

Information and Communications in Japan 2005

Feature: Stirrings of u-Japan

<Outline>

June 2005

Ministry of Internal Affairs and Communications

Feature: Stirrings of u-Japan

<Objectives>

- To analyze the current status toward realizing u-Japan in 2010
- To analyze the progress in ICT use by individuals and companies since the launch of the e-Japan Strategy (2001)
- To make comparisons among Japan, the United States, and the Republic of Korea

<Overall structure>

Chapter 1 Stirrings of u-Japan

Section 1 Use of Ubiquitous Networks by
Individuals and Companies

Section 2 ICT Use by Individuals

Section 3 ICT Use by Companies

Section 4 Network Infrastructure Supporting u-Japan

Section 5 Challenges Toward Achieving u-Japan

Chapter 2 Current Status of Information and Communications (presenting data that indicate the current situation of information and communications)

Chapter 3 Trends of Information and Communications Policies (focusing on efforts made by the MIC)

Content & Key Points

I. Use of Ubiquitous Networks by Individuals and Companies

- 1. u-Japan P 1
- 2. People’s Expectations for Ubiquitous Networks P 2
 - ◇ People have high expectations for “security and safety.”
- 3. Trend in Corporate Use of Ubiquitous Networks P 3
 - ◇ Corporate uses of ubiquitous network tools (RFID tags, contactless smart cards, and new network-compatible devices) have made notable progress. Active efforts are also made in the USA and ROK.
- 4. Example Use of Ubiquitous Networks P 5
 - ◇ The users had a high opinion of and a high degree of satisfaction with mobile phones with contactless smart card technology, RFID tags, etc., and believed that the services would spread in the future.
- 5. Japan’s Future Challenges and Solutions Using Ubiquitous Networks P11
 - ◇ Solving social issues through the use of ubiquitous networks is expected to become widespread through efforts to establish the respective business models and satisfy other preconditions.

II. ICT Use by Individuals

- 1. Progress in ICT Use P12
 - ◇ The number of Internet users is 79.48 million and The percentage of broadband households to the total Internet households is 62.0%.
- 2. Changes in People’s Lives P14
 - ◇ In line with the use of the Internet, the time for sleep, watching TV, reading magazines, etc. decreased, while the frequency of communicating with family and friends increased in terms of activity patterns. As for consumption behavior, most people gathered product information on the Internet.
- 3. Stimulation of Communication P17
 - ◇ The utilization rate of mobile phone e-mail is far higher in Japan than in the United States and the Republic of Korea. In addition, blogs have rapidly come into wide use since 2004.
- 4. Online Shopping P19
 - ◇ Compared to two years ago, the total amount of transactions, the frequency of use, and the degree of satisfaction have all increased. The characteristics of online shopping via mobile phones are selling in conjunction with magazines, etc., purchasing without making comparisons to similar products or other stores, and purchasing while en route. The purchases are lead by young females in their teens to those in their 30s.
- 5. Contents P22
 - ◇ While the overall contents market has hit the ceiling, the market for online contents has expanded. The main Internet contents used are free contents.
 - ◇ The intent for future use of paid contents is high for music, games, and moving images, and the utilization rate of paid contents is overwhelmingly high in the Republic of Korea compared to Japan and the United States. Music distribution and VOD services are expected to come into wider use in the future.

III. ICT Use by Companies

- 1. Enhanced Use of ICT P27
 - ◇ The use of package applications increased for application software for ICT systems, and the connection of ICT systems between companies has advanced. The purpose for introducing ICT systems has changed from “reducing costs” to “expanding sales.” Efforts including “verifying cost-effectiveness” and “organizational/institutional reform for management of ICT systems” also made progress. An increased number of companies found the introduction of ICT systems to be effective.
 - ◇ Progress can be seen in the shift from mainframe systems to open systems in Japan, the United States, as well as the Republic of Korea. The rate of concurrently using both mainframes and open systems is relatively high in Japan.

- 2. Expansion of E-Commerce P31
 - ◇ B2C transactions via PC Internet were conducted by 28.9% of all companies, and those via mobile phones were conducted by 9.1%. Many companies were scheduled or considering to conduct B2C transactions via mobile phones in the future. The future market size of B2C (market size in FY 2006 based on the 2003 level) is predicted to roughly triple in Japan and the Republic of Korea, and roughly double in the United States.
- 3. Expansion of New Businesses Using ICT P32
 - ◇ With the expenditure for Internet ads exceeding that for radio ads in 2004, the Internet became the fourth largest ad medium. The amount of Internet transactions accounted for about a quarter of all securities transactions. The balance at Internet-only banks almost quadrupled in two years. The amount of sales by mobile contents providers tripled in three years.

IV. Network Infrastructure Supporting u-Japan

- 1. Progress of Broadband P33
 - ◇ The number of broadband subscribers reached 18.66 million, continuing to achieve a steady increase. The broadband fees are at the lowest level in the world. Many non-users of FTTH intend to switch over to FTTH.
- 2. Progress of Mobile Communications P34
 - ◇ The number of mobile phone subscribers is 87 million, and the number of mobile phone Internet subscribers is 75.15 million. The number of third-generation mobile phone subscribers rapidly increased to 30.35 million. The percentage of mobile phones supporting the Internet is outstandingly high in Japan and the Republic of Korea at about 90%.
 - ◇ Wireless LAN came into wide use at home and in companies. The number of base stations for public wireless LAN increased rapidly. The percentage of public wireless LAN users is 12.5%, which is lower than that in the United States and the Republic of Korea.
- 3. Progress of IP Networks P37
 - ◇ The use of IP phones in households has become widespread. “IP-VPNs,” “Internet VPNs,” and “wide area Ethernet” are becoming widely used as the trunk systems for corporate communications networks.
- 4. Diffusion of Terrestrial Digital Broadcasting P38
 - ◇ The shipment volume of receivers supporting terrestrial digital broadcasting increased rapidly. The degree of satisfaction for terrestrial digital broadcasting is high.
- 5. Japan’s Advantage in Information and Communications Equipment and Technology P39
 - ◇ Japan has an advantage in intelligent home appliances and related parts. Although Japan has minor dominance in the market of mobile phone handsets, it has an edge in mobile phone parts.
 - ◇ With respect to ubiquitous network related technology, Japan has the advantage in “FTTH,” “next-generation mobile phones,” “network robots,” etc. On the other hand, ICT for safety and security, such as “IP traceback technology,” is more advanced in North America.

V. Challenges Toward Achieving u-Japan

- 1. Safe and Secure ICT Use P40
 - ◇ From 80 to 90% of individual and companies in Japan, the United States, and the Republic of Korea are victims of ICT security incidents. The most frequently occurred incident is “spam” for individuals and “virus infection” for companies.
 - ◇ Overall, U.S. individuals and companies are taking the strongest measures. Phishing has grown into a social problem in the United States.
 - ◇ The priority challenges toward a ubiquitous network society include the vulnerability of ICT networks, illegal business practices using networks, copyright protection of digital assets, the regional gaps in advanced services, etc.
- 2. Digital Divide P45
 - ◇ There are regional gaps in the availability of broadband services. The gaps are particularly large for FTTH.
- 3. Backbone Circuit P46
 - ◇ The Internet traffic surged. The traffic exchanges on the Internet are concentrated in Tokyo. Decentralization of traffic exchanges will be a future task.

I. Use of Ubiquitous Networks by Individuals and Companies

1. u-Japan

- ◆ “u-Japan” is what Japan will be like in 2010 when information and communications technology (ICT) will be applied toward resolving various problems in society. Among the four principles—“ubiquitous,” “universal,” “user-oriented,” and “unique”—“ubiquitous” plays the key role. u-Japan is characterized by “person-to-person” and “goods-to-goods” communications.

Figure 1: The u-Japan concept

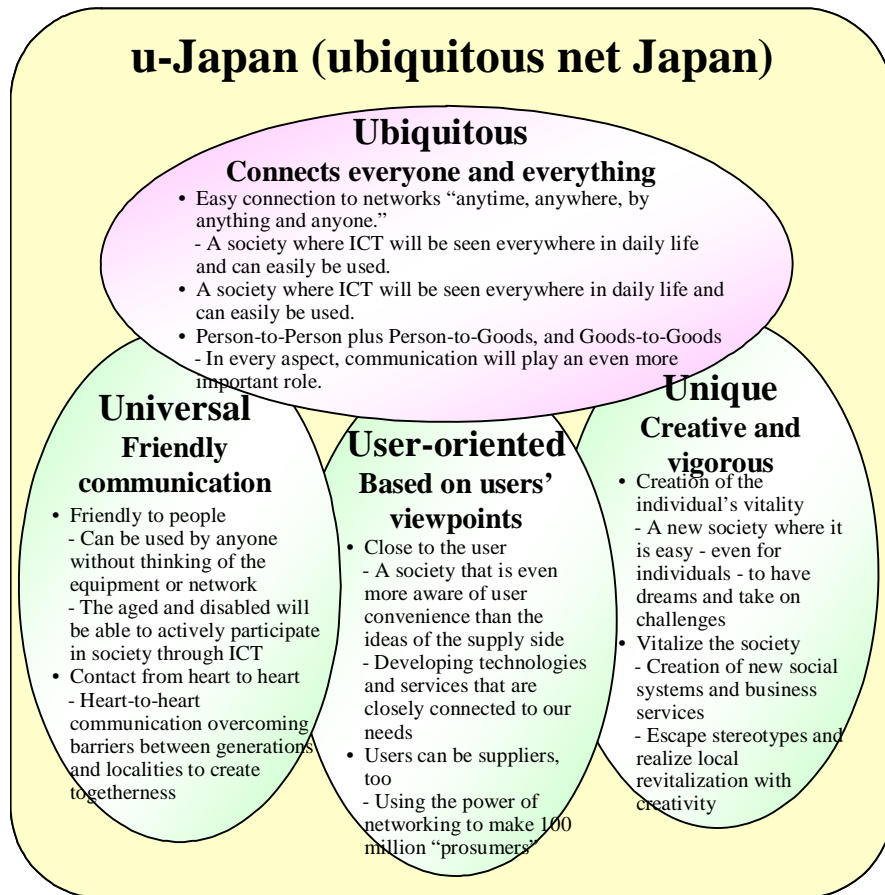
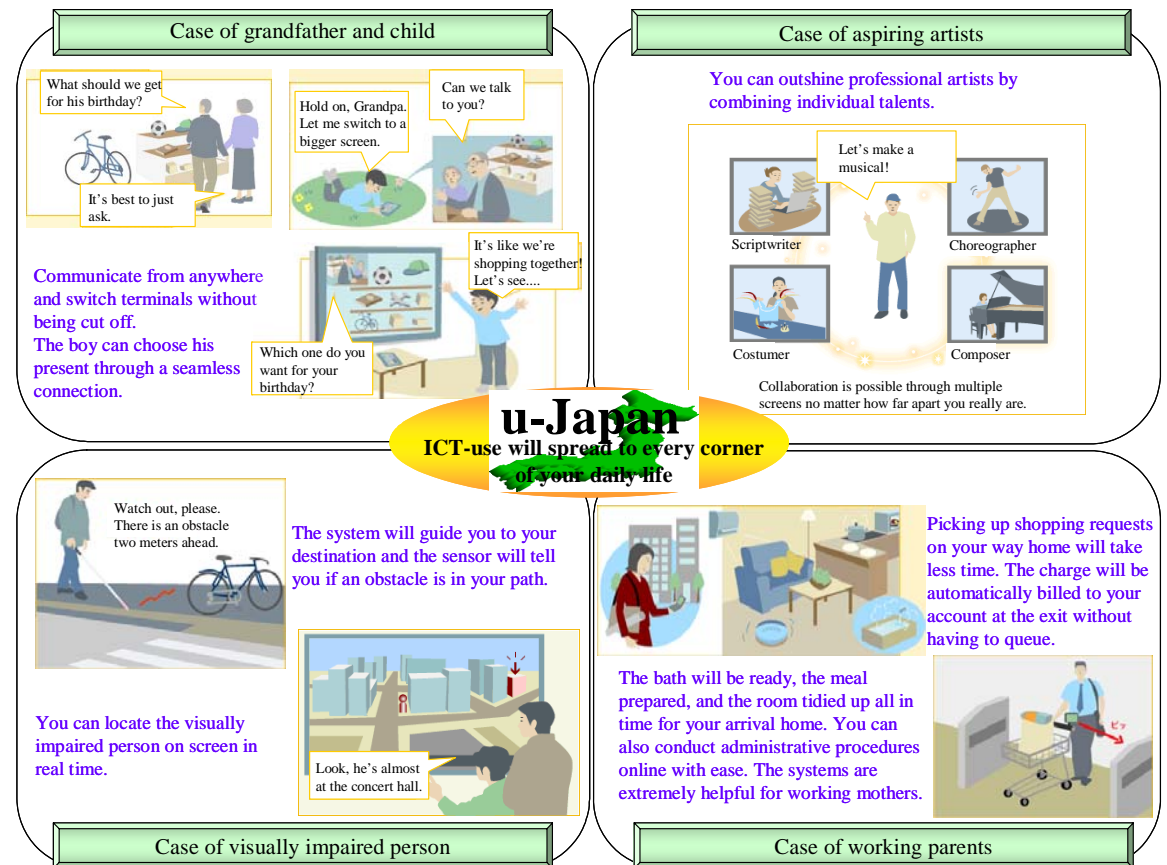


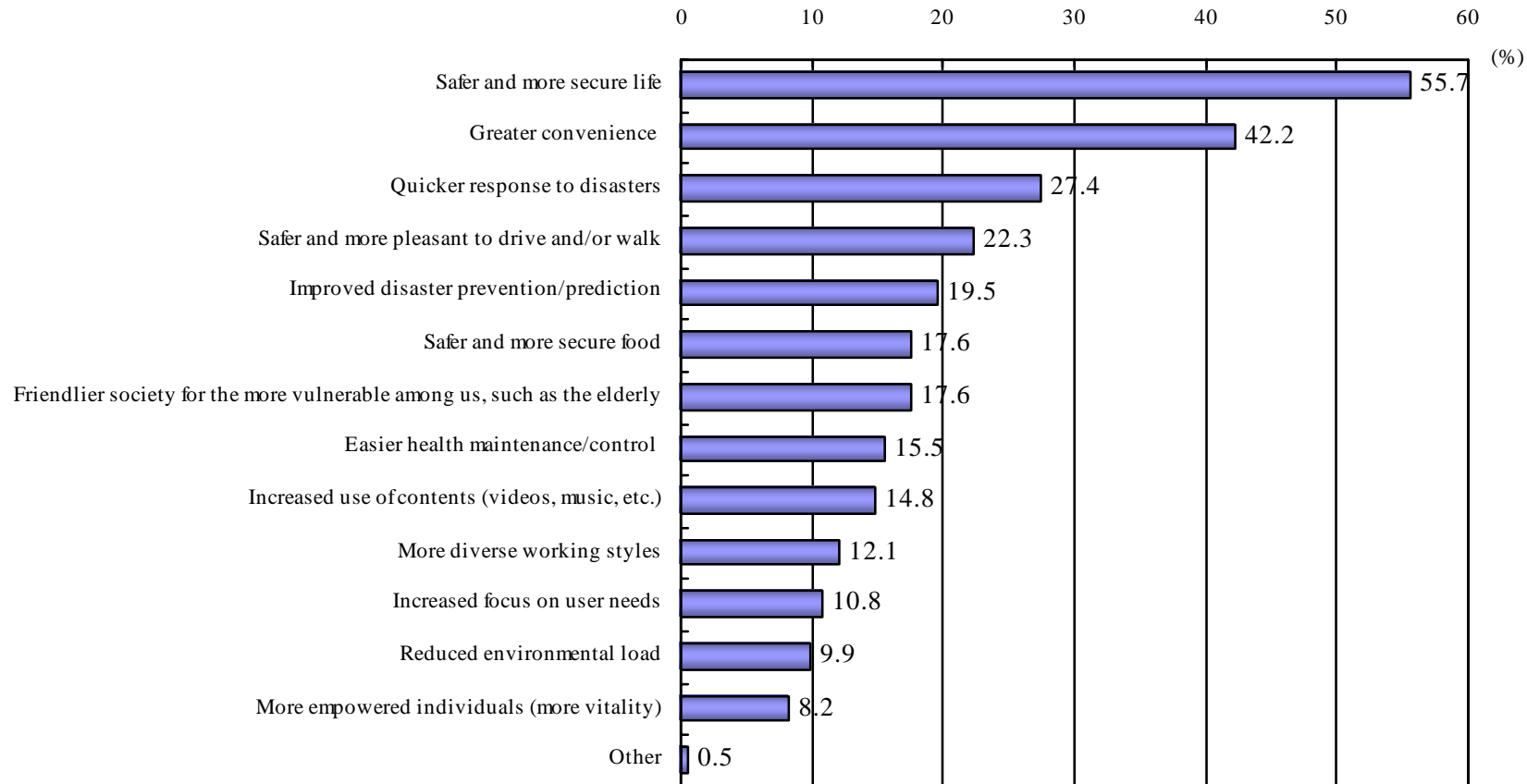
Figure 2: Impression of u-Japan



2. People's Expectations for Ubiquitous Networks

◆ Among the various benefits of ubiquitous networks, people have high expectations for “security and safety.”

Figure: Benefits expected in ubiquitous networks (multiple responses possible)



Source: “Survey on Trends Concerning a Ubiquitous Network Society” (Web survey)

3-1. Trend in Corporate Use of Ubiquitous Networks (Japan)

◆ Corporate uses of radio frequency identification (RFID) tags, contactless smart cards, and new network-compatible devices (ubiquitous network tools) have made notable progress in the past year.

Figure 1: Introduction of ubiquitous network tools in intra-corporate/inter-corporate operations

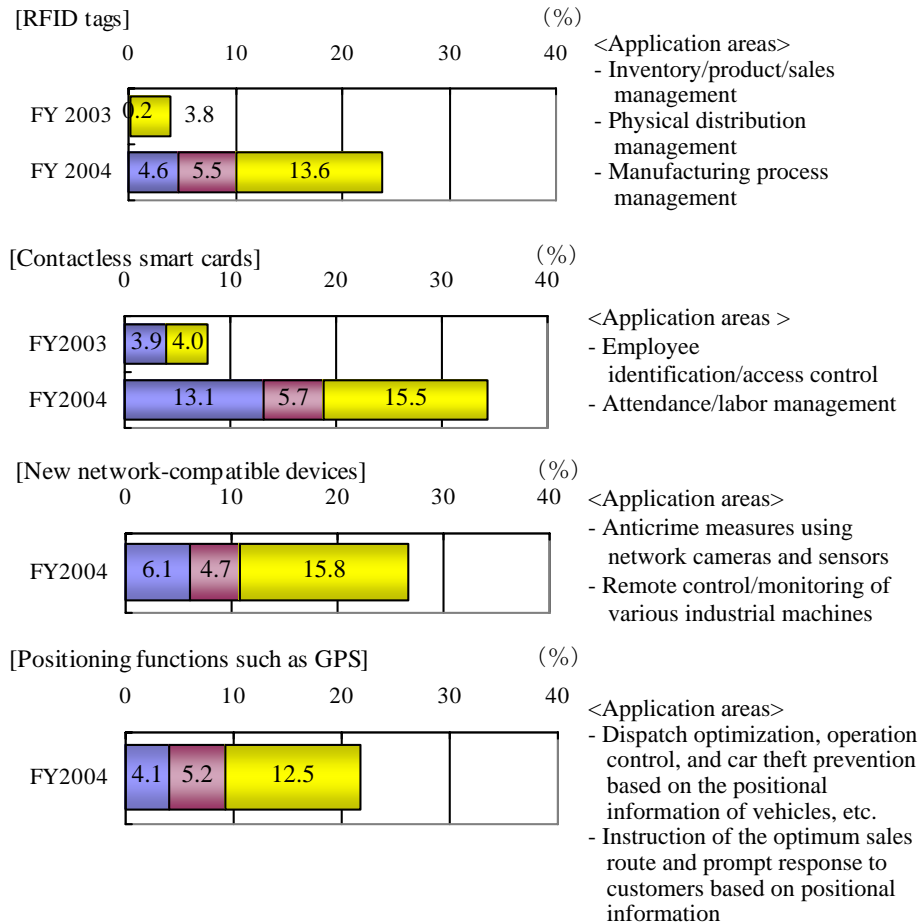
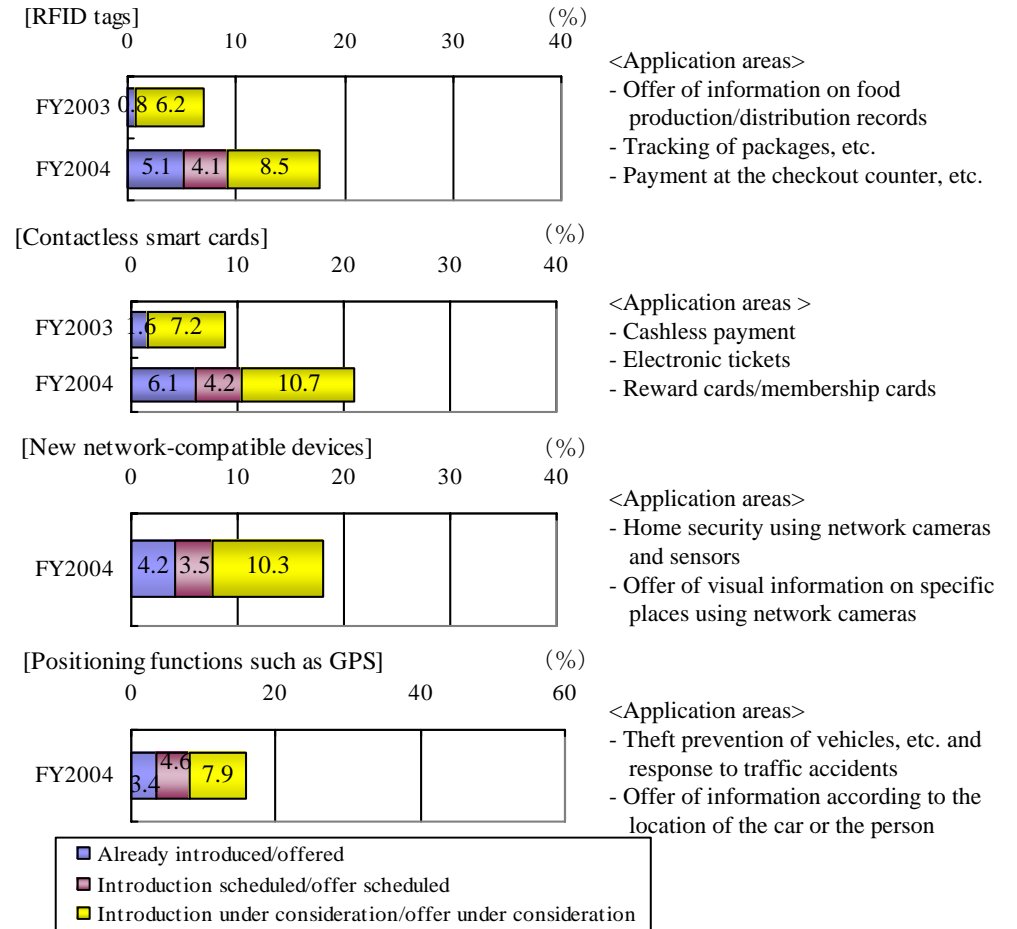


Figure 2: Offer of general consumer products and services using ubiquitous tools



Source: "Survey on the Status of Corporate Use of ICT" (Web survey)

3-2. Trend in Corporate Use of Ubiquitous Networks (Comparison Among Japan, the United States, and the Republic of Korea)

◆ Companies in the United States and the Republic of Korea are also making efforts to introduce ubiquitous network tools. With regard to intra-corporate/inter-corporate operations, advancement is being observed for “contactless smart cards” in Japan, “new network-compatible devices” in the United States, and “RFID tags” in the Republic of Korea. In respect to general consumer products and services, advancement can be seen for “contactless smart cards” in Japan and the Republic of Korea and “RFID tags” in the United States.

