coincides with the period in which the penetration of personal computers, the Internet and mobile telephones increased rapidly. Year on year growth rates peaked in 2001 and have slowed considerably since then, so one could conclude that this shows a settling of growth in penetration with that period as the peak. On the other hand, in conjunction with the deepening of usage which is expected from now on, it could be anticipated that the growth in ubiquitous networks could pick up pace again.

Next, with regard to the scale of impact of the advancement of ubiquitous networks on Japan's economic development, the results of a simulation that was carried out using a macro production function model, showed that if Japan's economy grows steadily and fully reflects the potential of ubiquitous networks, the real GDP growth rate from 2007 to 2010 would be approximately 1.0 to 1.1 points higher than when compared to a scenario in which the economy does not grow steadily and does not fully reflect the potential of ubiquitous networks. This makes it obvious how important it is for Japan's future economic growth to realize the potential of ubiquitous networks.

The current state of the information and communications industry

The nominal value of domestic production by the information and communications industry in 2005 came to 93.7 trillion yen,

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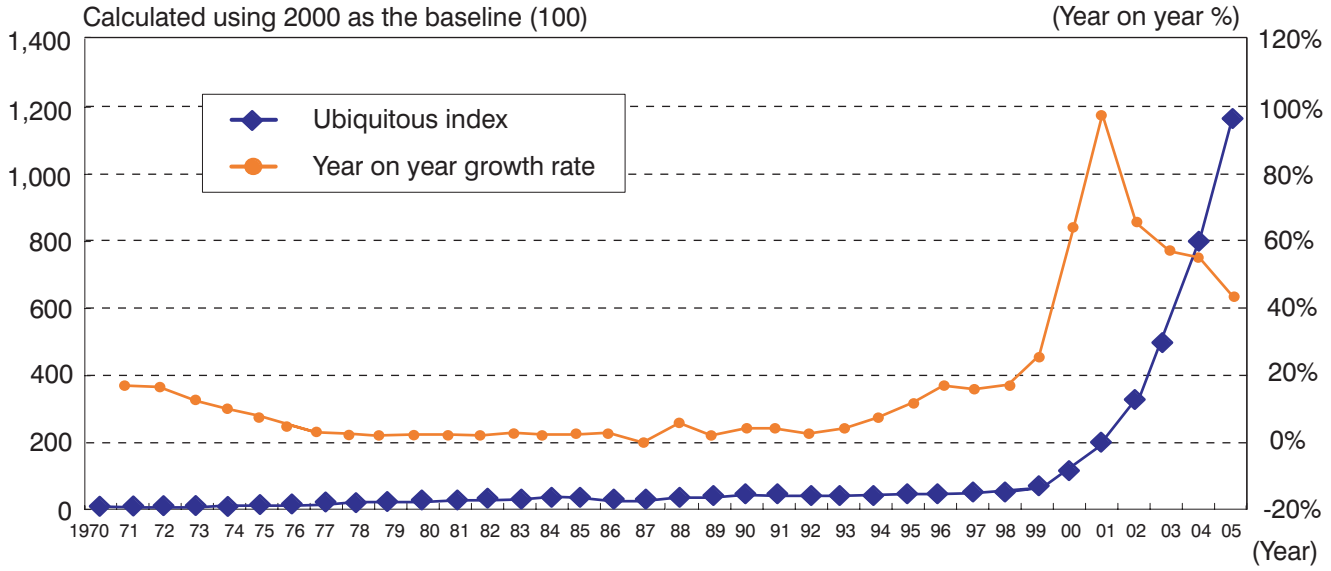
accounting for 9.9% of the nominal production value of 947 trillion yen for all industries combined. Other industries such as wholesaling (6.9%) and construction (6.8%) account for relatively high percentage values, but the information and communications industry is the largest among all industries. Looking at real GDP trends, the information and communications industry grew at an average annual rate of 7.3% between 1995 and 2005, which is the highest rate of growth among all industries. In addition, real GDP growth rate for all industries in 2005 was at 2.2%, to which the information and communications industry contributed 0.9%, showing that information and communications has the highest impact of all industries on Japan's economic growth.

Ubiquitous Index Trends



The international competitiveness of the information and communications industry

Along with the globalization of information and communications networks, it is vital for the future growth of Japan's information and communications industry to increase its competitiveness when compared to overseas information and communications industries. In that field, one can see when comparing the competitiveness of Japan, the United States and China that Japan is losing its competitiveness rapidly all around, in global market share for major information and communications equipment and share in export value.

Between 1997 and 2005, Japan's global market share and export share of almost all information and communications products fell. Looking at global market shares, Japan held more than 50% of the global market for products such as DVD players, LCD panels and digital cameras in 1997, but by 2005 the only product for which it still held more than 50% share was digital cameras. On the other hand, whereas the United States saw its export share of many products fall, it is still maintaining high global market shares, making it clear that it maintained its competitiveness by moving production overseas. In the case of China, it has widely increased its export share for many products against a background of concentrating production facilities.

Looking at the profit margins of major information and communications vendors between 1996 and 2005, average profit margins of 13.0%, 7.2% and 12.3% for the USA, Europe and South Korea respectively compare to 4.1% for Japanese vendors, starkly demonstrating the low profit margins of Japanese vendors.

The deepening of ubiquitous networks

The penetration of the Internet among the population stood at 68.5% in 2006, with an estimated user base of 87.54 million people. The growth in the user population has slowed down in recent years, but continues on an upward trend.

The growth in contract number for broadband lines also continued, with an increase of 3.14 million year on year to 26.44 million. Looking at the breakdown, the number of DSL contracts fell for the first time but there was a big growth in the number of contracts for FTTH, making the big increase in FTTH usage clear.

In addition, usage of mobile telephones and PHS which make up the equipment looking to take up the central role in driving the deepening of the ubiquitous networks that are linked in to the anytime anywhere networks, grew by 1.63 million to 70.86 million users.