Figure 1: Introduction of ubiquitous network tools in intra-corporate/inter-corporate operations

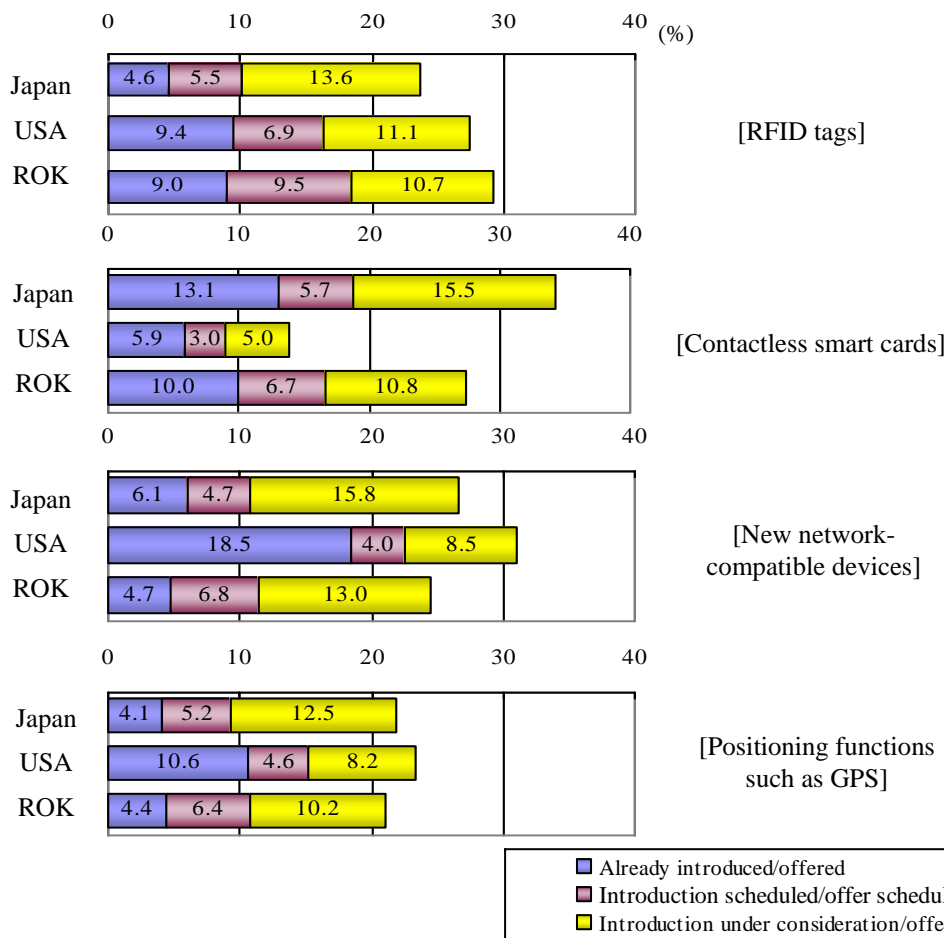
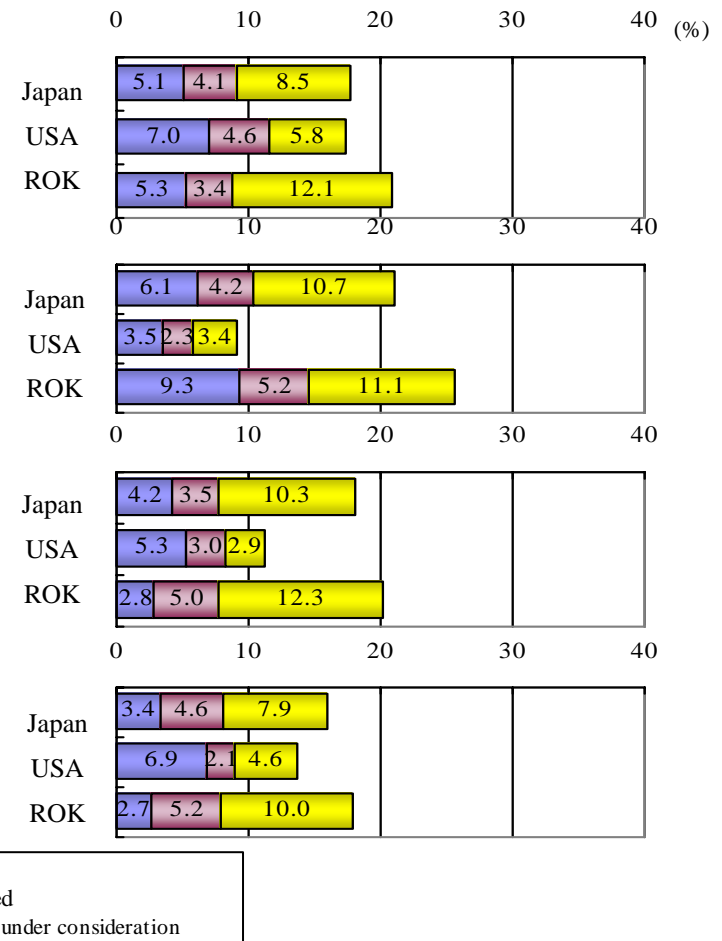


Figure 2: Offer of general consumer products and services using ubiquitous network tools



Source: “Survey on the Status of Corporate Use of ICT” (Web survey)

4-1. Example Use of Ubiquitous Networks (Mobile Phones with Contactless Smart Card Technology)

- ◆ The service most frequently used by the users of mobile phones with contactless smart card technology (379 persons) was electronic money settlements. The users had a high degree of satisfaction and a high intent to continue using the services, and believed that the services would spread in the future.

Figure 1: Example of service



Figure 2: Services used by users (multiple responses possible)

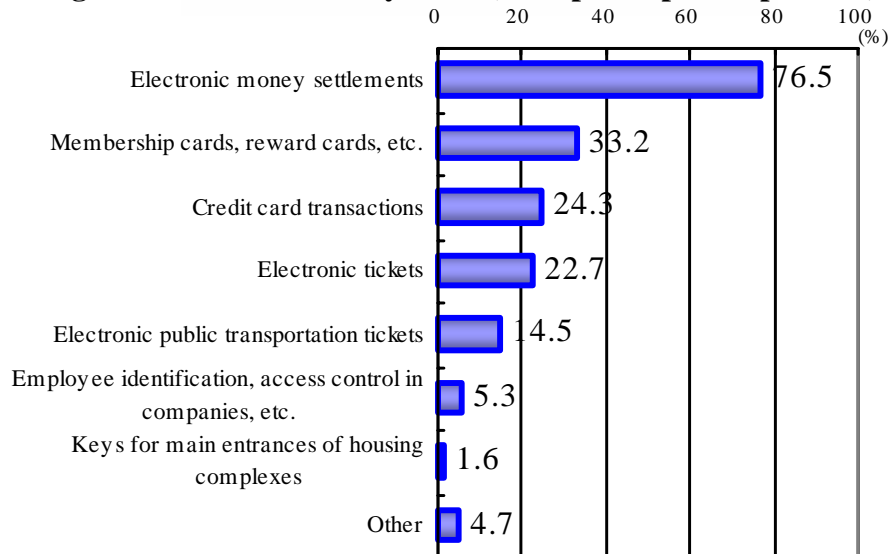


Figure 3: Degree of user satisfaction for the services

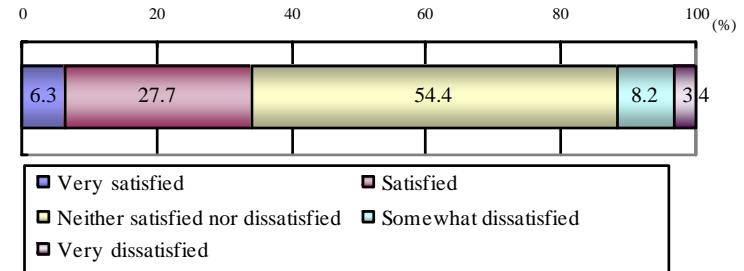


Figure 4: Users' intent to continue using the services

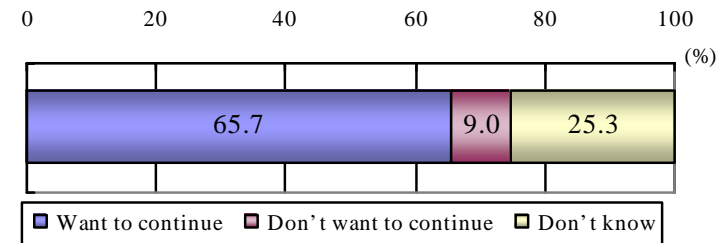
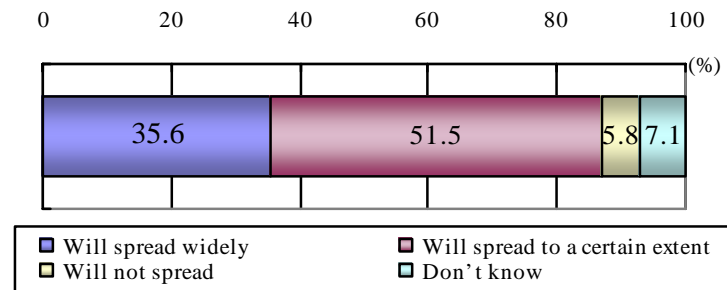


Figure 5: Prediction concerning spread of the services in the future



Source: "Survey on Trends Concerning a Ubiquitous Network Society" (Web survey)

4-2. Example Use of Ubiquitous Networks (Home Security Services)

- ◆ Users of home security services (services that detect and report any suspicious intruder or send video images of the inside of the house to users who are away by using network cameras, sensors, etc.) (176 persons) had a high degree of satisfaction and a high intent to continue using the services, and they believed that the services would spread in the future.

Figure 1: Example of service

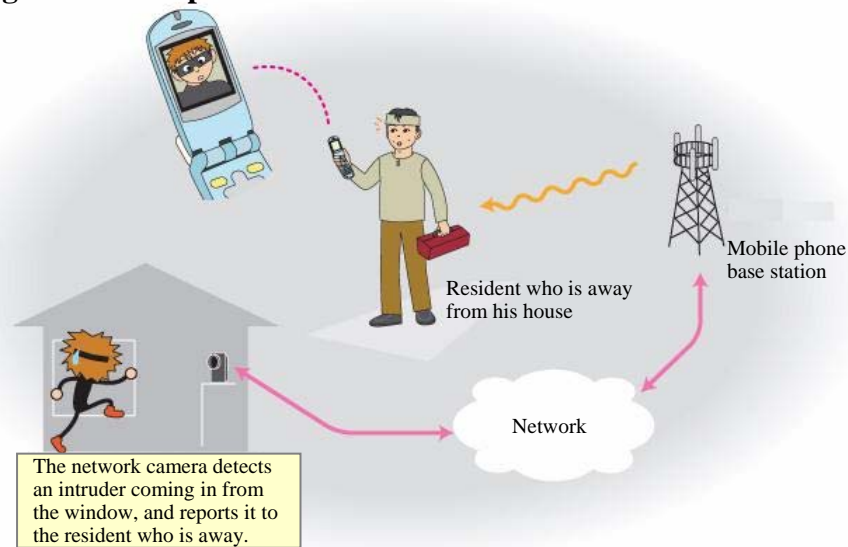


Figure 2: Benefits in using the services (multiple responses possible)

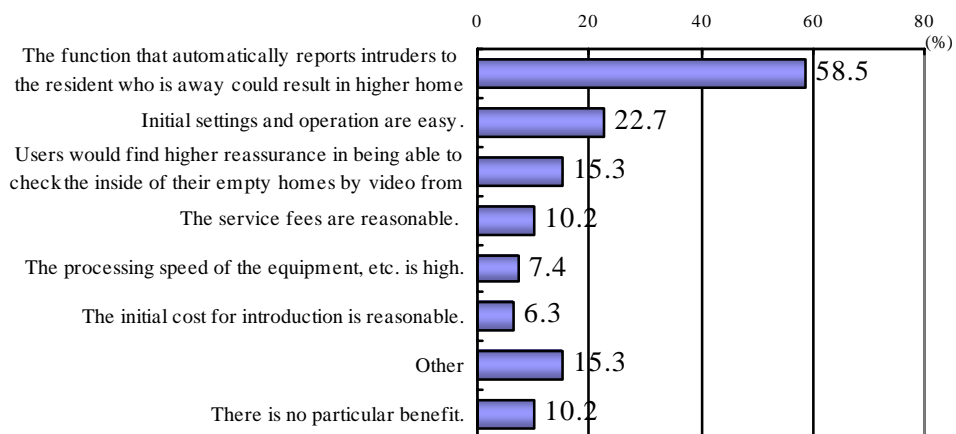


Figure 3: Degree of user satisfaction for the services

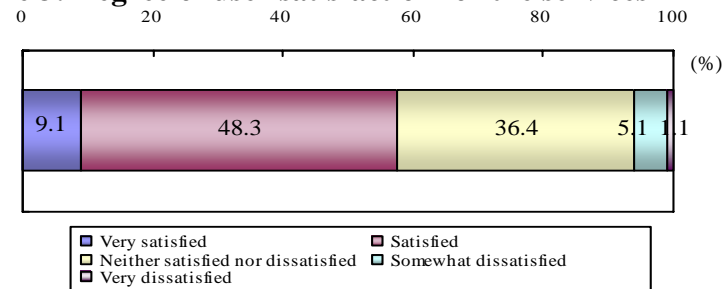


Figure 4: Users' intent to continue using the services

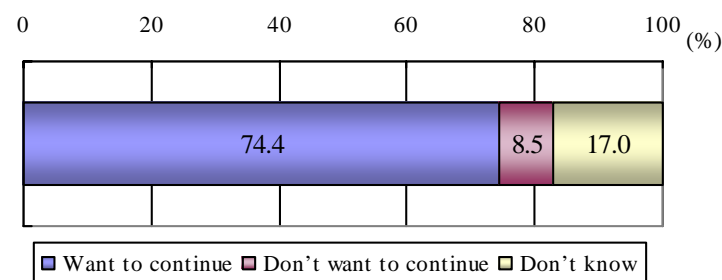
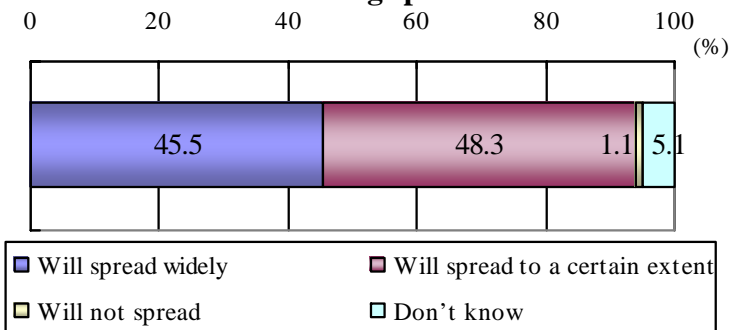


Figure 5: Awareness concerning spread of the services in future



4-3. Example Use of Ubiquitous Networks (Services using RFID Tags)

- ◆ People who have experienced using food traceability systems applying RFID tags (134 persons) had a high opinion of the services, a high degree of satisfaction, and a high intent to continue using the services, and they believed that the services would spread in the future. Meanwhile, 24.6% of the users agreed with the statement “I want to buy food for which the production/distribution information can be checked even for a slightly higher price,” and 20.9% disagreed.

Figure 1: Example of service

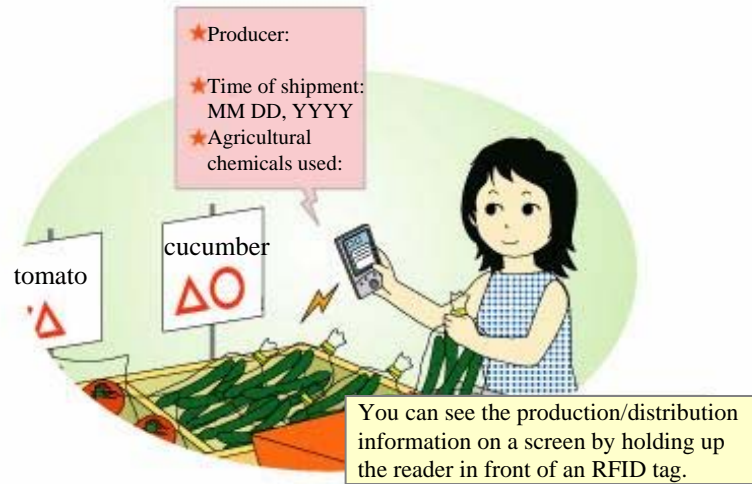


Figure 2: User evaluation of the services

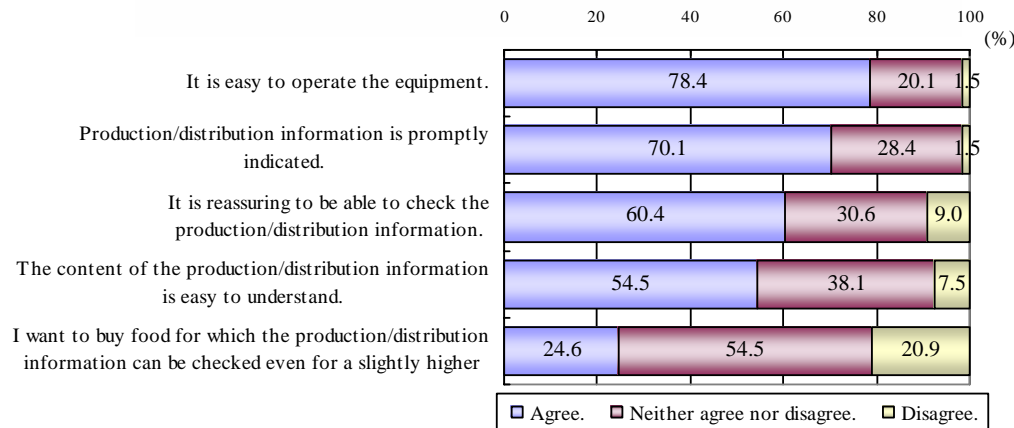


Figure 3: Degree of user satisfaction for the services

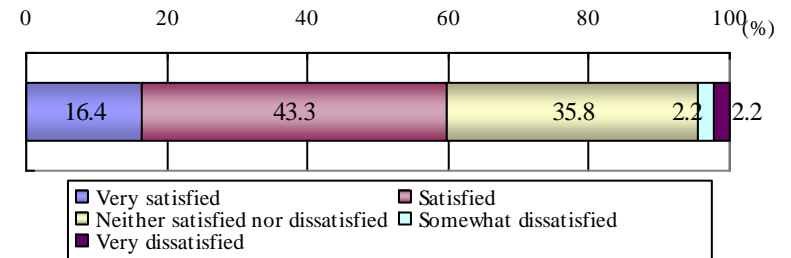


Figure 4: Users' intent to continue using the services

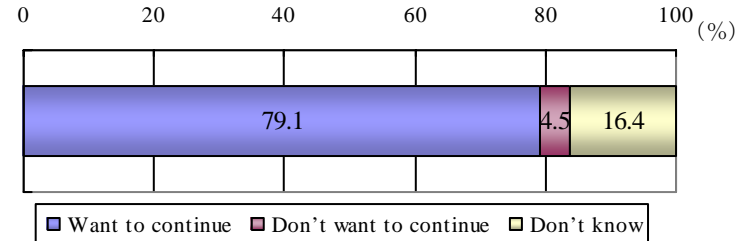
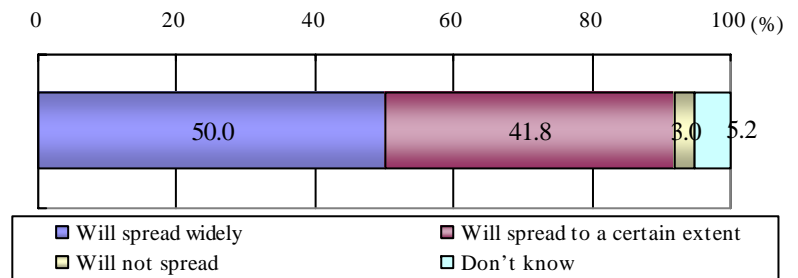


Figure 5: Prediction concerning spread of the services in the future



Source: “Survey on Trends Concerning a Ubiquitous Network Society” (Web survey)

4-4. Example Use of Ubiquitous Networks (Utilization of RFID Tags for Safety of School Children)

◆ The Kinki Bureau of Telecommunications of the Ministry of Internal Affairs and Communications (MIC), implemented a demonstration test for a system that records the school arrival and departure times by RFID tags, notifies parents of this information by e-mail, etc. under the cooperation of an elementary school in Wakayama Prefecture (October 25 - November 5, 2004). In the questionnaire survey conducted to the participants after the test, most of the respondents indicated that they felt more reassured throughout the program.