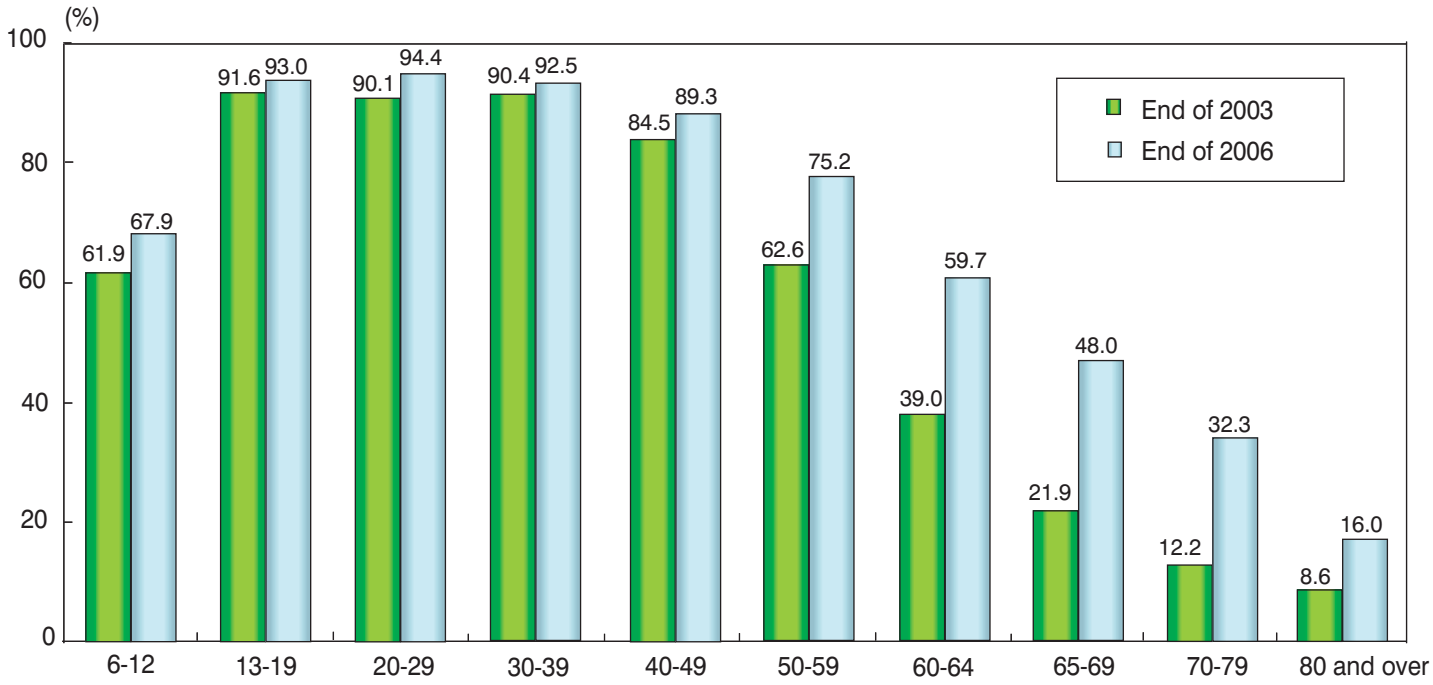
The state of usage of information and communications networks as seen by user attribute

In the realization of a ubiquitous society, it is important to ensure that there will not be any major gaps (digital divides) in the use of information and communications networks based on age, gender, size of cities, age or other factors. In this, looking at the state of usage of information and communications networks by user attribute, it is clear that whereas there is an overall growth in the state of usage of information and communications networks, there is a growing trend towards gaps, especially gaps due to the size of cities. This shows that the use of information and communications networks is not necessarily growing steadily in areas where the population is small.

Looking at the state of Internet and broadband usage by attribute category, it is clear that the higher annual income is, the higher usage is. There is a danger that the availability of access to information will see an even greater link to economic status in the future.

On the other hand, when looking at Internet usage by age group, all age groups are seeing increases in usage, and the 60 and above age group which showed the lowest growth rate is now showing noticeable increase, with the age groups between 60 to 79 showing growth rates of over 20 points. This makes it clear that the generation-based usage gap has diminished when compared to three years ago.

The state of Internet usage by age group



STUDY GROUP REPORT

Moving towards Establishing a Usage Environment for Next-Generation Broadband Technology - From the Report by Study Group on Establishing Usage Environments for Next-Generation Broadband Technology -

In order to promote the penetration of next-generation broadband technologies aimed at setting up nationwide broadband, including the "Japan premium Technologies," MIC set up the Study Group on Establishing Usage Environments for Next-Generation Broadband Technology (Chair: Prof. HATORI Mitsutoshi, Faculty of Science and Engineering, Chuo University) in November 2006. This article introduces the report that was compiled by the group in June 2007.

Background

Recent years have seen considerable advances in the penetration of an access environment for broadband in Japan. Usage of the Internet has spread from corporations to home users, and the web environment and email services have widely penetrated people's daily lives. The technologies that are used to access the Internet were originally concentrated on dial-up using telephone lines and analog modems, but have since progressed, moving on to cable Internet, then ADSL-based broadband access, with FTTH using optical lines now holding pride of place.

As of the end of March 2007, the total number of subscribers to broadband services including ADSL, FTTH, cable Internet and wireless (FWA) totaled 26.44 million.

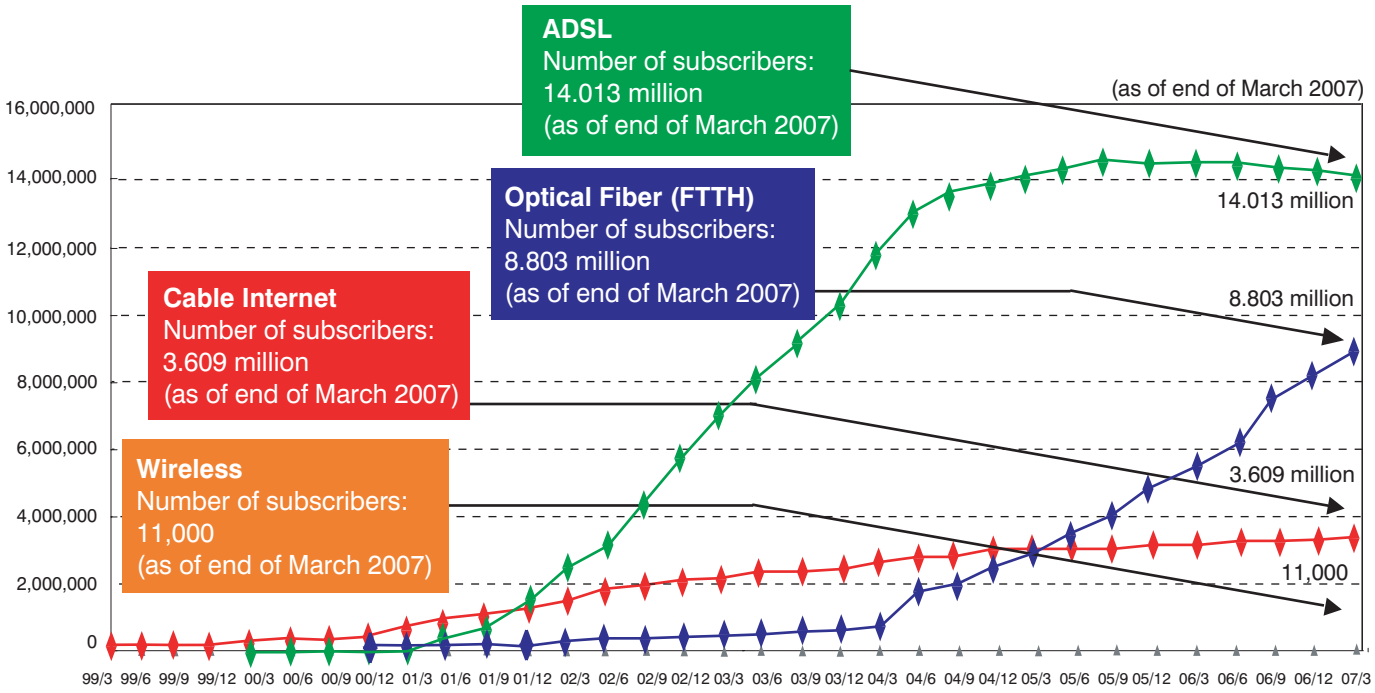
As is shown in Figure 1-1, ADSL moved to a negative trend in 2006 while the number of FTTH subscribers is growing rapidly. This shows that user needs are shifting to FTTH services which are offering stable quality at higher speed and in greater volume.

In addition, as show in Figure 1-2, the state of infrastructure installation enabling the use of such broadband Internet services had, as of the end of March 2007, reached 95% coverage for either ADSL or FTTH service (48.63 million households out of 51.10 million), whereas it was 84% for FTTH alone (42.68 million households out of 51.10 million).

On the other hand, the number of households in "Broadband Zero" areas with absolutely no broadband reception is at 2.47 million. As is shown in Figure1-3, there remain 25 "Broadband Zero" towns and villages in remote, offshore and mountainous areas.

Looking at the state of broadband installation by prefecture, Kanagawa, Toyama, Mie Prefectures, and the Osaka area have achieved 100% broadband usage access, but there are still a number of prefectures with less than 90% access, indicating a gap. Also, even in areas where the service is provided, there are places where distance from the reception station makes it impossible to received broadband services, leading to a digital divide.

Figure 1-1 Number of subscribers to broadband services



* Random sampling until end of May 2004. From the end of June 2004, survey based on revised Rules for Reporting on Telecommunications Business