Figure 1: Outline of the demonstration test

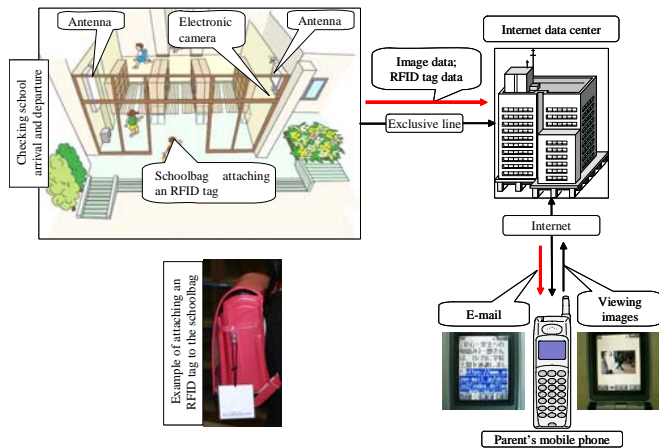


Figure 3: Overall impression of the program

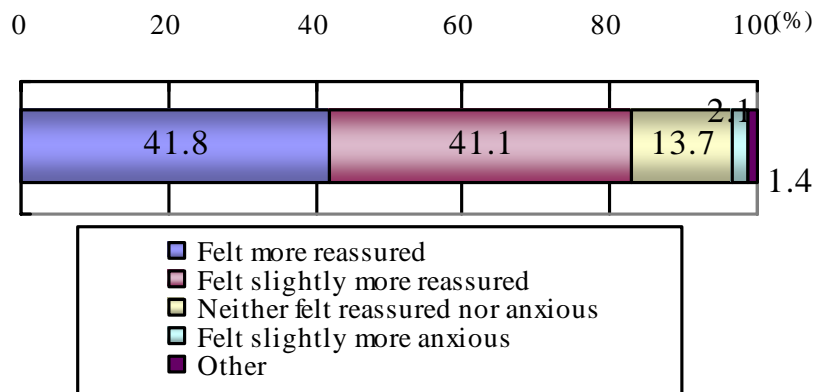


Figure 2: Frequency of checking the school arrival and departure notification

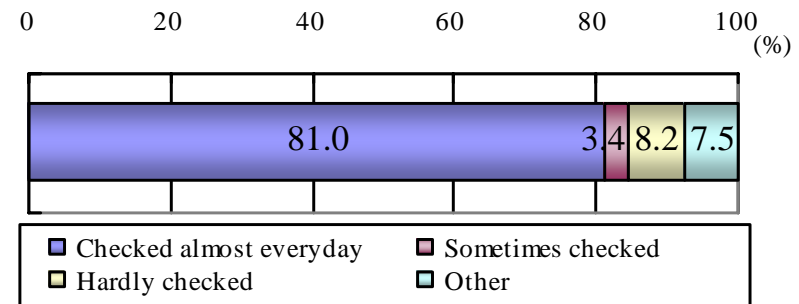
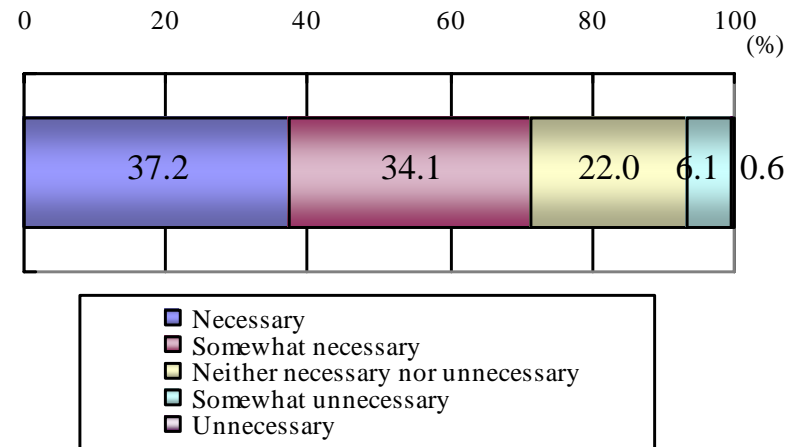


Figure 4: Future need for the program



Source: Kinki Bureau of Telecommunications, MIC, "Study Group on Utilization of RFID Tags in the Public Sector" (March 2005)

4-5. Example Use of Ubiquitous Networks (Utilization of GPS for Vehicle Control)

- ◆ A petroleum-products company established a system applying the positioning function of GPS mobile phones in order to deal with gas stations' inquiries on the time of arrival of tank lorries more efficiently and to reply to their inquiries more quickly. After introducing this system, the time required for dealing with an inquiry was shortened from about 15-20 minutes to 3-4 minutes.

Figure 1: Operational flow before the introduction of the system

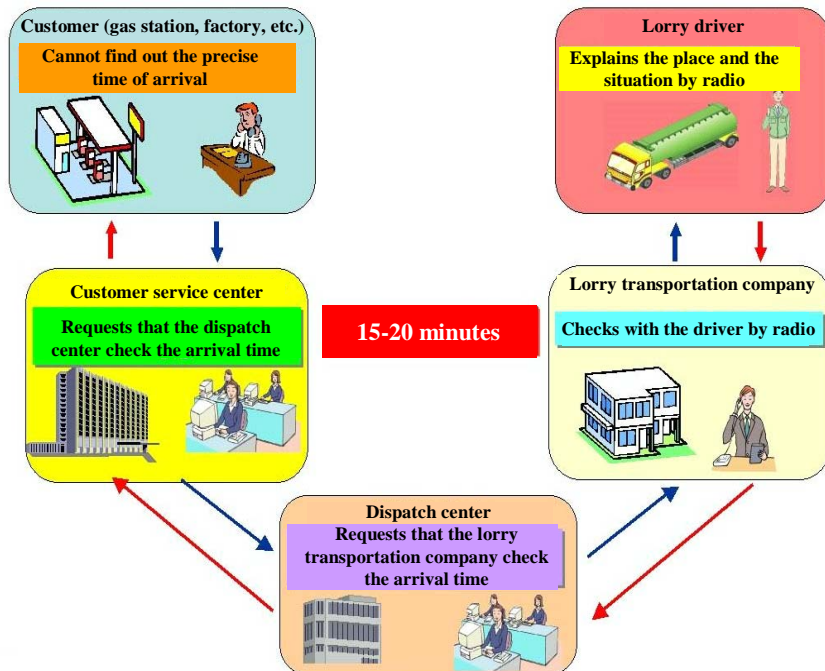
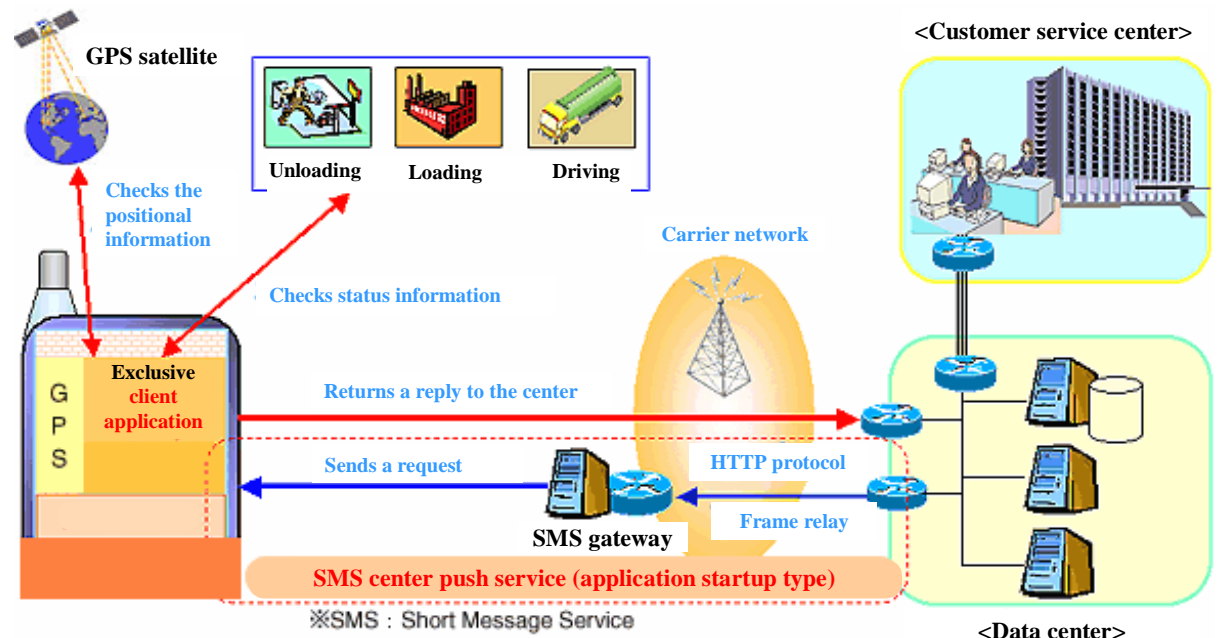


Figure 2: System outline

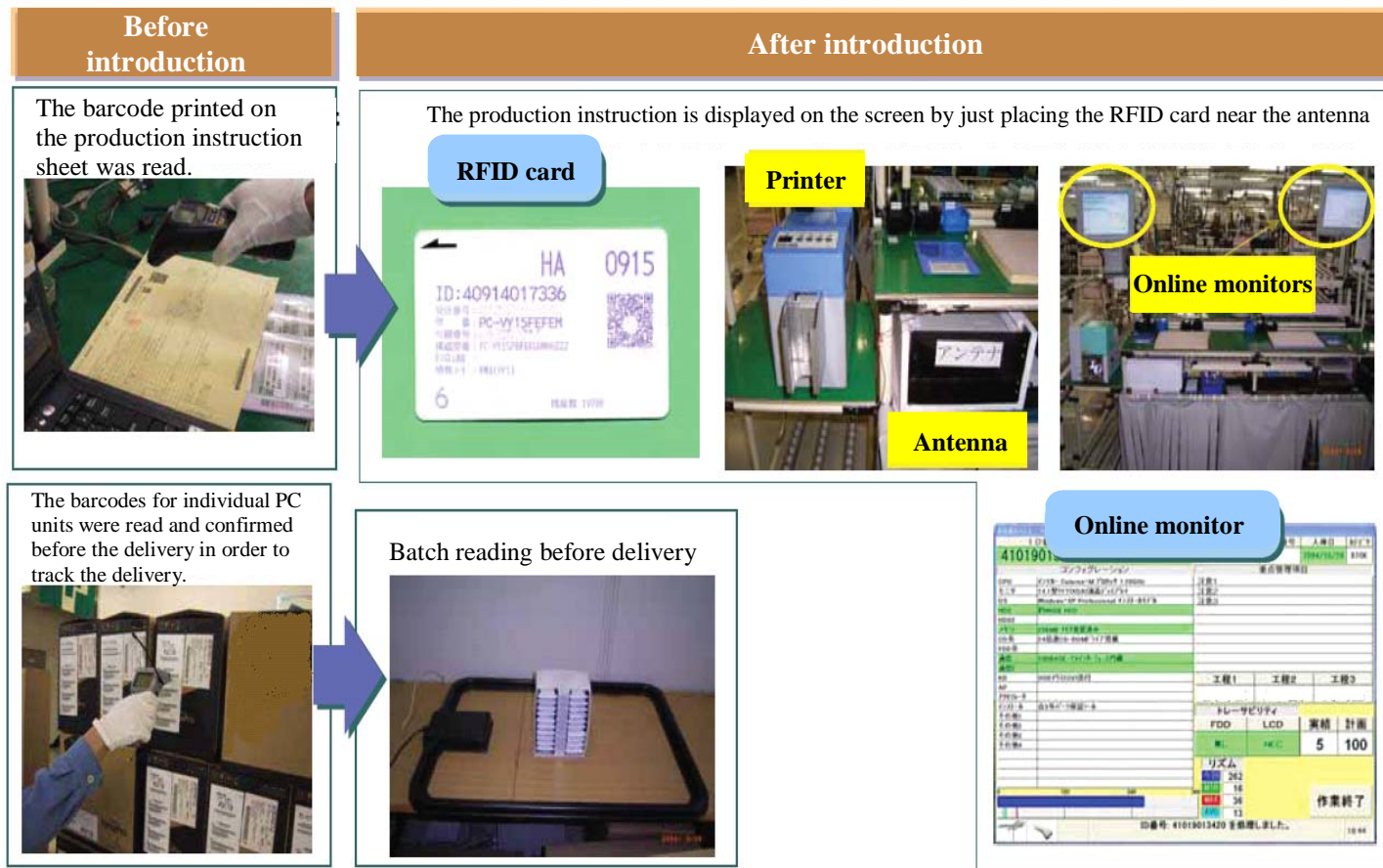


Source: The company's document.

4-6. Example Use of Ubiquitous Networks (Utilization of Contactless Smart Cards for Production Management)

- ◆ A PC manufacturing factory shifted from a system using barcode-printed production instruction sheets on paper (one instruction sheet per PC unit) to a system using contactless smart cards in order to facilitate confirmation of the production instructions and to eliminate the barcode reading process, and consequently managed to improve productivity by more than 10%.

Figure



Source: The company's document.

5. Japan's Future Challenges and Solutions Using Ubiquitous Networks

- ◆ The “Policy Roundtable for Realizing a Ubiquitous Network Society” conducted a consumer questionnaire survey concerning the important theme that Japanese society should address toward 2010. As a result, the most-mentioned theme was “achieving a safe and secure living environment,” indicated by nearly 70% of the respondents.
- ◆ In addition, more specific challenges were investigated, and examples of solutions using ubiquitous networks were identified through consumer group interviews. While these solution examples vary in the extent of progress, ranging from those in the concept phase or the demonstration test phase to those in the pilot project phase, use of them is expected to become widespread in society in the not-so-distant future through efforts to establish the respective business models and satisfy other preconditions.

Figure 1: Important theme that Japanese society should address toward 2010 (multiple responses possible)

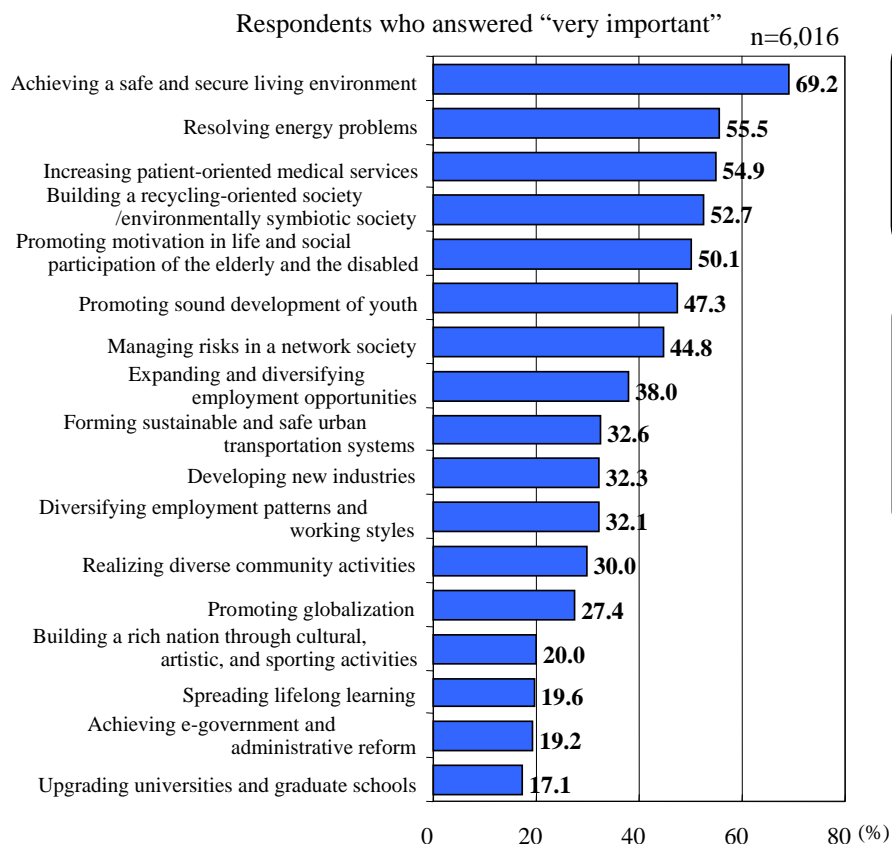
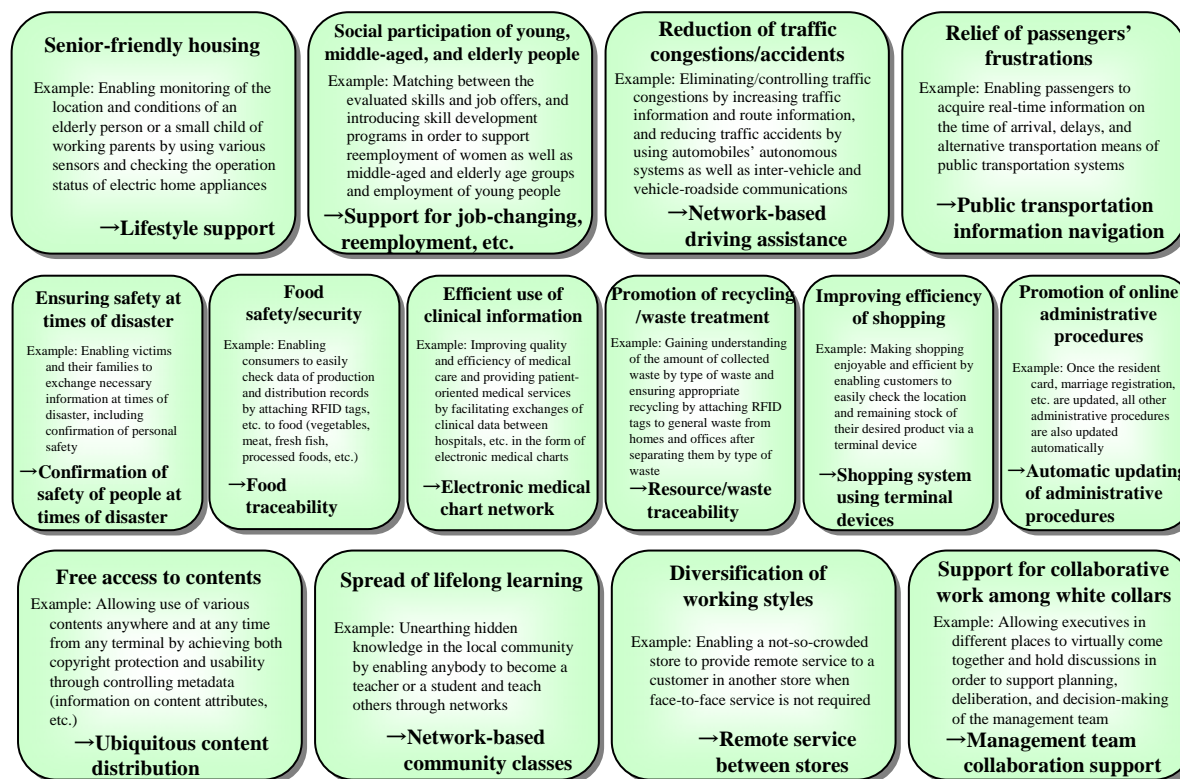


Figure 2: Specific future challenges and solution examples using ubiquitous networks



Produced from the final report of “Policy Roundtable for Realizing a Ubiquitous Network Society.”

II. ICT Use by Individuals

1-1 Progress in ICT Use (Use of the Internet/Broadband)

- ◆ The number of Internet users is 79.48 million (an increase by 2.8% over the previous year), and the penetration rate is 62.3%. Compared to the end of the year preceding the launch of the e-Japan strategy (2000), the number of Internet users increased by about 32 million, and the penetration rate by 25.2 points.
- ◆ The percentage of broadband households to the total Internet households rapidly expanded to 62.0%, increasing by 55.2 points from the end of 2000.