Figure 1-2 The state of broadband installation and government targets

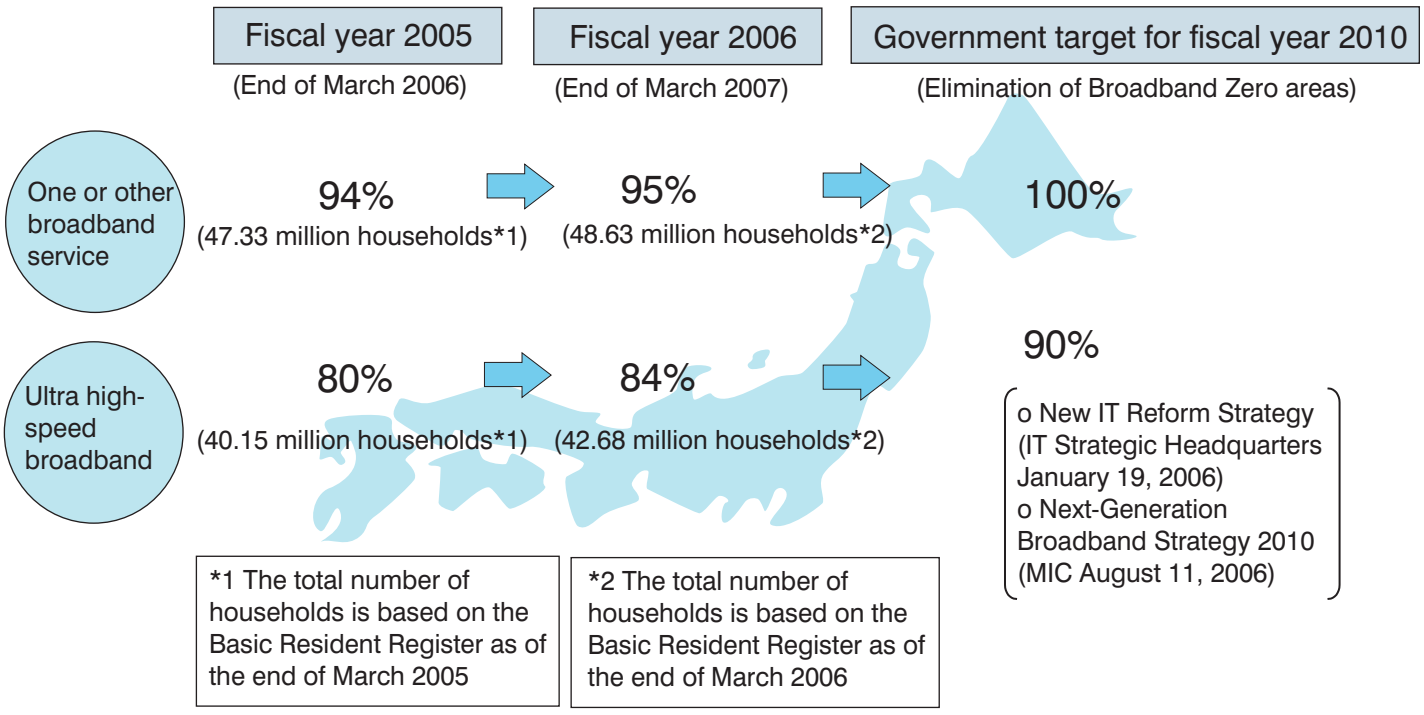
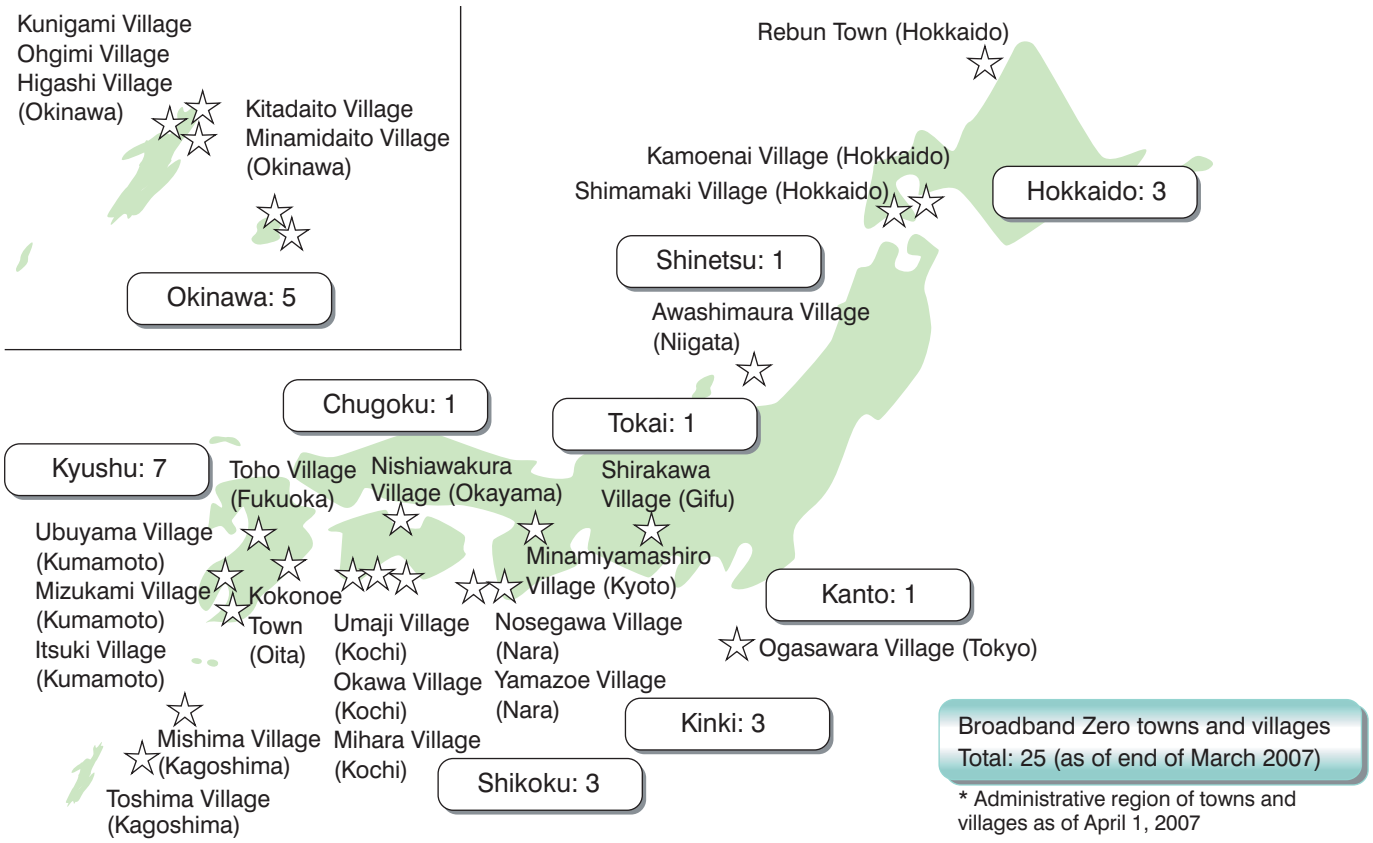


Figure 1-3 Distribution of Broadband Zero towns and villages



Taking all of these conditions into consideration, MIC formulated its Next Generation Broadband Strategy 2010 in August 2006. This strategy sets out to realize a nationwide installation of broadband by fiscal year 2010 and to promote the installation of an environment that will allow 90% of households to have access at any time to ultra high-speed broadband such as FTTH service, stating the importance of coordination in approach between the government, regional public bodies and operators to achieve those goals.

Also, with regard to next-generation broadband technology and in response to user needs for ultra high-speed services, MIC is seeding technologies that are "Japan Premium Technologies" such as optical fiber technology, optical wireless communication technology, technologies using the infrared spectrum or visible light spectrum in the frequency of over 3000GHz. However, there had been virtually no investigation ahead of the actual use or the installation of a user environment for next-generation broadband technologies.

This is where, in order to promote the penetration of next-generation broadband technologies ahead of the nationwide installation of broadband, this study group was formed with the aim of contributing to investigations concerning a framework for measures for the installation of a user environment from the technological aspect.

Trends in broadband technologies in various countries

With regard to the current state of broadband services in various countries, Figure 2-1 shows that since, in the United States, the installation of a cable television network is advanced, the number of cable Internet users is large whereas in the EU and other countries, it is ADSL which has a large number of subscribers.