Figure 1: Number of Internet users and penetration rate

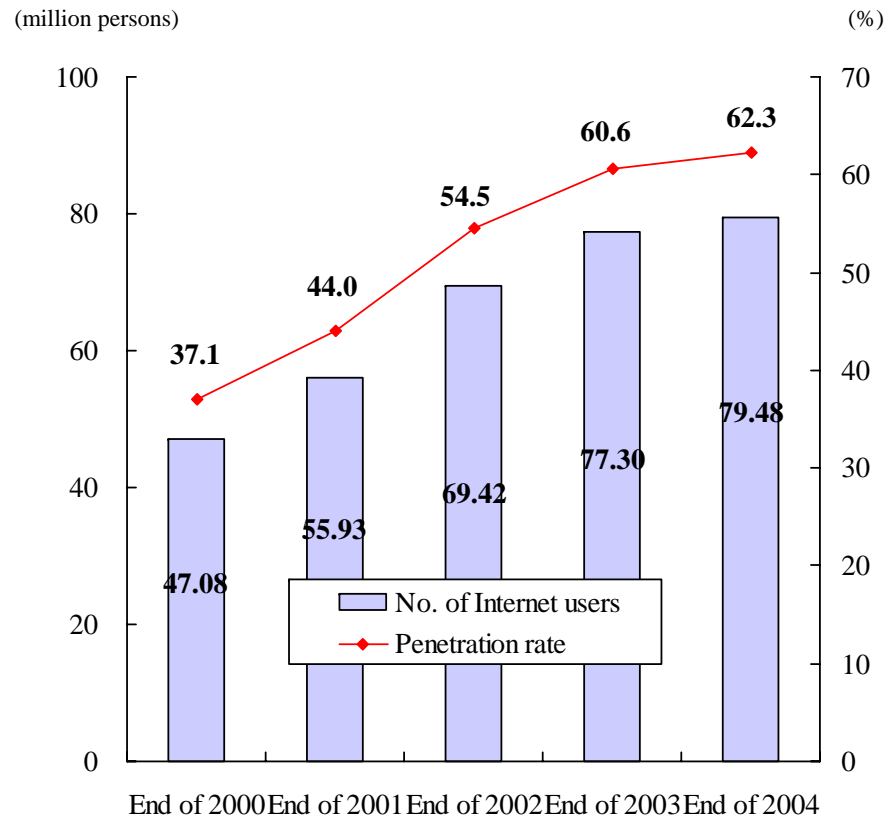
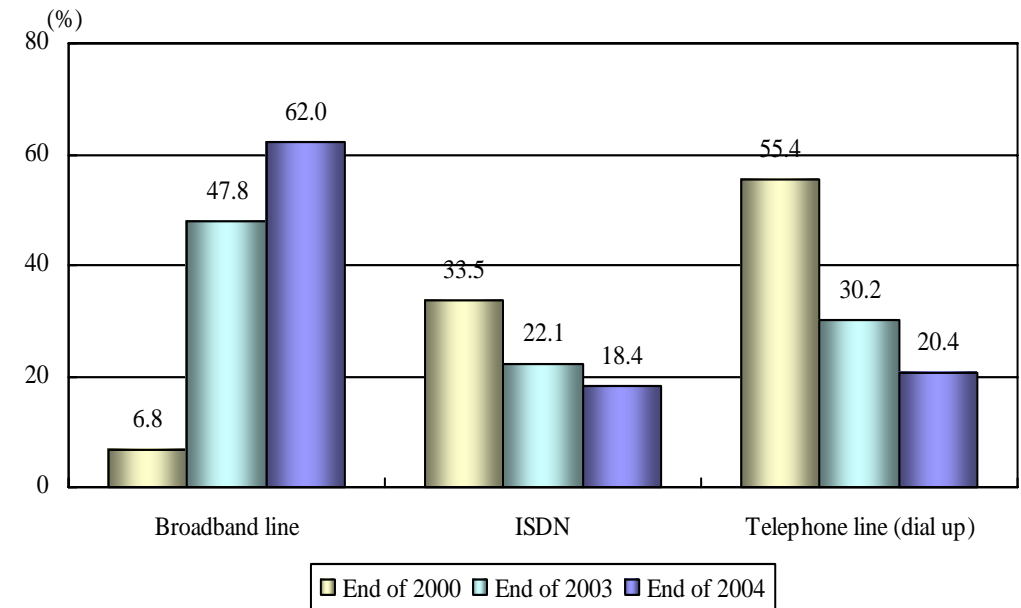


Figure 2: Internet access method at home



* Broadband line: FTTH (from “End of 2001”), DSL, cable Internet, wireless (FWA, etc.), and third-generation mobile phones (only for “End of 2004”)

* The values for each year may not add up to 100 because multiple answers were allowed and other options were available.

Source: “Communications Usage Trend Survey”

1-2 Progress in ICT Use (Degree of Satisfaction in the Internet; Progress of ICT Use in Main Fields)

- ◆ The degree of satisfaction was generally high for PC Internet, but the degree of dissatisfaction was comparatively high for mobile phone (including mobile phones, PHS, and PDA) Internet.
- ◆ Users believed that ICT use made progress in the fields of “information gathering,” “shopping,” “communication,” “amusement/contents,” and “financial transactions,” but not so much in the fields of “medical care,” “administration,” and “education.”

Figure 1: Degree of satisfaction in the PC/mobile phone Internet

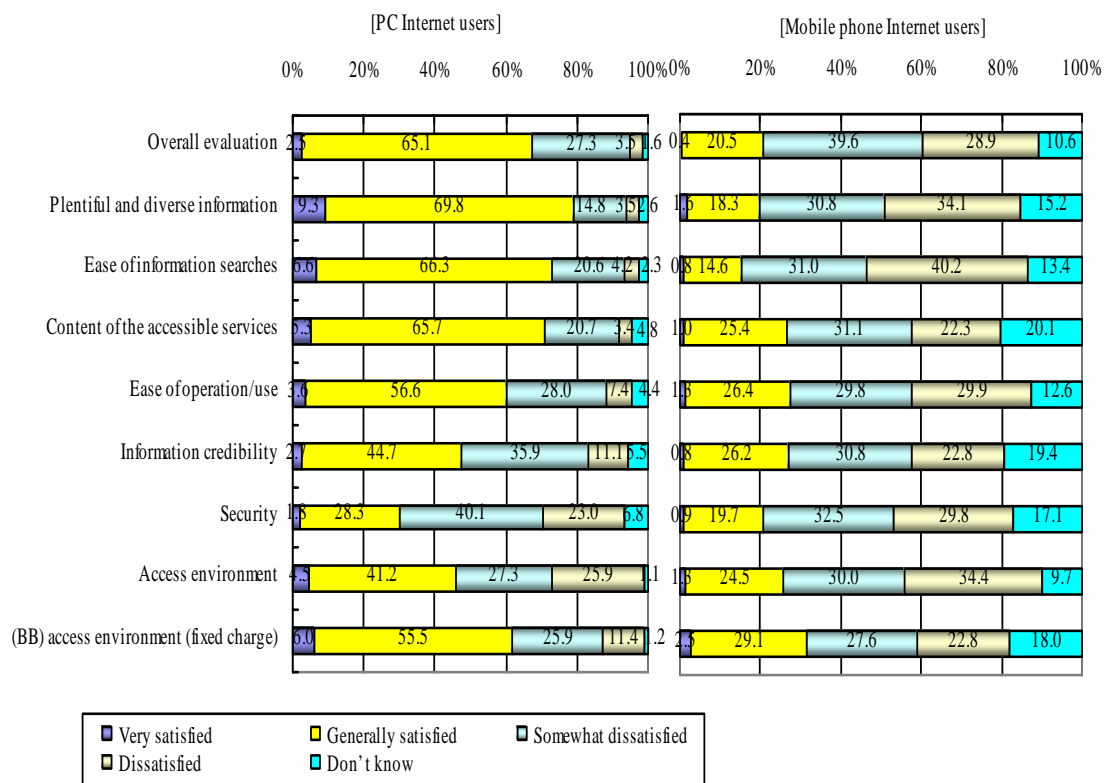
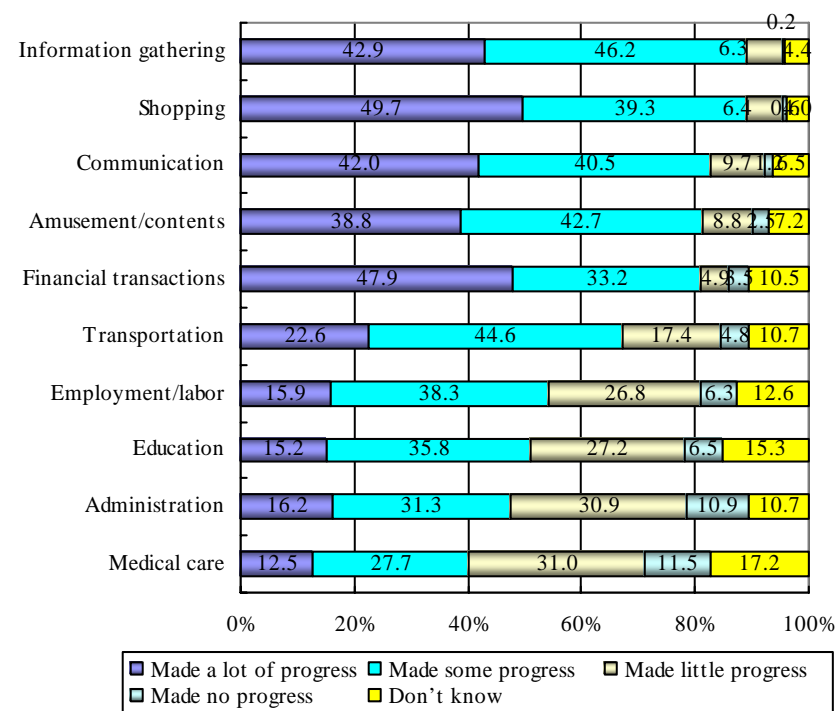


Figure 2: Progress of ICT use in main fields

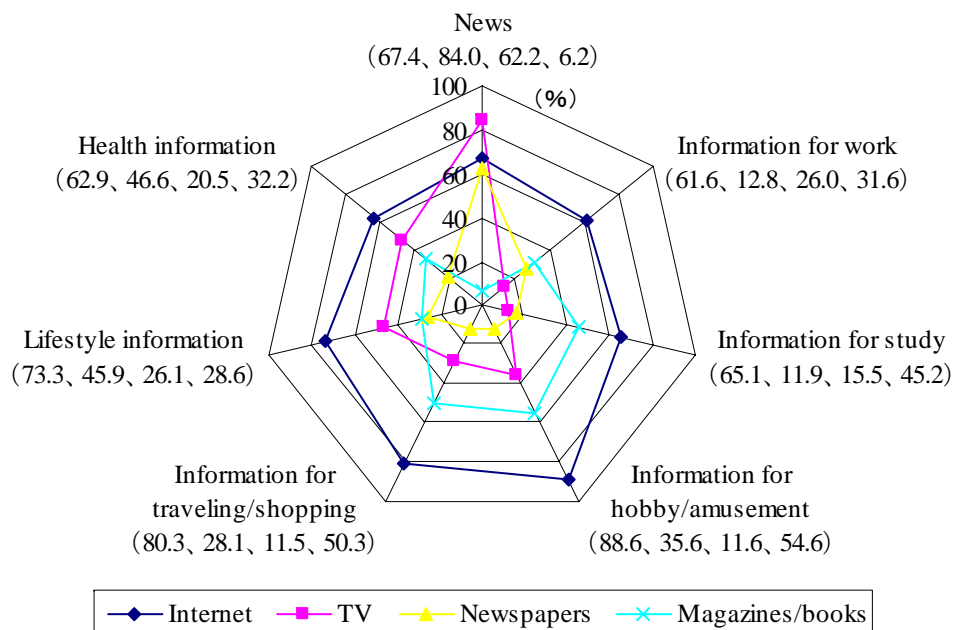


Source: “Survey on Networks and People’s Lives” (Web Survey)

2-1 Changes in People's Lives (Changes in Information Gathering Means and Communication Means)

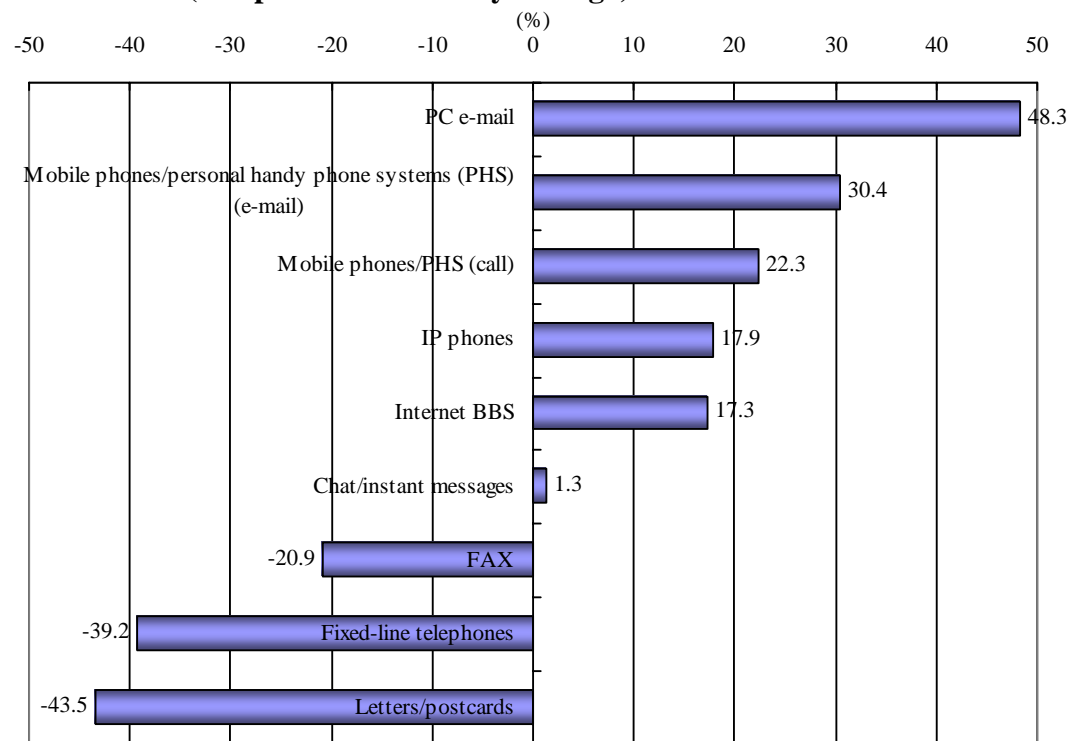
- ◆ The Internet is used for gathering information in wide-ranging fields. It is an indispensable medium for daily life.
- ◆ The means of communication has been shifting from conventional “fixed-line telephones” to “mobile phones” and “IP phones,” and from “letters/postcards” to “e-mail.”

Figure 1: Purpose for gathering information by type of information media (multiple responses possible)



* The values in the brackets indicate those for the Internet, TV, newspapers, and magazines/books, respectively.

Figure 2: Changes in the means of communication (comparison with two years ago)



* The figure indicates the percentage of users who answered “increased” by deducting the percentage of users who answered “decreased” for each item.

Source: “Survey on Networks and People's Lives” (Web Survey)

2-2 Changes in People's Lives (Changes in Activity Patterns and Spending)

- ◆ In line with the use of the Internet, the time for sleep, watching TV, and reading magazines, as well as the frequency of going out decreased, while the frequency of communicating with family and friends increased in terms of activity patterns (length of time and frequency). However, the time for talking with family and friends in person decreased.
- ◆ In terms of expenditure, spending on magazines, video games, and music CDs, etc. decreased. As for consumption behavior, most people gathered product information on the Internet. The number of people who said the overall expenditure for shopping increased due to online shopping exceeded the number of those who said the overall expenditure decreased.

Figure 1: Changes in activity patterns (length of time and frequency) in line with the use of the Internet (compared to two years ago)

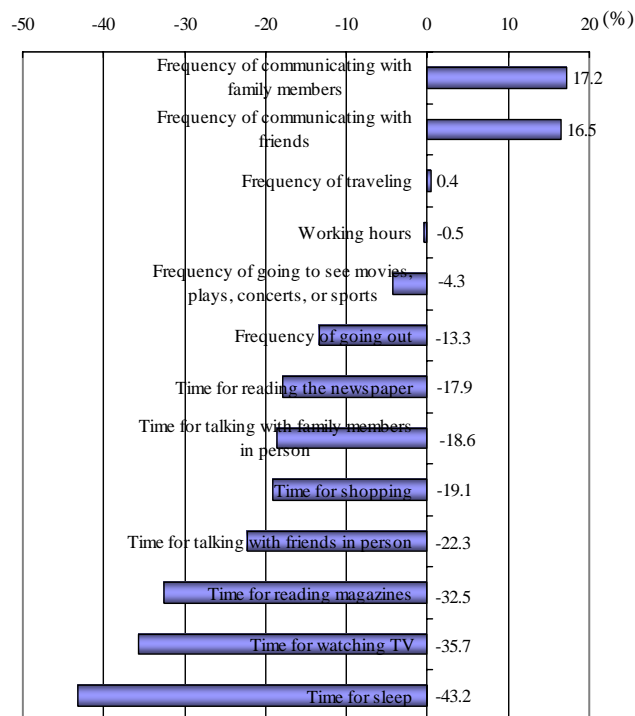


Figure 2: Changes in spending in line with the use of the Internet (compared to two years ago)

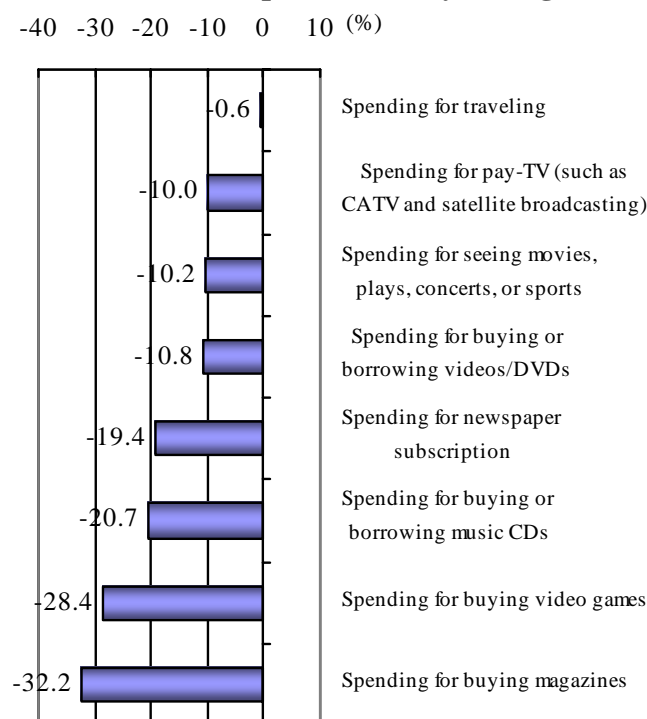
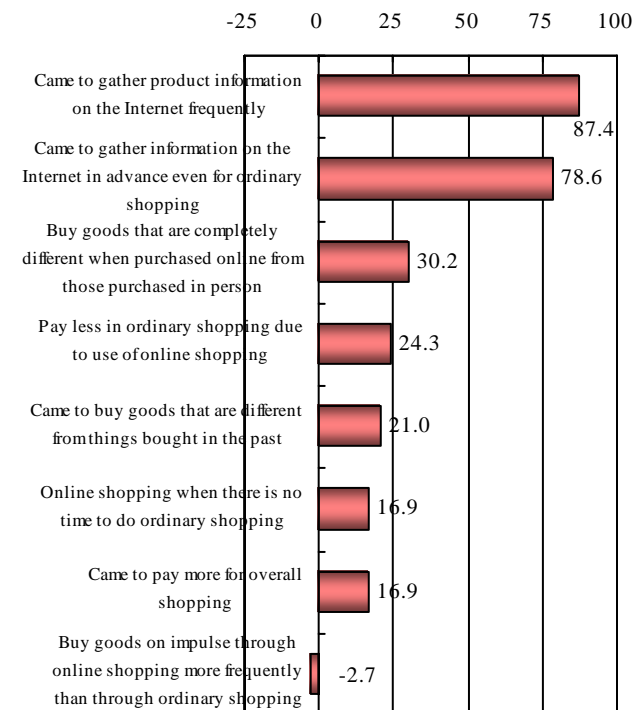


Figure 3: Changes in consumption behavior in line with the use of the Internet (%)



* The figures indicate the percentage of users who answered "increased" (or "applies") by deducting the percentage of users who answered "decreased" (or "on the contrary") for each item.

Source: "Survey on Networks and People's Lives" (Web Survey)

2-3 Changes in People's Lives (Utility and Social Influences of the Internet)

- ◆ Most people indicated that the Internet had positive effects such as “proved useful in daily life” and “broadened and enhanced my interests.”
- ◆ People were both aware of the Internet's positive and negative impacts on society. In general, they considered the Internet to have a favorable impact on society.

Figure 1: Utility of the Internet

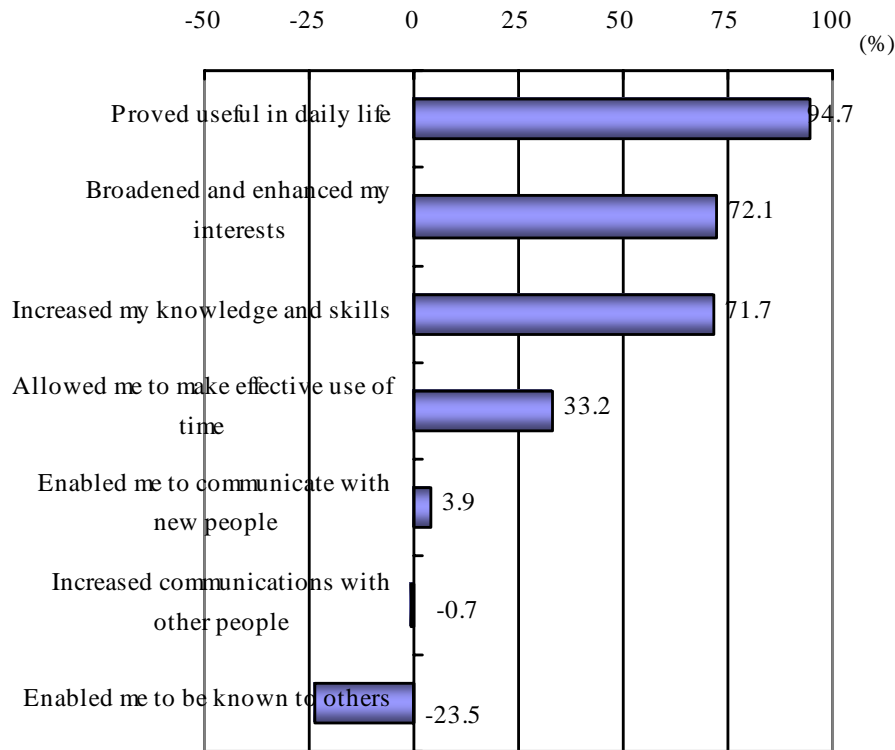
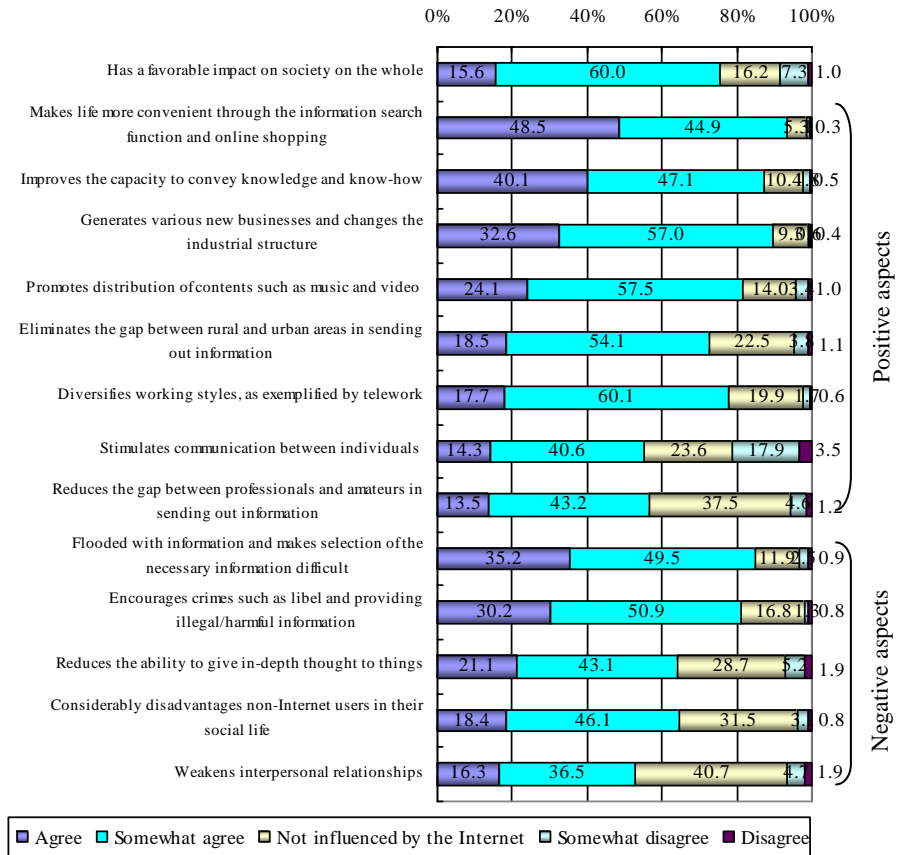


Figure 2: Social influences of the Internet



* The figures indicate the percentage of users who answered “applies” by deducting the percentage of users who answered “does not apply” for each item.

Source: “Survey on Networks and People's Lives” (Web Survey)

3-1 Stimulation of Communication (E-mail, etc.)

- ◆ While the utilization rate of PC e-mail is commonly high in Japan, the United States, and the Republic of Korea, that for mobile phone e-mail is far higher in Japan than in the other two countries.
- ◆ The utilization rate of communication tools other than e-mail is generally high in the Republic of Korea with the percentage of blog owners reaching 37.3%.

Figure 1: Utilization rate of e-mail

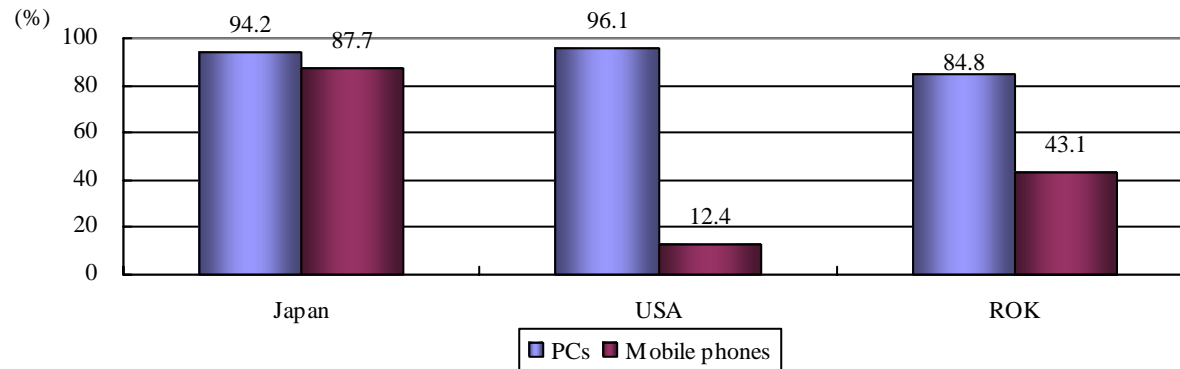
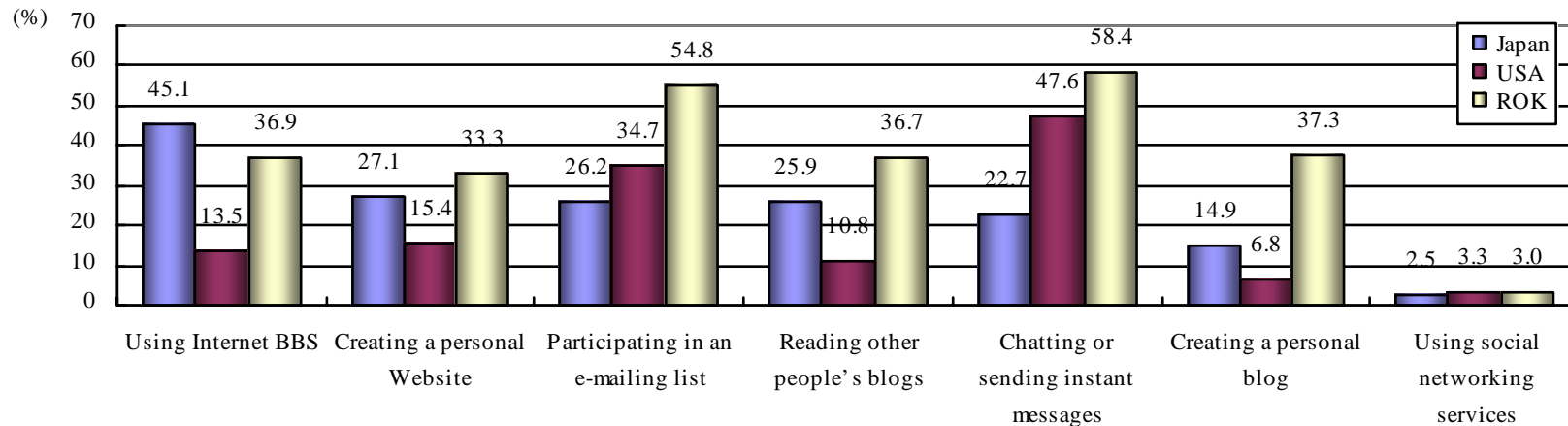


Figure 2: Utilization rate of communication tools (multiple responses possible)



Source: "Survey on Networks and People's Lives" (Web Survey)

3-2 Stimulation of Communication (Blogs)

◆ Blogs have rapidly come into wide use in the past year. The biggest reason for creating a blog was “to present personal experiences and daily life in writing.” Correspondingly, an overwhelmingly high percentage of blogs contain “a diary of daily life.” The blog users had a high degree of satisfaction and a high intent to continue using blogs and believed that blogs would spread throughout society in the future.

Figure 1: Time that blog was created

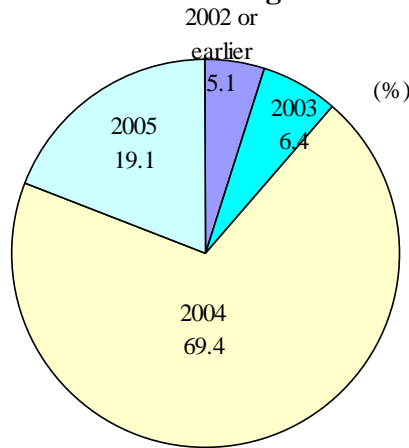


Figure 2: Reason for creating a blog

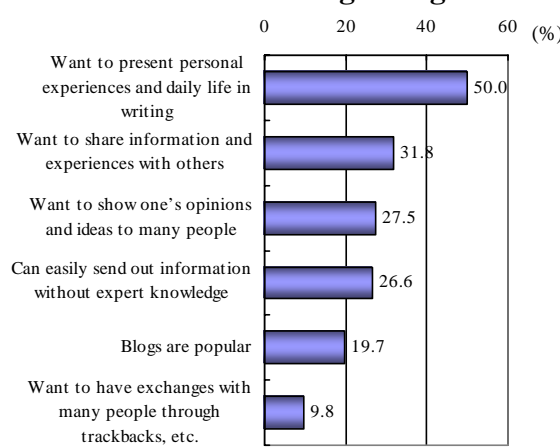


Figure 3: Content

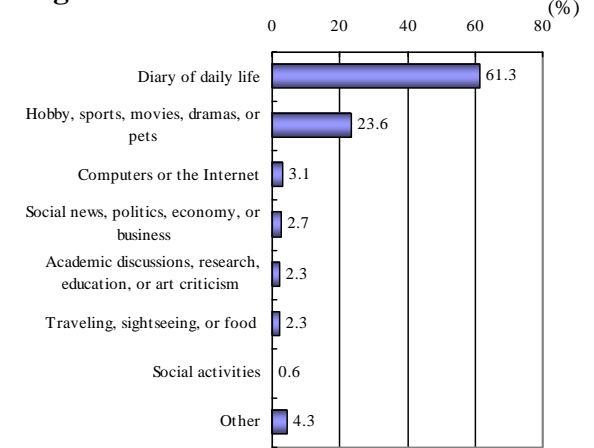


Figure 4: Degree of satisfaction

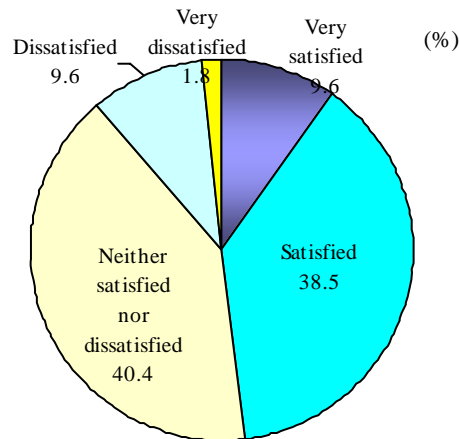


Figure 5: Intent to continue using blogs

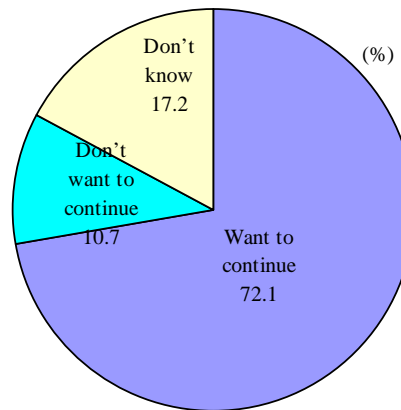
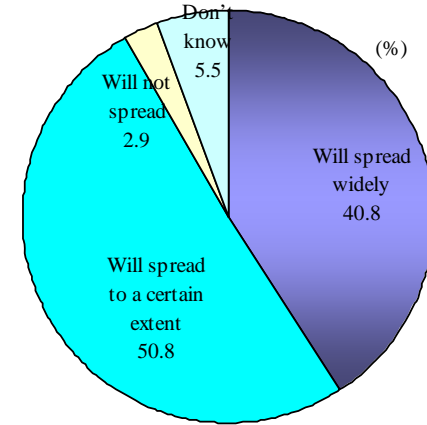


Figure 6: Spread of blogs in future



Note: Web questionnaire survey on blog owners (488 persons)

Source: “Survey on Trends Concerning a Ubiquitous Society” (Web Survey)

4-1 Online Shopping (Status of Online Shopping)

- ◆ Online shopping has penetrated society. Compared to two years ago, the total amount of transactions, the frequency of use, and the degree of satisfaction have all increased. While the degree of satisfaction is high for PC online shopping, the degree is low for mobile phone online shopping, with the exception of the payment method.

Figure 1: Utilization rate of online shopping

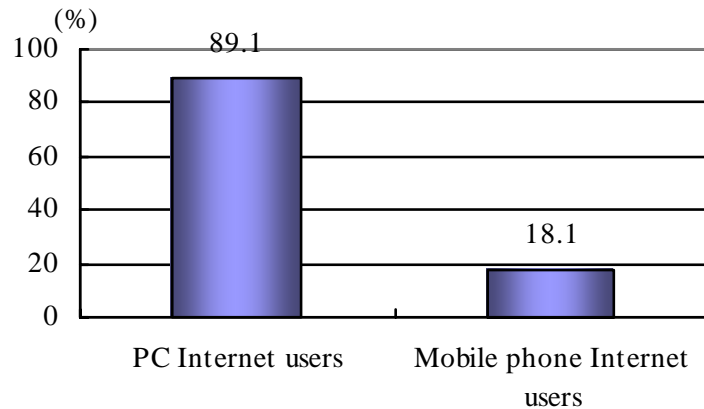


Figure 2: Changes in the use of online shopping (compared to two years ago)

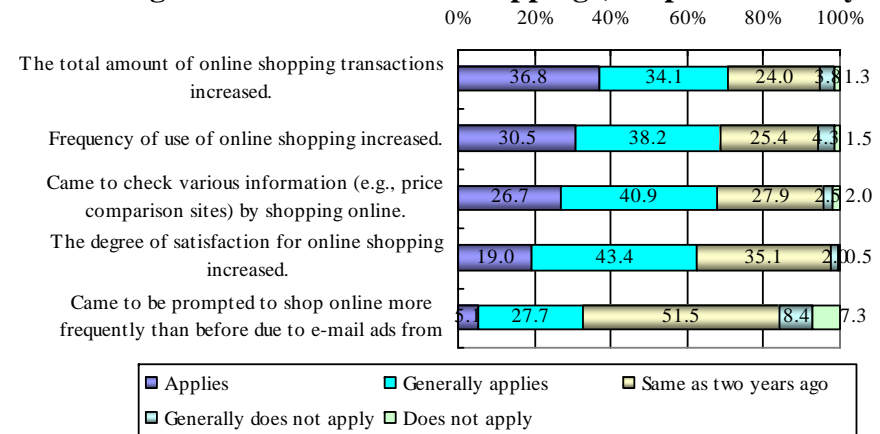
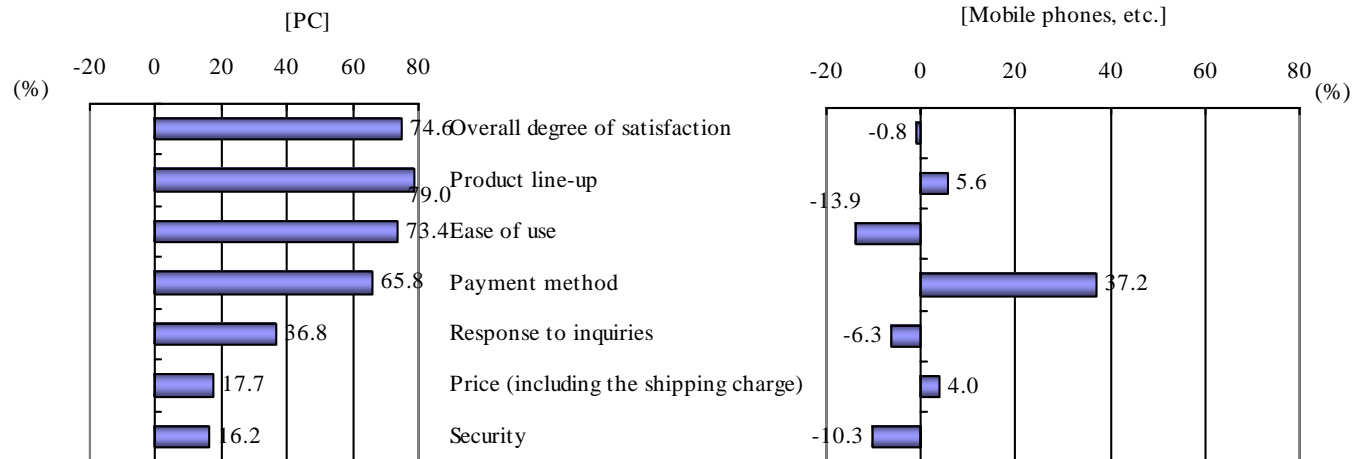


Figure 3: Degree of satisfaction of online shoppers



* The figure indicates the percentage of users who answered “satisfied” by deducting the percentage of users who answered “dissatisfied” for each item.

Source: “Survey on Networks and People’s Lives” (Web Survey)

4-2 Online Shopping (Comparison Between PCs and Mobile Phones)

- ◆ The characteristics of online shopping via mobile phones as compared to the PC Internet are: selling in conjunction with magazines, etc.; purchasing without making comparisons to similar products or other stores; and purchasing while en route. In addition, purchases are lead by young females in their teens to those in their 30s.

Figure 1: Source of product information

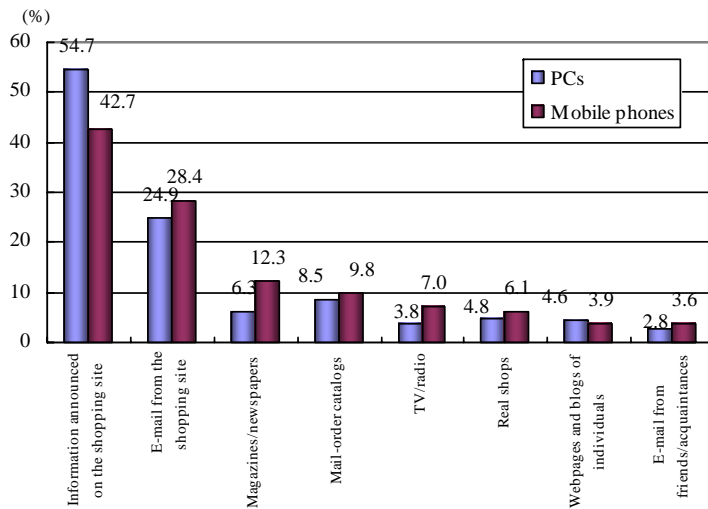


Figure 3: Place of order (multiple responses possible)

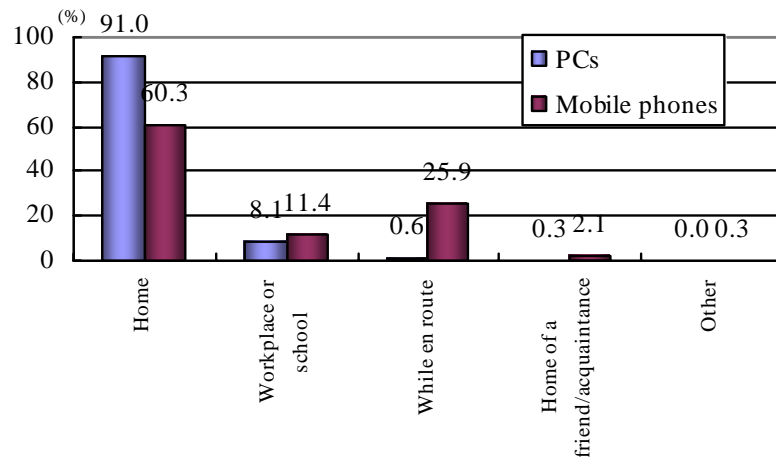


Figure 2: Comparison with similar products or other stores upon purchase

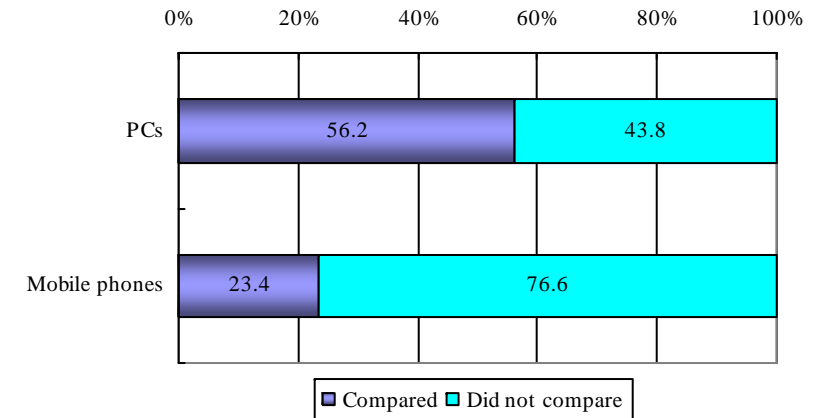
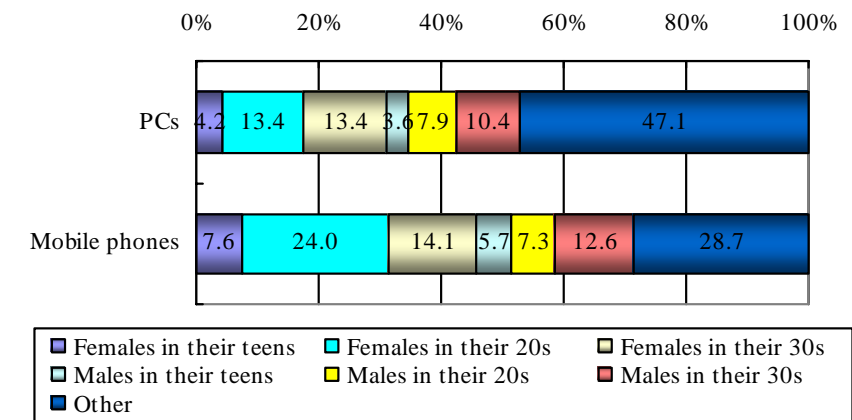


Figure 4: Generation/gender structure of online shoppers

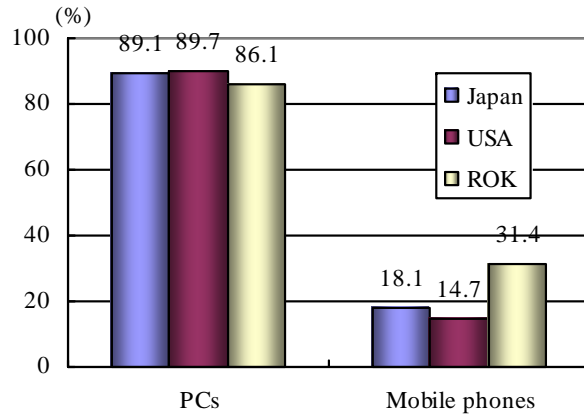


Source: "Survey on Networks and People's Lives" (Web Survey)

4-3 Online Shopping (Comparison Among Japan, the United States, and the Republic of Korea)

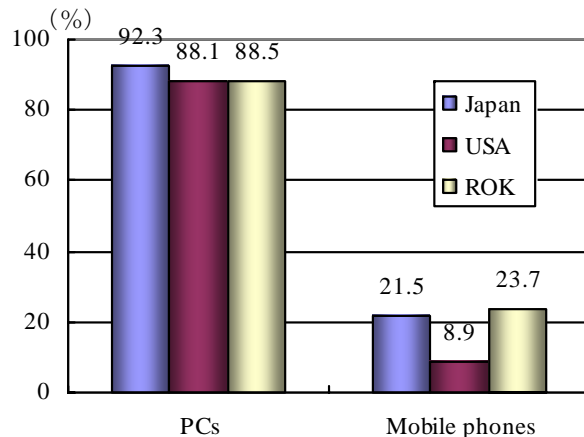
◆ Online shopping via PCs is also very common in both the United States and the Republic of Korea. On the other hand, the utilization rate of online shopping via mobile phones is still low in these countries. As far as the payment method for online shopping goes, the United States is characterized by more frequent use of “credit cards” than the other two countries, Japan by the frequent use of “cash on delivery,” and the Republic of Korea by the frequent use of “charging by the telecommunications carrier, etc.”