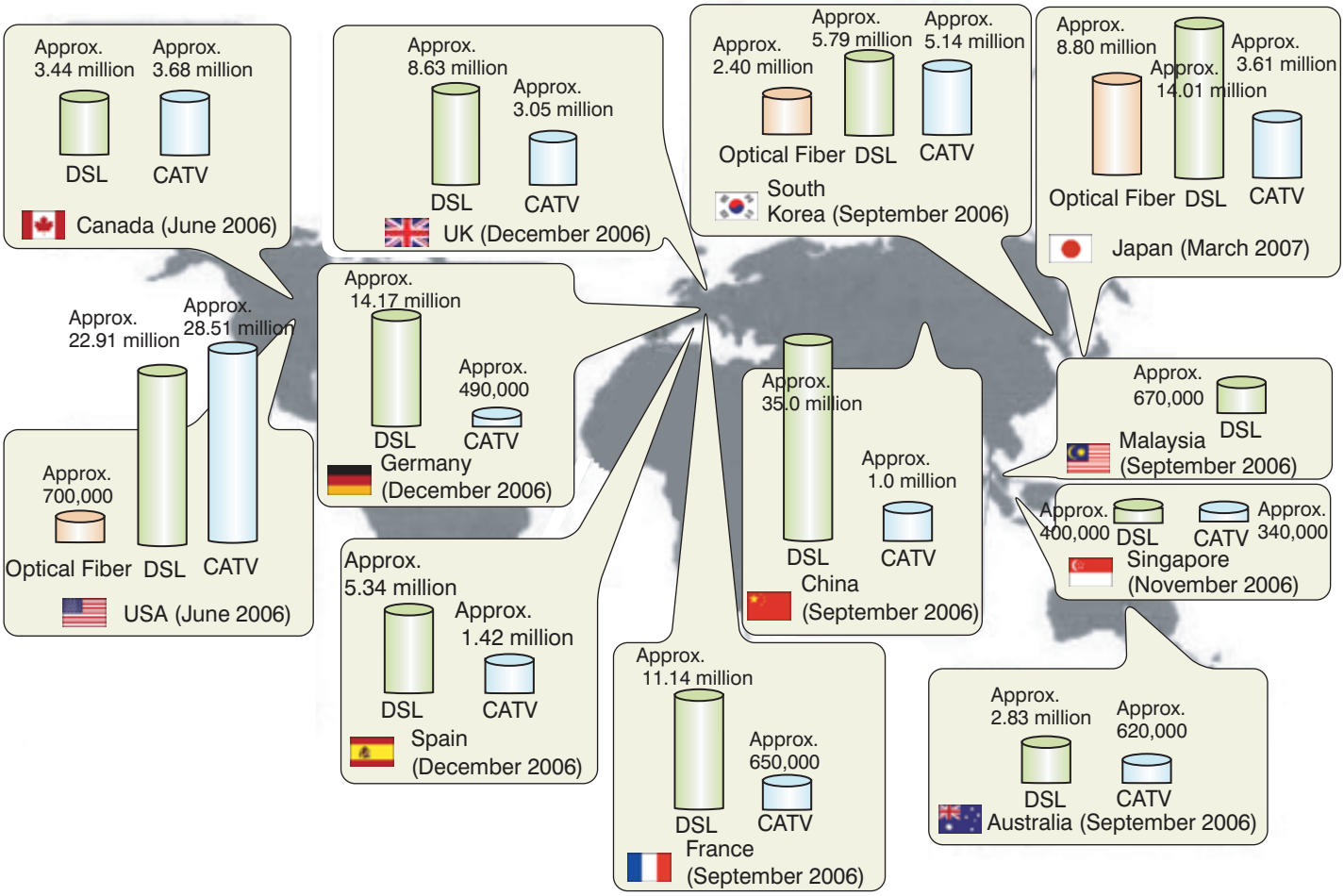
Also, as shown in Figure 2-2, other countries, just like Japan, are seeing positive moves towards the advancement and high speed of optical fiber transmission technology, with a variety of approaches in the move towards broadband.

In North America, there have been advances in the introduction of satellite broadband and the development of WiMAX. In the EU, broadband installation is moving forward based on "i2010 - European Information Society 2010" (October 2006).

The move towards broadband is also progressing rapidly in the rest of Asia with China at fever pitching in the building of an optical fiber network ahead of the Beijing Olympics in 2008 and the Shanghai World Expo in 2010. South Korea is moving forward with its domestic broadband installation based on

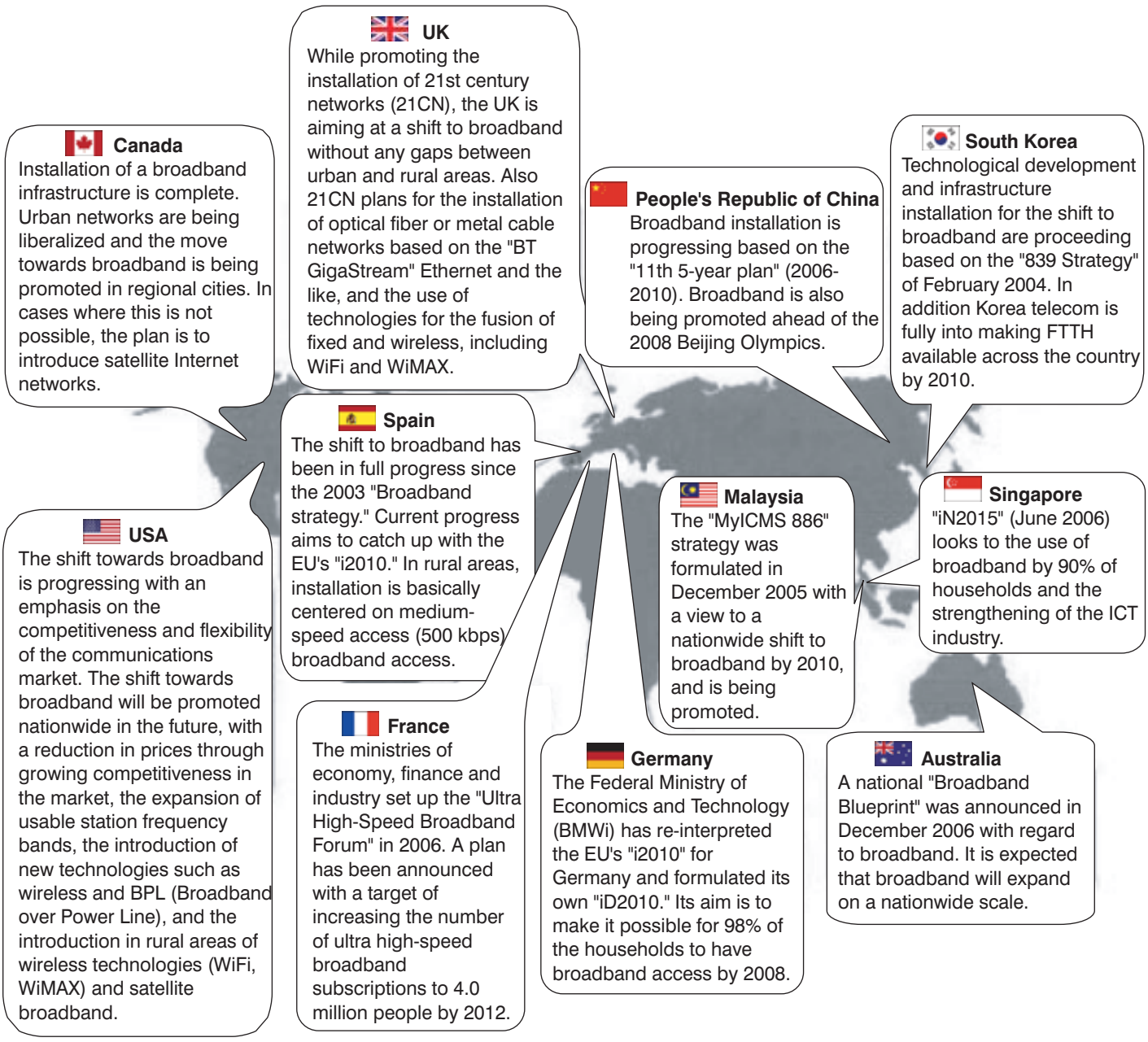
the "839 Strategy" (February 2004) and according to the international comparison of broadband prices in the Internet report published by the ITU in December 2006, is beginning to achieve good results such as being second only to Japan in the lowest prices.

Figure 2-1 Number of broadband service subscribers in various countries



Note 1: The state of penetration of broadband is shown through the number of subscribers
Note 2: "CATV" denotes high-speed Internet service using CATV networks
Note 3: Sources: USA (FCC statistics), UK (Ofcom documents), Germany (OECD statistics), France (OECD Statistics and ARCEP statistics), China, South Korea, Malaysia (ASIA com January 9, 2007 documents), Singapore (IDA documents), Australia (ACCC documents)

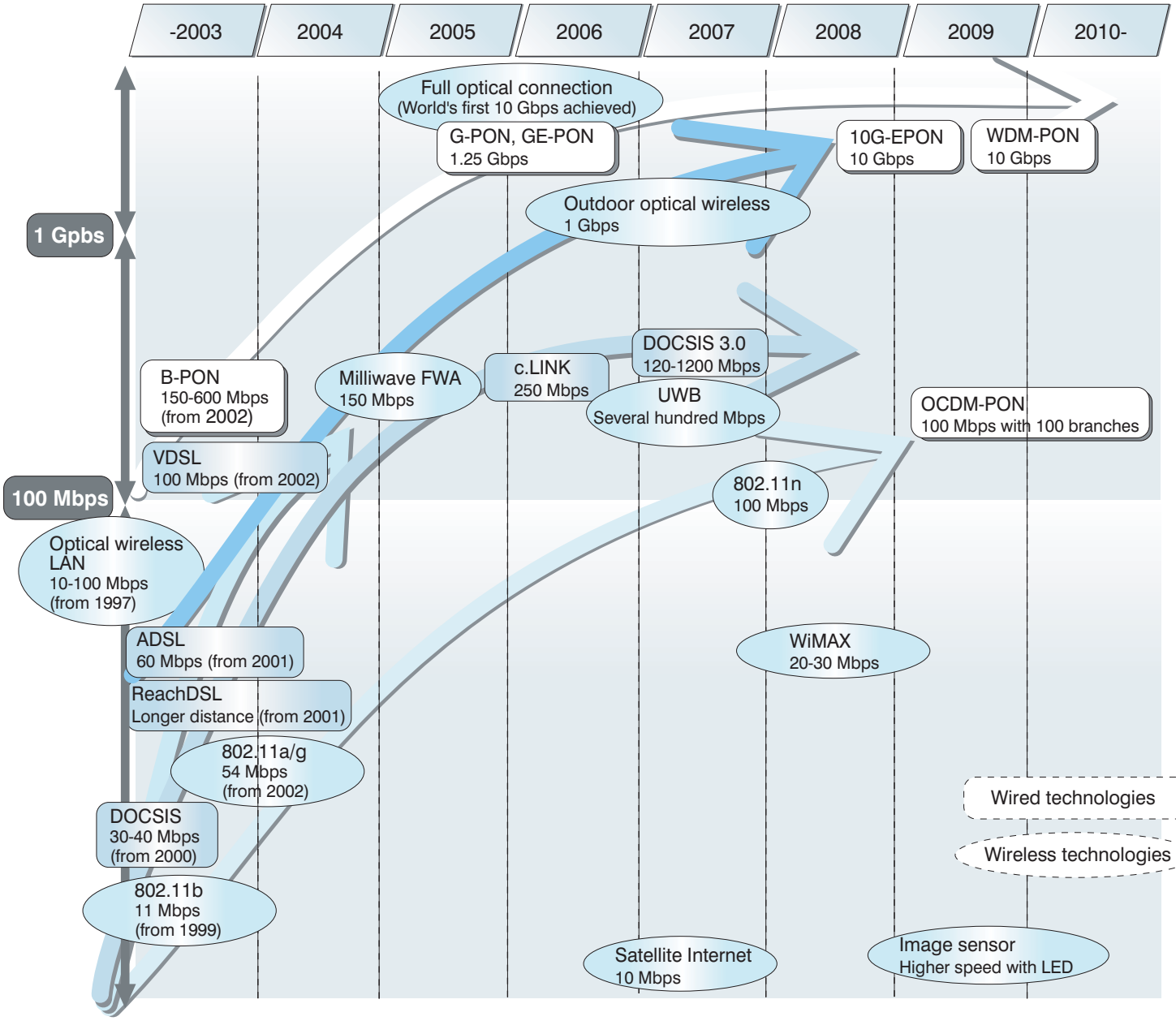
Figure 2-2 Various countries' approaches to the shift to broadband