Figure 1: Utilization rate of online shopping



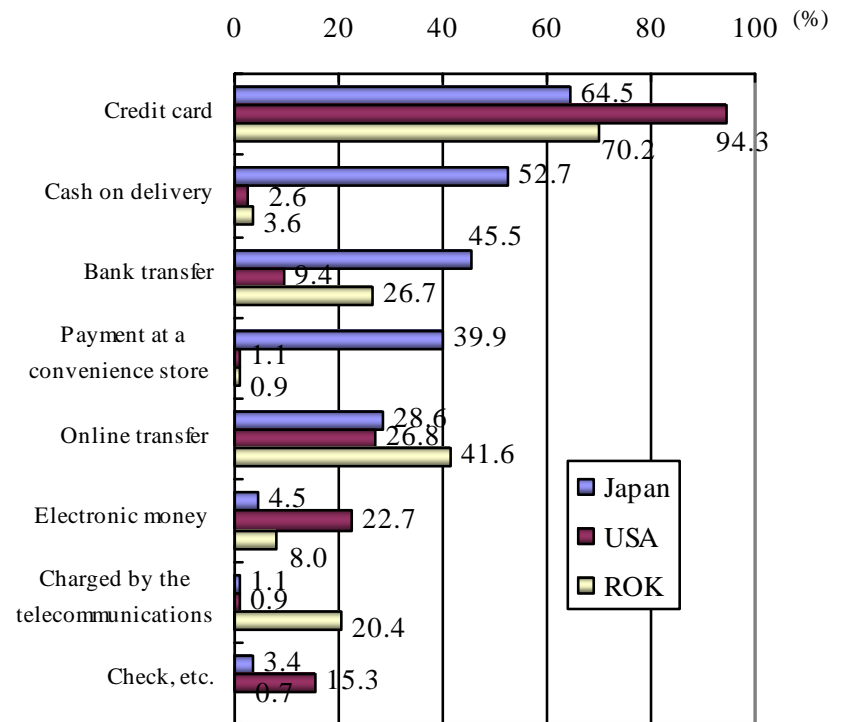
* Percentage of PC/mobile phone online shoppers to the total PC/mobile phone Internet users

Figure 3 : Intent of future use of online shopping



*Percentage of users who want to use PC/mobile phone online shopping services to the total PC/mobile phone Internet users

Figure 2: Payment method for online shopping (multiple responses possible)



Source: “Survey on Networks and People’s Lives” (Web Survey)

5-1 Contents (Overall Trend of the Contents Market)

- ◆ The overall contents market has hit the ceiling.
- ◆ The market for online contents that are distributed via PCs, mobile phones, etc. has expanded in recent years. The market size in 2003 was about 500 billion yen, increasing by about 200 billion yen in three years.

Figure 1: Transition in the overall market by type of contents

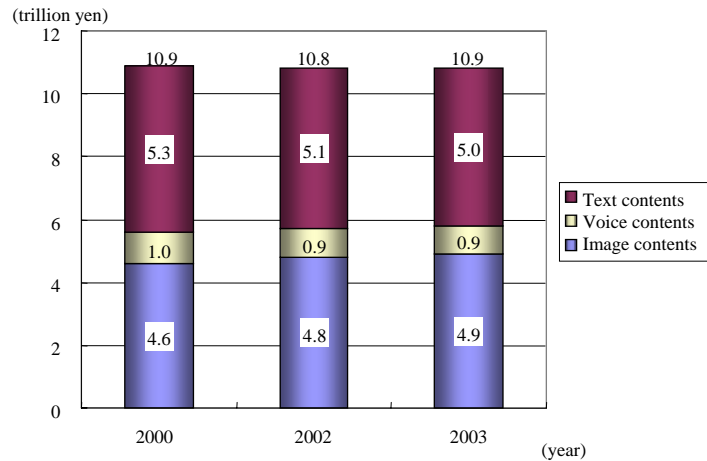
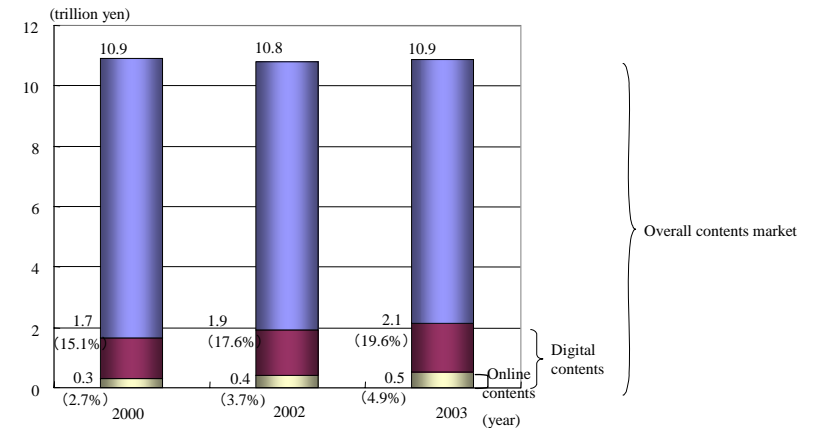
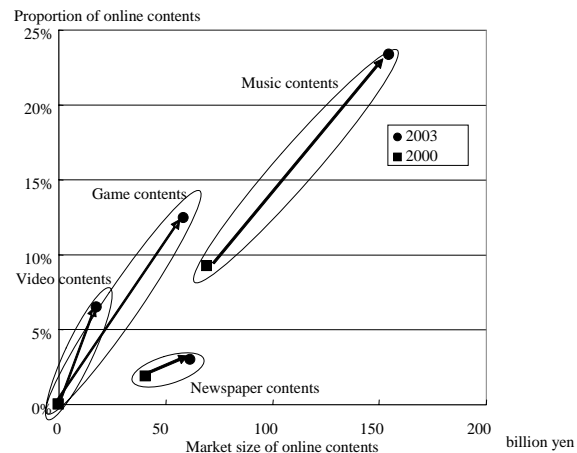


Figure 2: Proportion of the online contents market in the overall contents market



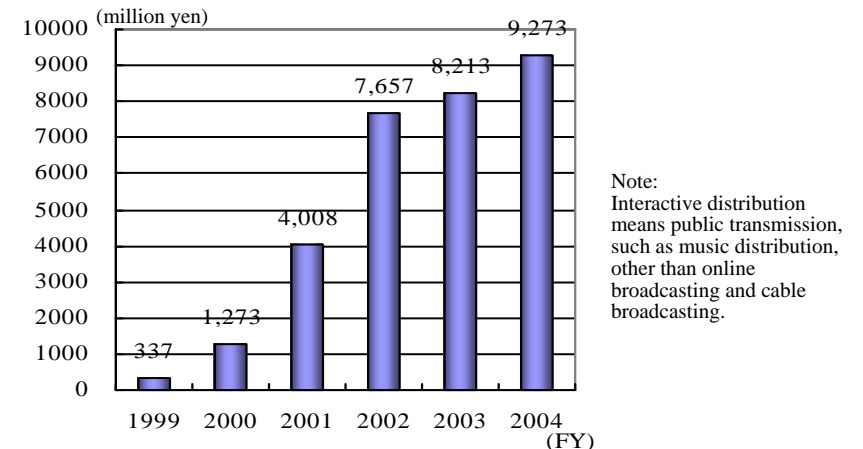
Note: Online contents are contents distributed via the Internet, mobile phones, online karaoke, and online databases.

Figure 3: Expansion of the online contents market



Source for Figures 1-3: "Research Concerning the Current State of Production and Distribution of Content (Media Software)"

Figure 4: Royalties related to interactive distributions collected by JASRAC



Note: Interactive distribution means public transmission, such as music distribution, other than online broadcasting and cable broadcasting.

Produced from the materials of the Japanese Society for Rights of Authors, Composers and Publishers (JASRAC)

5-2 Contents (Use of Internet Contents)

- ◆ The main Internet contents used are free contents. The intent for future use of paid contents is high for music, games, and moving images.

Figure 1: Status of use of contents (multiple responses possible)

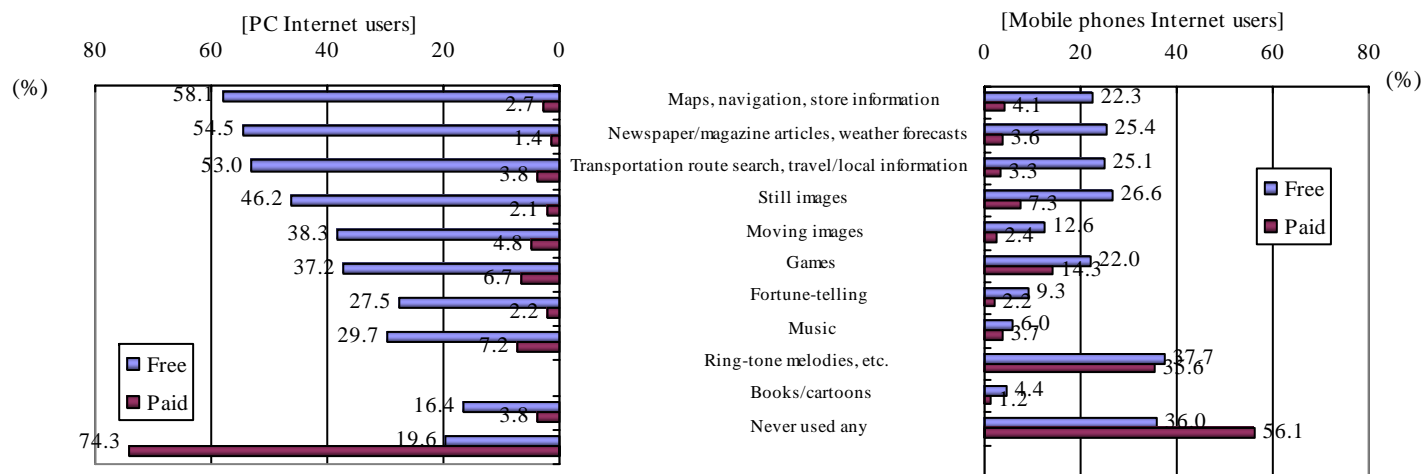
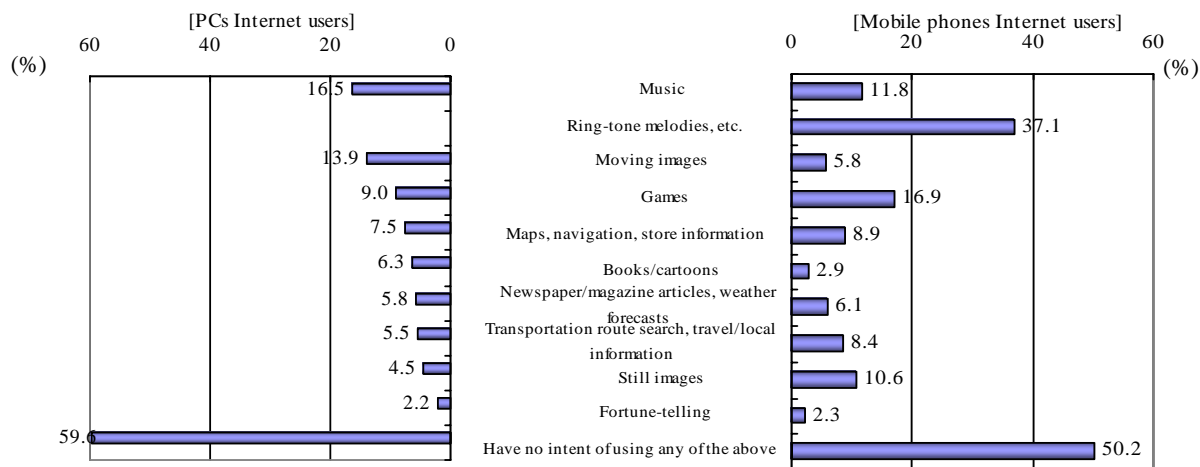


Figure 2: Intent for future use of paid Internet contents (multiple responses possible)



Source: "Survey on Networks and People's Lives" (Web Survey)

5-3 Contents (Comparison of Internet Contents Use in Japan, the United States, and the Republic of Korea)

- ◆ The utilization rate of paid contents is overwhelmingly high in the Republic of Korea. One of the reasons is that settlement of small amounts is simple and easy due to the diffusion of the system to have the fees charged by the mobile phone carriers.
- ◆ The copyright awareness in using contents is high in the United States, while the proportion of people who are aware was about the same as that of people who are not aware in Japan and the Republic of Korea. The number of users of P2P file sharing software was tremendously large in the Republic of Korea.

Figure 1: Status of use of paid contents (multiple responses possible)

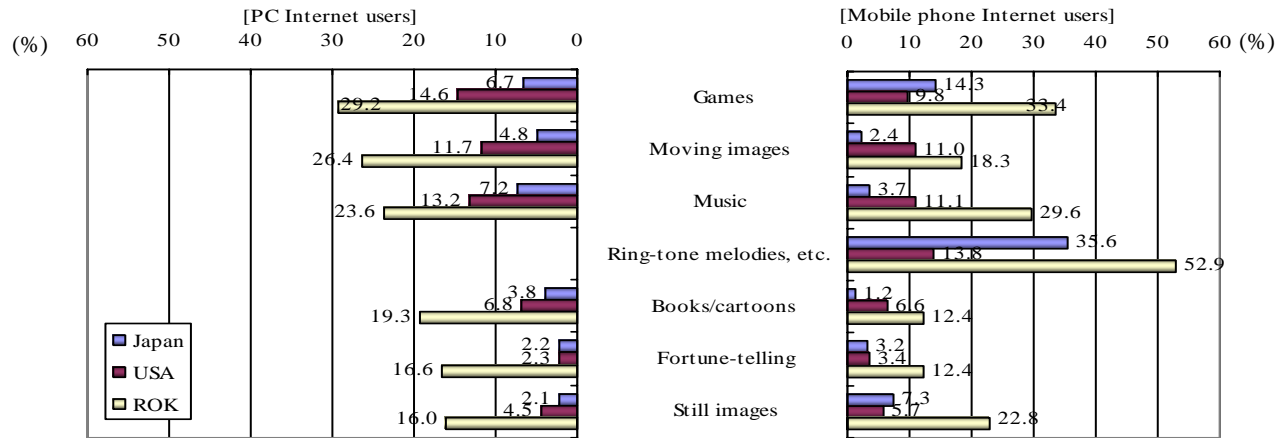


Figure 2: Copyright awareness upon using contents

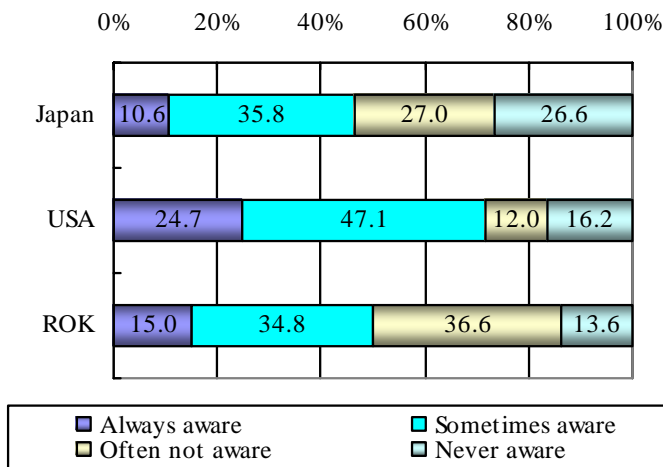
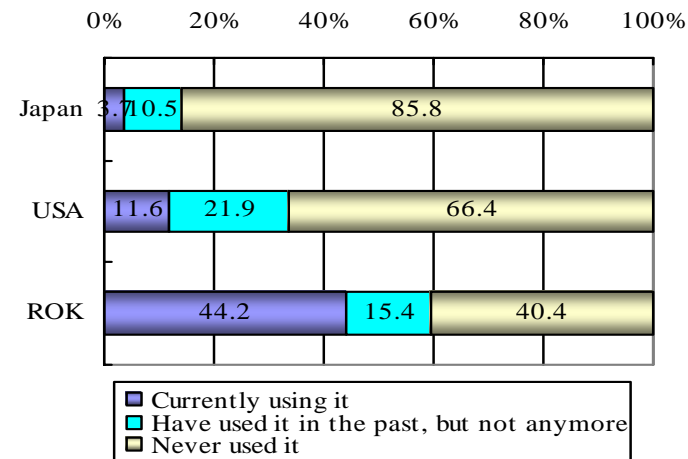


Figure 3: Status of use of P2P file sharing software



Source: "Survey on Networks and People's Lives" (Web Survey)

5-4 Contents (Music Distribution)

- ◆ The music distribution service started by a U.S. company, A, in April 2003 was an explosive hit due to the large collection of music available, the low price, and loose copyright restrictions. The cumulative total of the number of tunes sold exceeded 300 million in March 2005.
- ◆ In such a situation, many Japanese companies have also entered the music distribution market since 2004. Two major Japanese companies' monthly music sales in January 2005 were 510,000 tunes, which was lower than sales in the United States but more than doubled from five months ago (240,000 tunes were sold in August). The music distribution market is likely to expand in the future.

Figure 1: Status of music distribution services and CD shipment in the United States

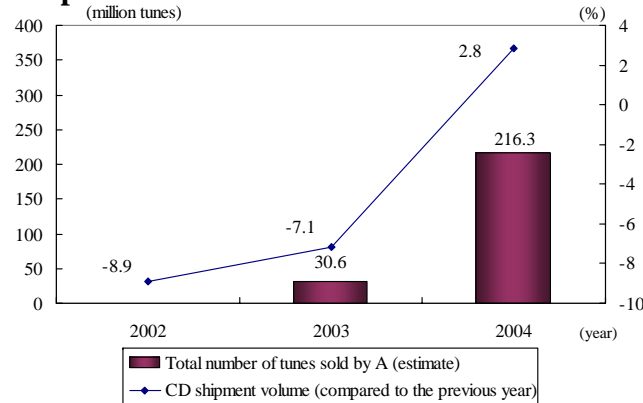


Figure 2: Status of major Japanese music distributors (15 companies) (as of March 2005)

Time of launch	1999 or earlier: 2 companies 2000-2003: 3 companies 2004 or after: 10 companies
Compression format	Only WMA: 9 companies Only ATRAC3: 3 companies Both WMA and ATRAC3: 2 companies Both WMA and MP3: 1 company
Price per tune	About 150 to 350 yen
Tune available	About 10,000 to 30,000 tunes: 3 companies About 40,000 to 70,000 tunes: 2 companies About 80,000 to 100,000 tunes: 7 companies About 150,000 tunes: 1 company
Writing on a CD-R	Prohibited: 5 companies Prohibited except for certain labels/tunes: 10 companies

Figure 3: Utilization rate of online music distribution

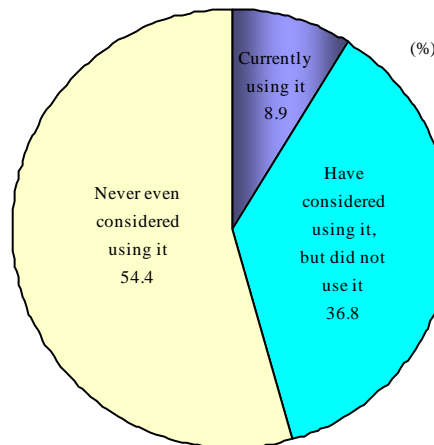


Figure 4: Dissatisfying aspects of online music distribution services

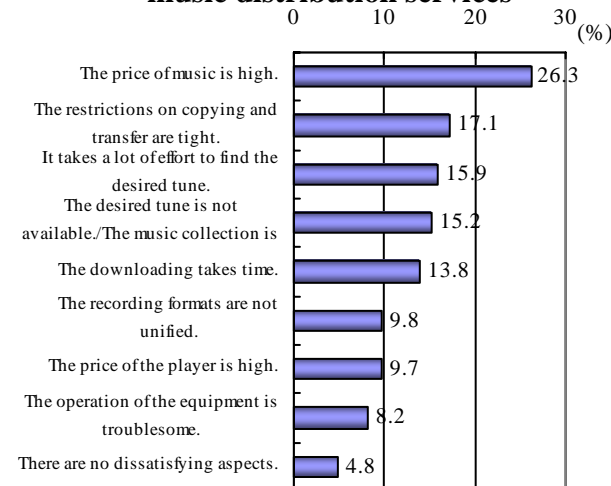
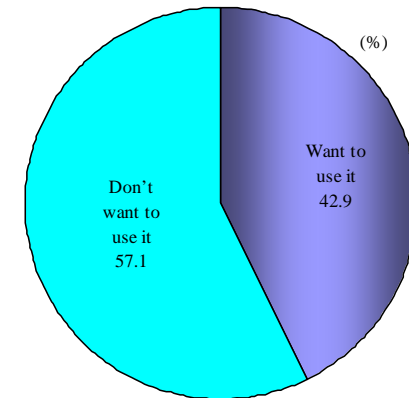


Figure 5: Intent of use of online music distribution



Source: "Survey on Networks and People's Lives"

5-5 Contents (Video on Demand)

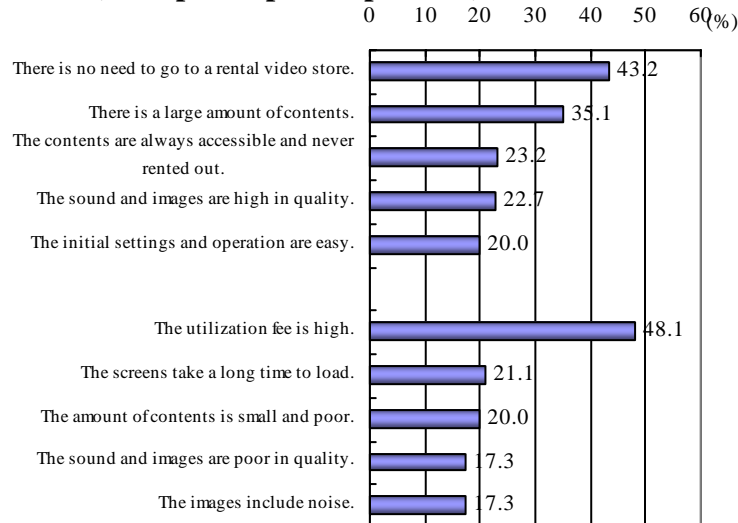
◆ In line with the spread of broadband to homes, the number of video-on-demand (VOD) providers started to increase from around 2003. The recognition rate of VOD is still low at 11%, but the intent of use is high, so VOD is expected to come into wider use in the future.