Transitions in broadband technology in Japan and future outlook

As has been mentioned earlier, broadband in Japan has already become a vital part of the social and economic activity infrastructure. As shown in Figure 3, broadband technology has recently been picking up speed in response to user needs for transmission of documents containing video or the like in both wired and wireless communications. Until now, FTTH has been the mainstream in terms of ultra-high speed broadband, with upload and download speeds of over 30 Mbps, but other wired and wireless technologies are aiming for technologies that will match if not overtake FTTH, and there will be a need for ongoing developments in broadband technology in terms of higher speed and larger volume to meet user needs.

Figure 3 Transitions in broadband technology



Approaches for the promotion of the introduction of next-generation broadband technologies

As mentioned above, Japan has been active in the development of next-generation broadband technologies. In particular, next-generation broadband technologies such as OCDM-PON, which is a wired technology, and WiMAX which is a wireless technology, have characteristics such as being usable over longer distances than earlier technologies and the ability to cover wide areas, and so arise high expectations as efficient killer technologies for contributing to the building of new networks that will eliminate the digital divide.

The following 3 topics are to be considered for promoting the introduction of these next-generation broadband technologies.

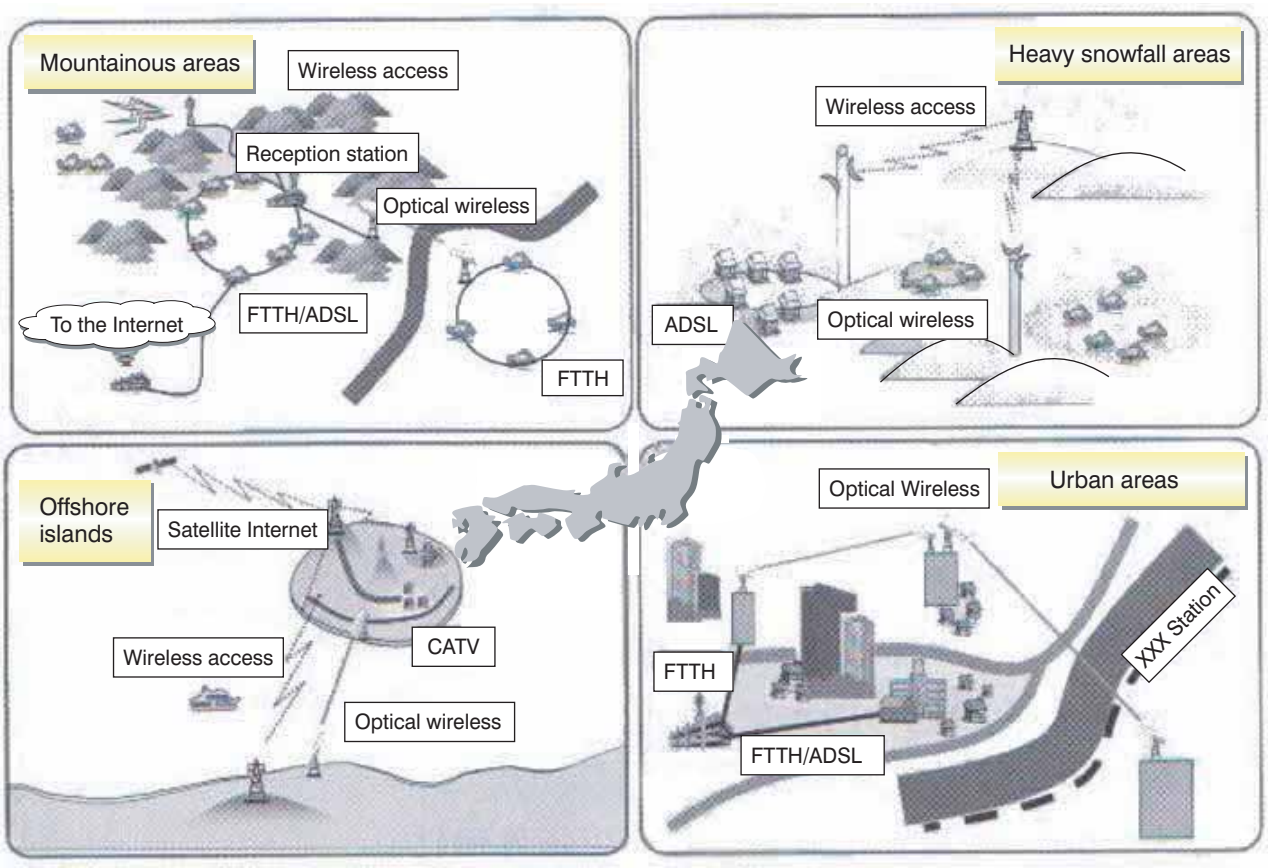
First of all, as the initial topic, since there were no investigations concerning compatibility with existing systems in the case of combining various wired and wireless systems, and no presentations of system construction models or costs, it is currently difficult for regional public bodies to enter into concrete system design or cost estimations. At this stage, in order to draw out the issues, it seems to be necessary to carry out tests and experiments on the combined system of various wired and wireless technologies, investigate compatibility with regional characteristics and existing networks, and present system construction models and introduction costs.

With regard to these tests and experiments, it is necessary to properly grasp regional needs and to use a system that combines diverse wires and wireless technologies so as to meet these needs, and to implement these as quickly as possible and present measures for the nationwide installation of broadband in fiscal year 2010, in the course of the current fiscal year in mountainous areas, offshore islands, heavy snowfall areas and urban areas as shown in Figure 4.

The second topic is that the development of next-generation broadband technologies has until now received the support of the government, but there will continue to be a need in the future for development to eliminate the digital divide and for newly created networks, and thought is required about the active research and development of new technologies that will enable the construction of efficient and stable networks.

As for the third topic, Japan's broadband technology is at a high level worldwide and Japan is proud of its "Japan Premium Technologies" but the fact is that it is difficult to state that, in regional areas, introduction measures and compatibility with existing systems have been fully acknowledged or understood. It is therefore necessary to promote the penetration and use of these technologies that Japan can be proud of, both domestically and overseas.

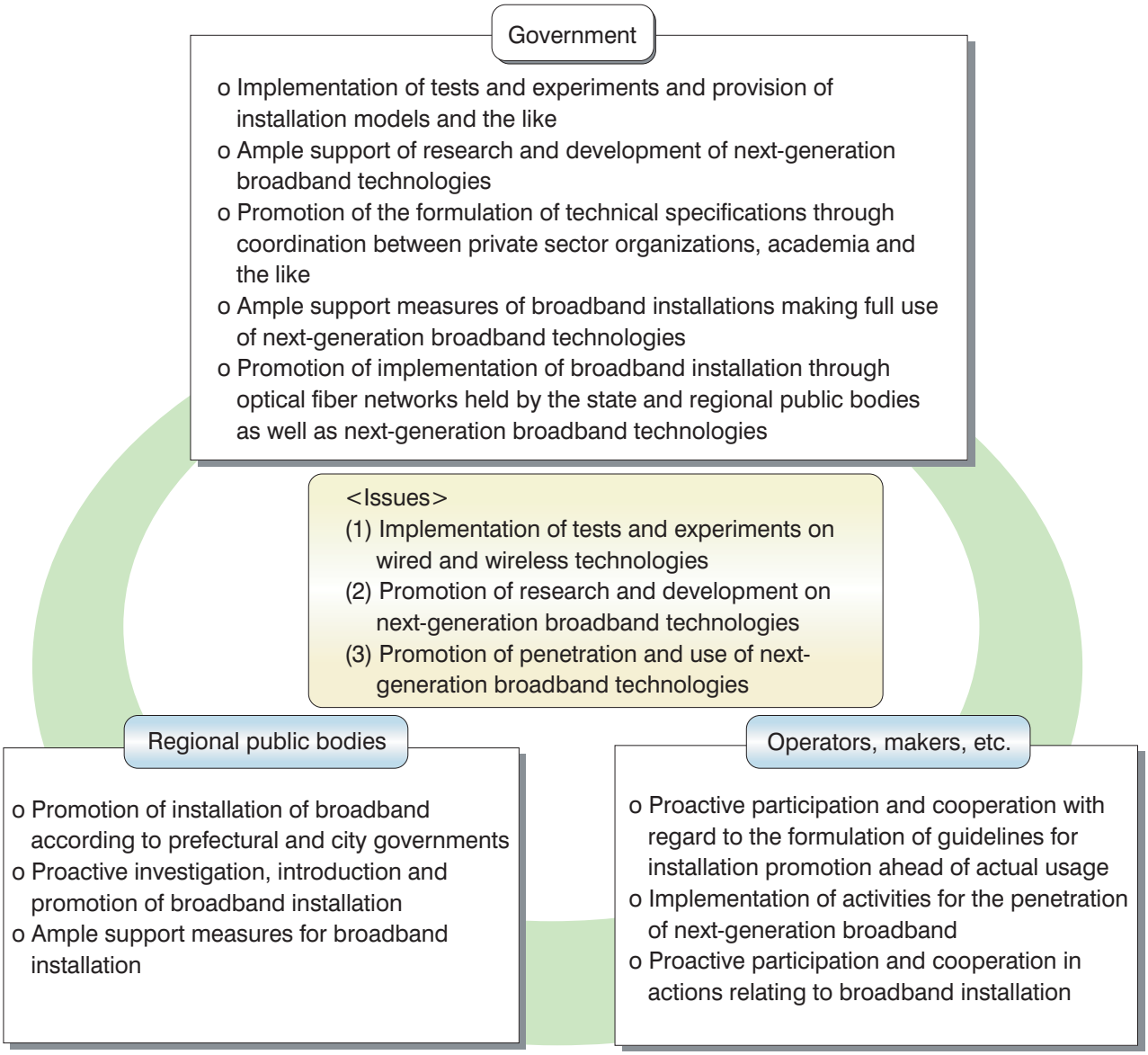
Figure 4 Test and experiments using next-generation broadband technologies



Actions that need to be taken

As for actions that need to be taken to solve these issues in the future, and in looking ahead to installing broadband nationwide by fiscal 2010, it is necessary, as shown in Figure 5, for the government, regional public bodies and operators to work together and take a proactive approach to resolving these issues, from the perspective of how one should best promote the introduction of wired and wireless next-generation broadband technologies in areas with difficult circumstances such as underpopulated areas, offshore islands and mountainous areas, taking into consideration the survey analysis and the issues brought up in promoting the introduction of next-generation broadband technologies and on the premise of maintaining fair competition and ensuring the neutrality of technology.

Figure 5 Coordination between government, regional public bodies and operators to solve issues



Conclusion

Japan's broadband environment has already reached the highest global level, with new efficient network uses gradually being promoted. MIC will continue to encourage endeavors for the promotion of the introduction of next-generation broadband technologies, including the world-leading "Japan Premium Technologies," so as to maintain and strengthen Japan's international competitiveness. MIC will also take positive action to achieve the goal of nationwide installation of broadband by 2010.