Figure 1: Status of major VOD service providers (8 companies) (as of March 2005)

Time of launch	2003: 3 companies 2004: 3 companies 2005: 2 companies
Line used	ADSL/FTTH
Price per video	About 100 to 500 yen
Number of titles	About 1,000 to 2,000 titles: 4 companies About 3,000 to 4,000 titles: 2 companies About 5,000 titles: 2 companies

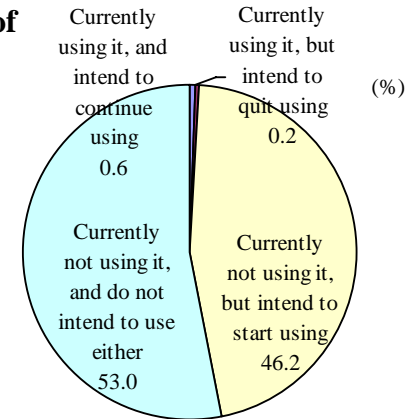
Source: "Survey on Networks and People's Lives"

Figure 3: Benefits/dissatisfying aspects of VOD services (multiple responses possible)



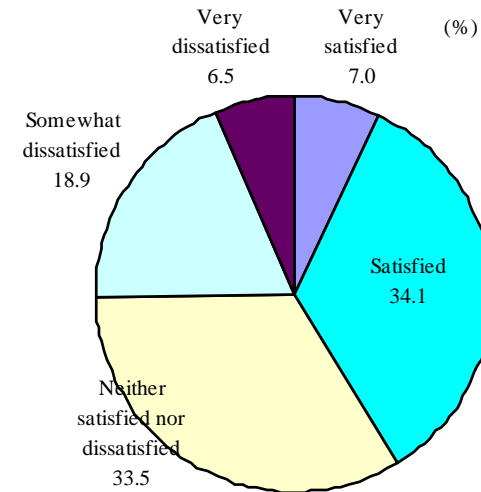
Note: Figures 3 and 4 are based on Web questionnaire on VOD users (185 persons).

Figure 2: Intent of use of VOD services



Source: "Survey on Networks and People's Lives" (Web Survey)

Figure 4: Degree of satisfaction for VOD services



Source for Figures 3 and 4: "Survey on Trends Concerning a Ubiquitous Society" (Web survey)

III ICT Use by Companies

1-1 Enhanced Use of ICT by Companies

(Use of the Internet, Construction of Corporate Communications Networks, etc.)

- ◆ Companies' Internet utilization rate was 98.1%, which indicates that most companies are using the Internet.
- ◆ The construction rate of intra-corporate networks was 89.5%, while that of inter-corporate networks was 59.0%.
- ◆ Companies' mobile phone utilization rate was 65.8% and the styles of use were diversified with users not only for calls, but also for accessing the corporate intranet.

Figure 1: Transition in the Internet utilization rate (left: enterprises; right: establishments)

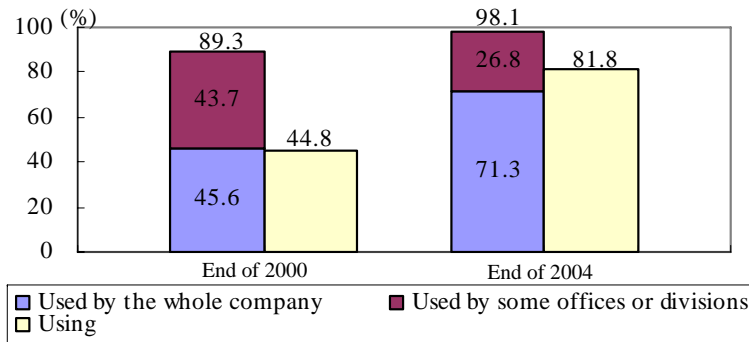
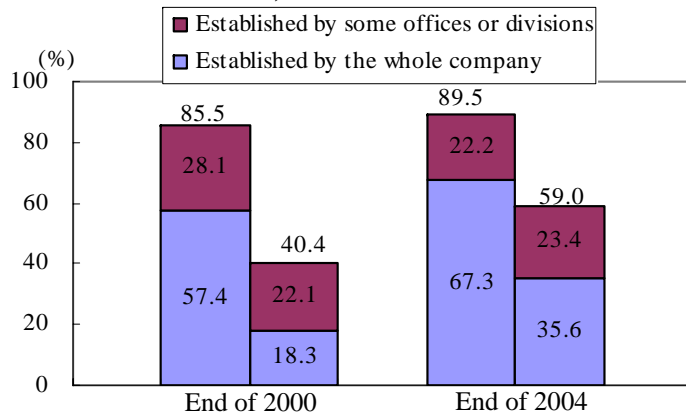
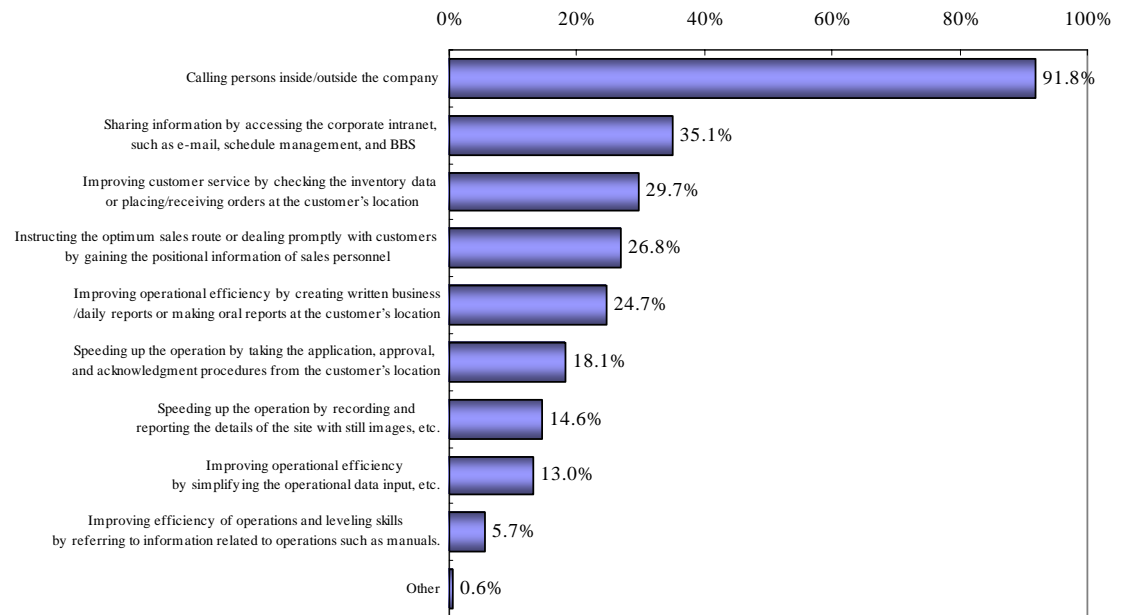


Figure 2: Transition in the construction rate of intra/inter-corporate networks (left: enterprises; right: establishments)



Source for Figures 1 and 2: "Communications Usage Trend Survey"

Figure 3: Purposes of use of mobile phones in companies (multiple responses possible)

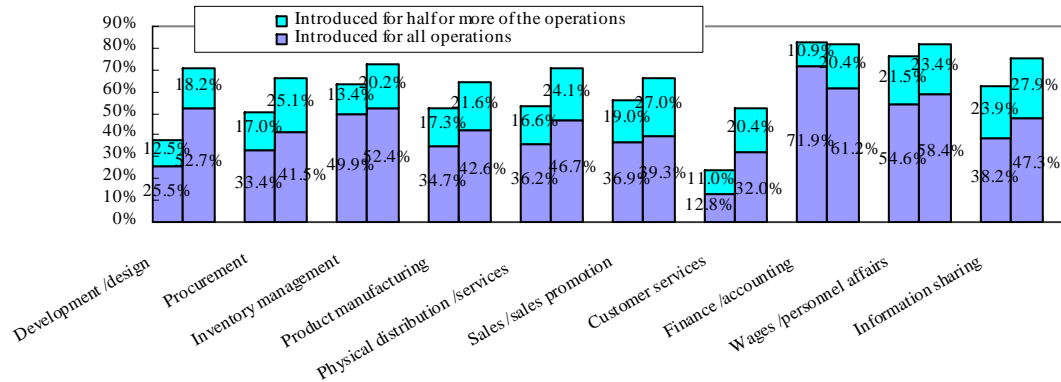


Source for Figure 3: "Survey on the Current Status of ICT Use by Companies" (Web Survey)

1-2-1 Enhanced Use of ICT by Companies (Introduction of ICT Systems)

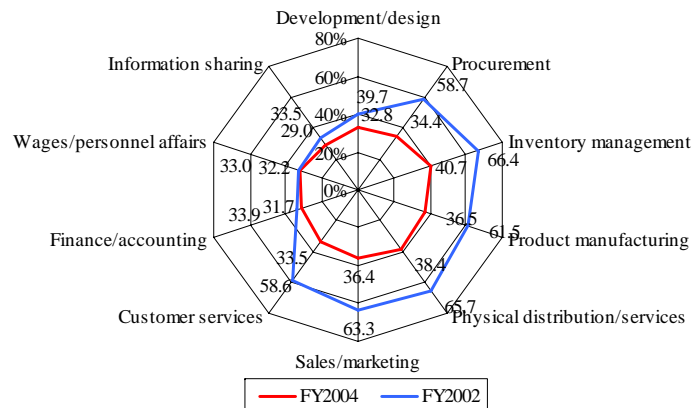
- ◆ The introduction of ICT systems has made progress in almost all operations. While use of custom-made application software has decreased, use of package application software increased. In addition, connection of ICT systems between companies has advanced.

Figure 1: Transition in the introduction of ICT systems by type of operations



* For each item, the left graph shows the values for FY 2002, and the right graph shows the values for FY 2004.

Figure 3: Use of ICT system application software (custom-made)



Note: Survey on Japanese companies for FY 2002 was conducted by postal mail.

Figure 2: Use of ICT system application software (package)

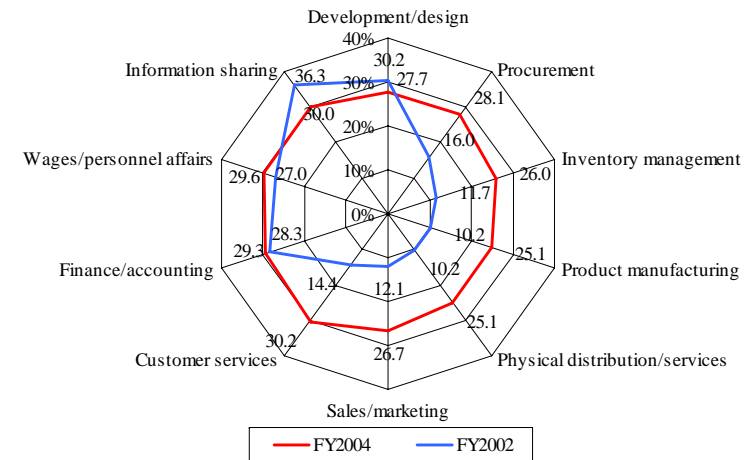
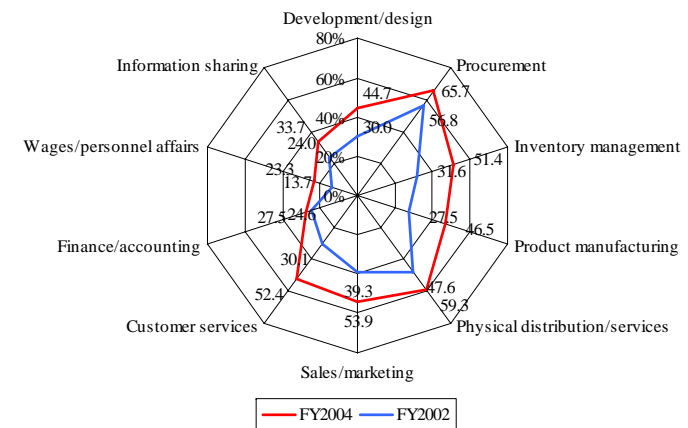


Figure 4: Status of connection of ICT systems between companies



Source: "Survey on the Current Status of ICT Use by Companies" (Web Survey)

1-2-2 Enhanced Use of ICT by Companies (Purpose for Introducing ICT Systems, Effects of Introduction, etc.)

- ◆ The purpose for introducing ICT systems has changed from “reducing costs/improving operational efficiency” to “expanding sales/increasing added value.”
- ◆ Efforts toward increasing effectiveness of ICT system investment has made progress in terms of “verifying cost-effectiveness” and “organizational/institutional reform for management of ICT systems.”
- ◆ An increased number of companies indicated that introducing ICT system was effective.

Figure 1: Purpose for introducing ICT systems (reducing costs/improving operational efficiency)

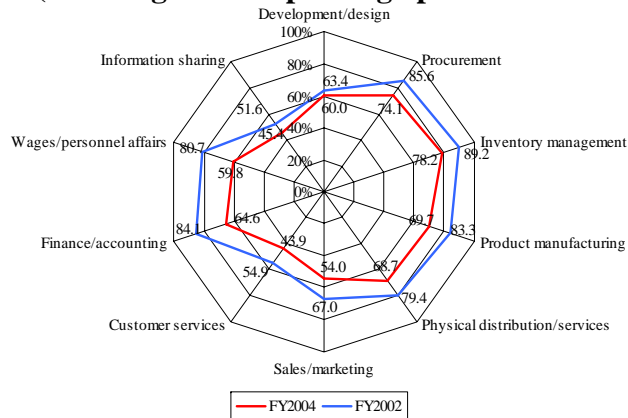


Figure 2: Purpose for introducing ICT systems (expanding sales/increasing added value)

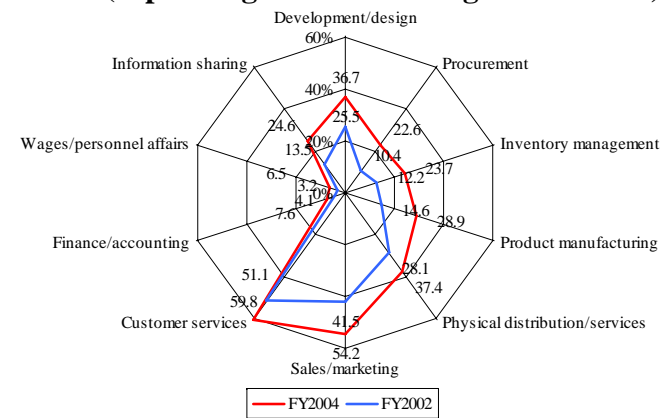
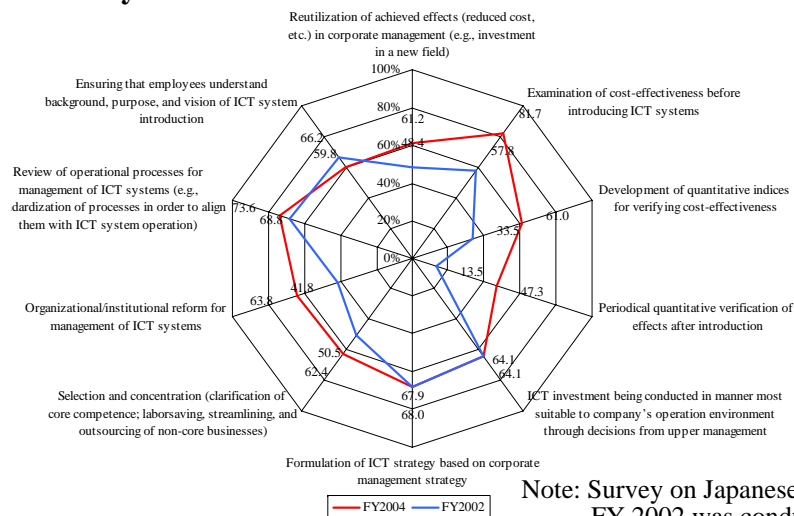
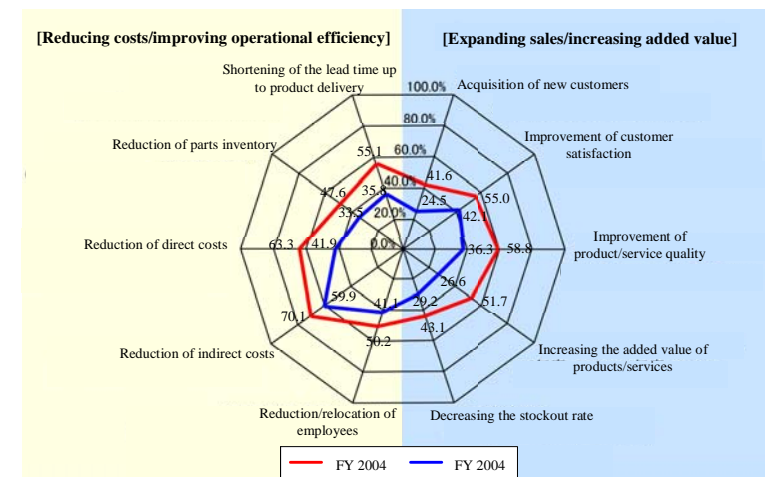


Figure 3: Efforts toward increasing effectiveness of ICT system investment



Note: Survey on Japanese companies for FY 2002 was conducted by postal mail.

Figure 4: Effects of introducing ICT system



Source: “Survey on the Current Status of ICT Use by Companies” (Web Survey)

1-3 Enhanced Use of ICT by Companies (Open Source Software, Shift from Mainframes to Open Systems)

- ◆ The rate of introducing open source software (OSS) as the server OS is the highest in the United States at 33.0%, while the rate was 21.0% in Japan and the Republic of Korea. The OSS was highly evaluated in terms of the “low introduction/operational cost” and “flexible customization.” On the other hand, it was poorly evaluated in terms of the “development/maintenance system” and “support system.”
- ◆ Due to various efforts, progress can be seen in the shift from mainframe systems to open systems in Japan, the United States, as well as the Republic of Korea. The rate of concurrently using both mainframes and open systems is relatively high in Japan. The reason for continuing to use the mainframes was the “stability of operation” and “use of existing software assets.”

Figure 1: Status of introduction of OSS as the server OS

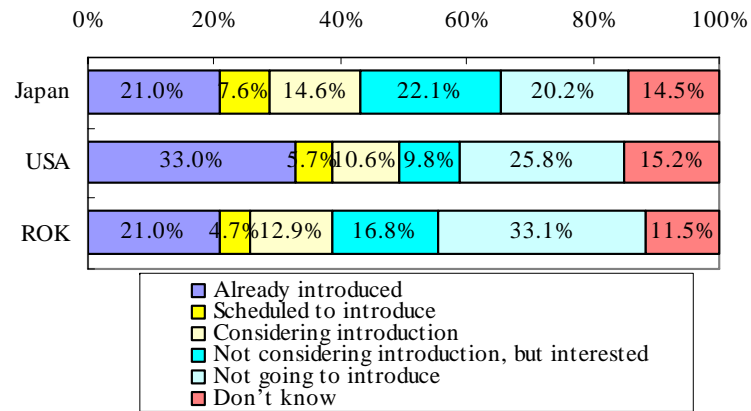


Figure 3: Status of the shift from mainframes to open systems

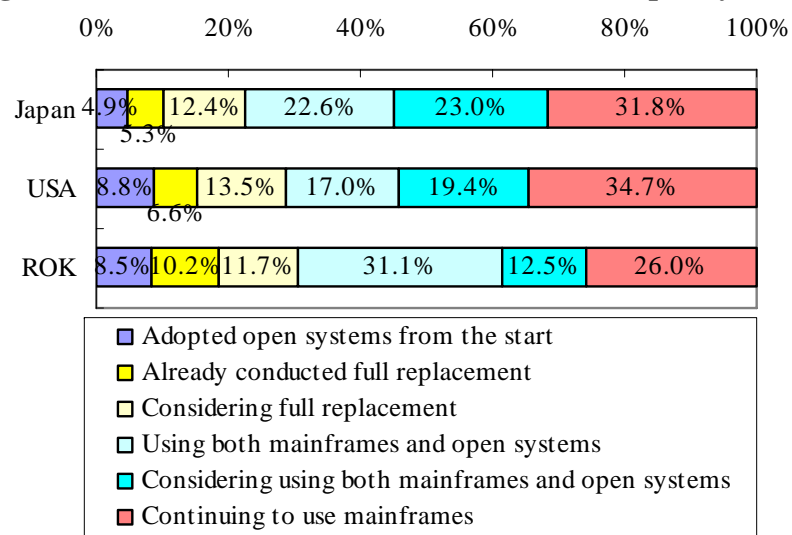


Figure 2: Characteristics of OSS

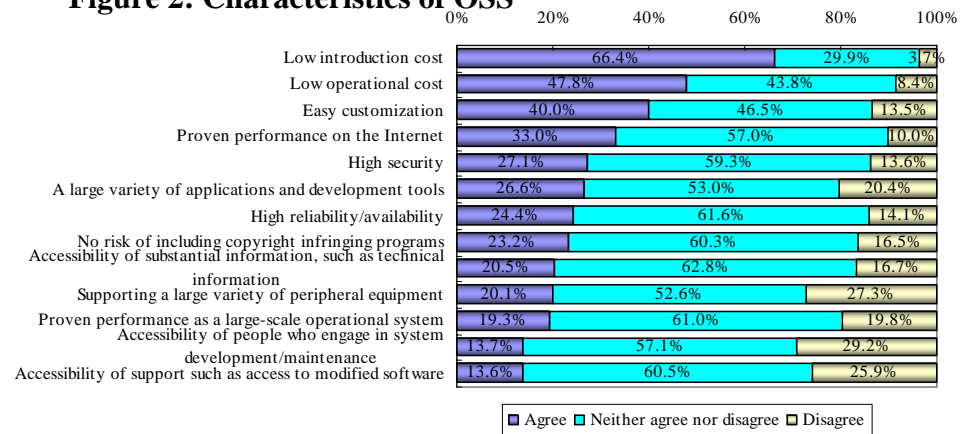
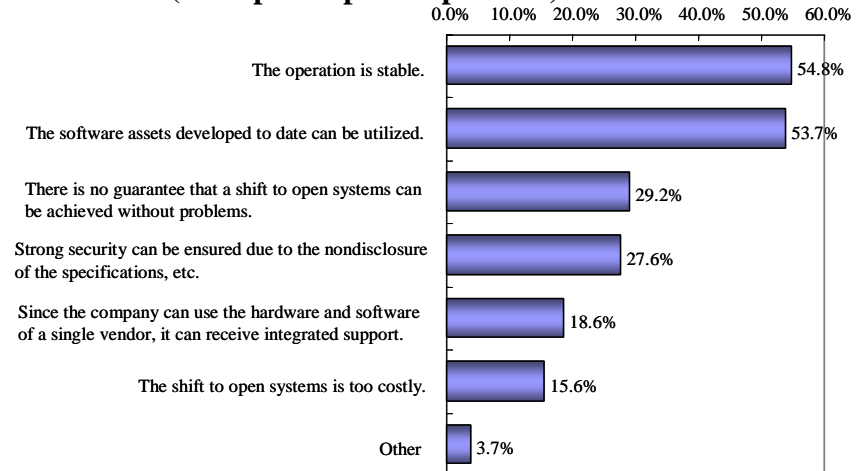


Figure 4: Reasons for continuing to use mainframes (multiple responses possible)



Source: “Survey on the Current Status of ICT Use by Companies” (Web Survey)

2 Expansion of E-Commerce

- ◆ B2C transactions via PC Internet were conducted by 28.9% of all companies, and those via mobile phones were conducted by 9.1%. Many companies were scheduled or considering to conduct B2C transactions via mobile phones in the future. The implementation rate of B2C transactions via PC Internet was the highest in the United States. The future market size of B2C (market size in FY 2006 based on the 2003 level) is predicted to roughly triple in Japan and the Republic of Korea, while it is expected to achieve a smaller growth by roughly doubling in the United States.
- ◆ The characteristics of the B2C transactions via mobile phones include sales in conjunction with other media such as magazines and TV.

Figure 1: Implementation of e-commerce via PCs/mobile phones

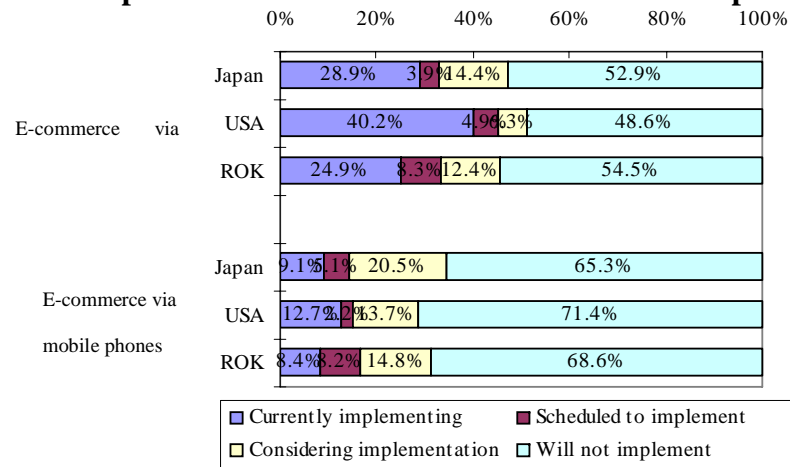


Figure 2: Predicted market size of e-commerce via PCs/mobile phones

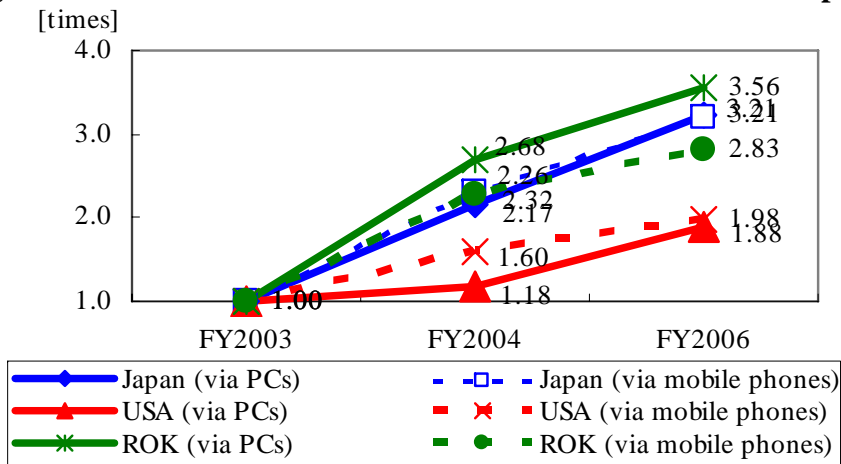
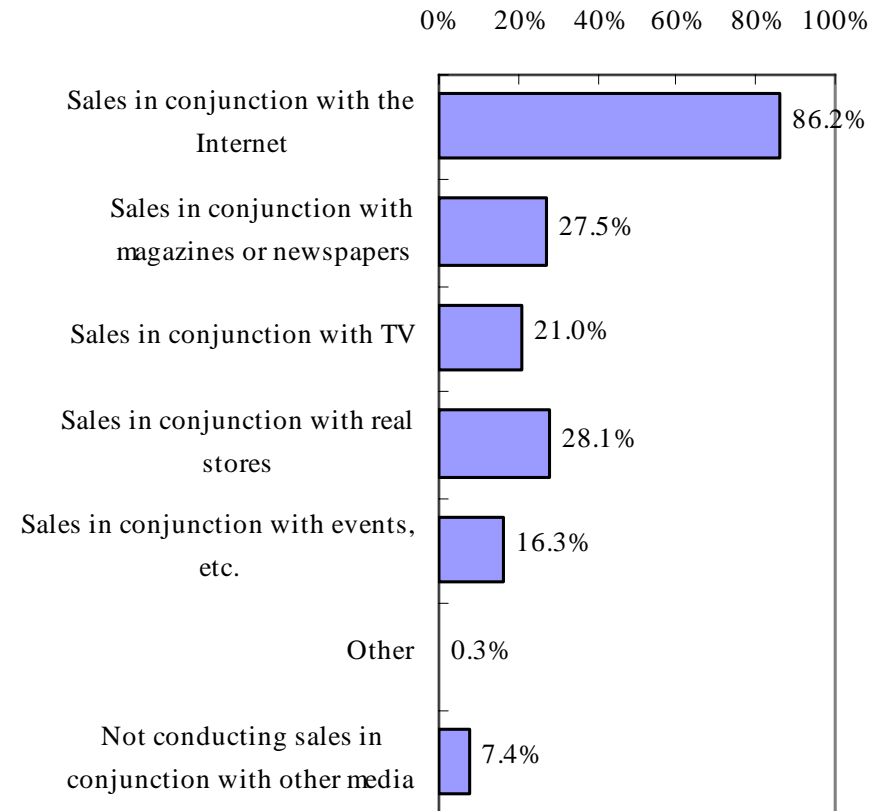


Figure 3: Styles of e-commerce via mobile phones

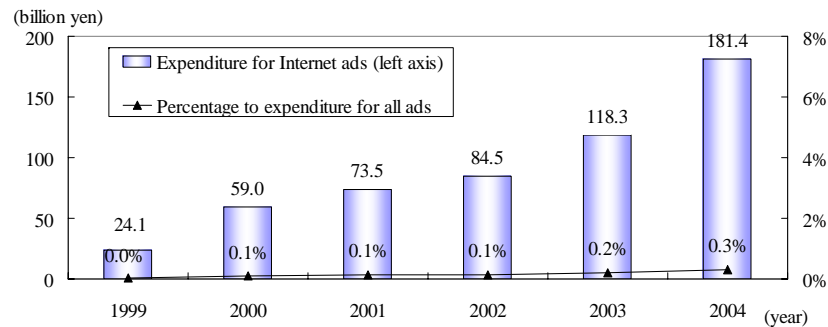


Source: "Survey on the Current Status of ICT Use by Companies" (Web Survey)

3 Expansion of New Businesses Using ICT

◆ In line with the spread of the Internet, new businesses using the Internet have rapidly grown over the past five years. With the expenditure for Internet ads exceeding that for radio ads in 2004, the Internet became the fourth largest ad medium. The amount of Internet transactions accounted for about a quarter of all securities transactions. The balance at Internet-only banks almost quadrupled in two years (from FY 2001 to FY 2003). The amount of sales by mobile contents providers tripled in three years.

Figure 1: Transition in expenditure for Internet ads



Produced from materials from Dentsu.

Figure 3: Transition in the balance and number of accounts of Internet-only banks (four major banks)

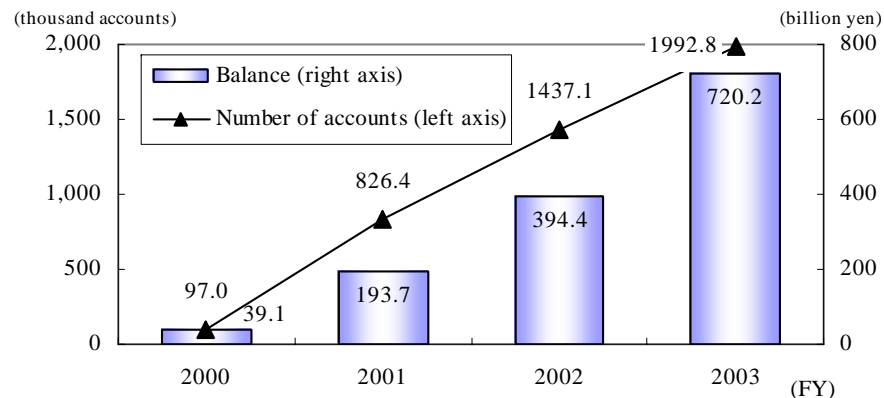
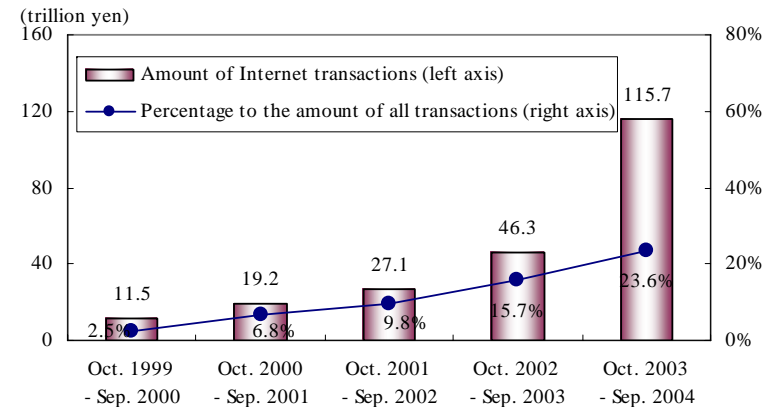
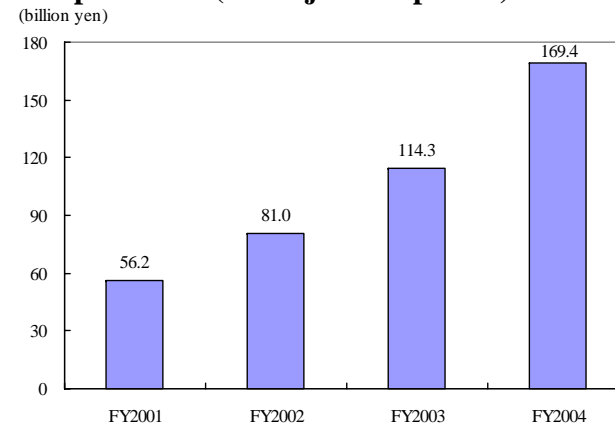


Figure 2: Transition in the amount of Internet securities transactions



Source: Based on Japan Securities Dealers Association, "Research on Internet Transactions."

Figure 4: Transition in the amount of sales by mobile contents providers (15 major companies)



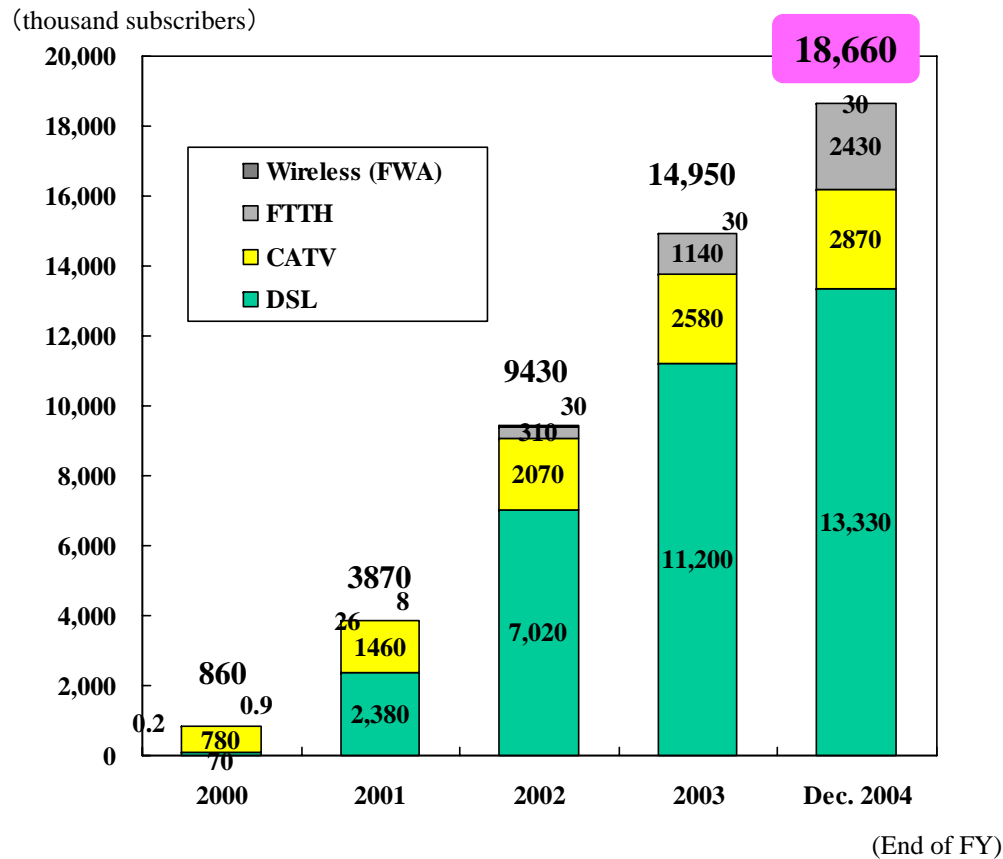
Source for Figures 3 and 4: Produced from materials from the respective companies. 32

IV Network Infrastructure Supporting u-Japan

1 Progress of Broadband

- ◆ The number of broadband subscribers reached 18.66 million, continuing to achieve a steady increase. The broadband fees in Japan are at the lowest level in the world.
- ◆ Non-users of FTTH have a high intent to switch over to FTTH. Among those who are planning to switch over to FTTH, about 30% plan to switch over within one year.

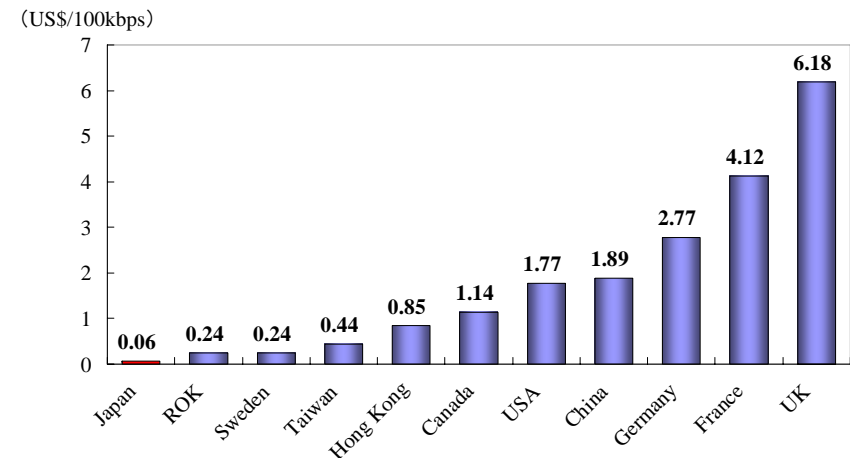
Figure 1: Transition in the number of broadband subscribers



* The values for 2004 are those as of the end of the calendar year.

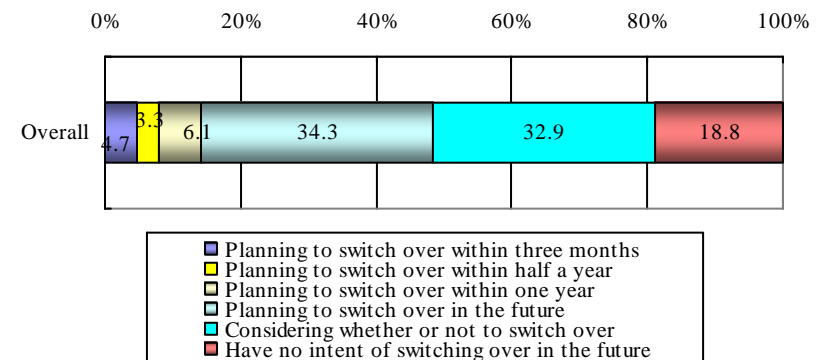
Produced from materials from the MIC.

Figure 2: International comparison of the broadband fees (2003)



Source: Based on ITU, "The Portable Internet" (September 2004)

Figure 3: Intent to switch over to FTTH

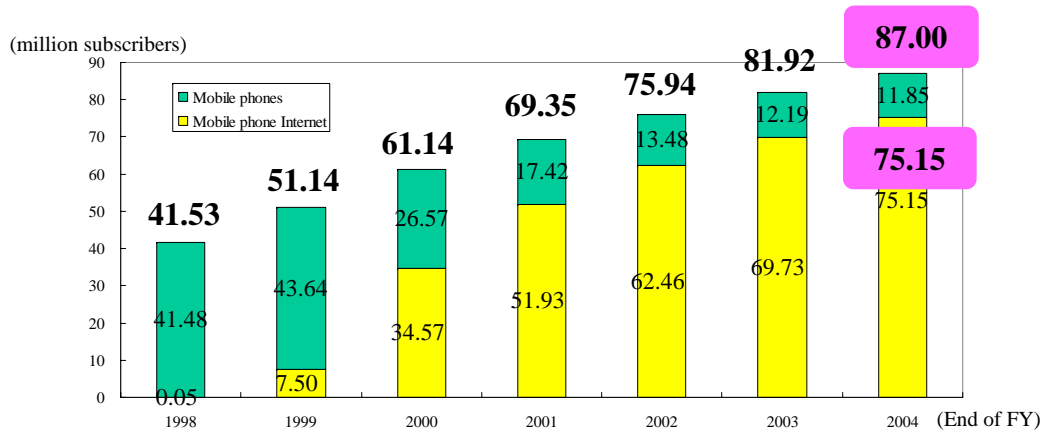


Source: "Survey on Networks and People's Lives" (Web Survey)

2-1 Progress of Mobile Communications

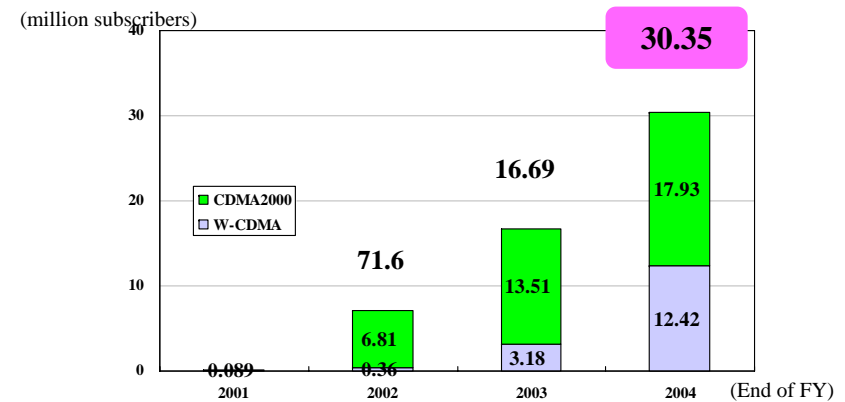
- ◆ The number of mobile phone subscribers has reached about 87 million, continuing to increase but slowing down. The number of mobile phone Internet subscribers was 75.15 million, accounting for 86.4% of mobile phone subscribers. The number of third-generation mobile phone subscribers rapidly increased to 30.35 million.
- ◆ Japan leads the world in the percentage of mobile phones supporting the Internet (94.1%). Japan and the Republic of Korea are outstanding in this area.
- ◆ A new service appeared that allows seamless access by connecting to the fixed-line network indoors and to the mobile network outdoors through a single terminal (fixed and mobile convergence [FMC]).

Figure 1: Transition in the number of mobile phone subscribers



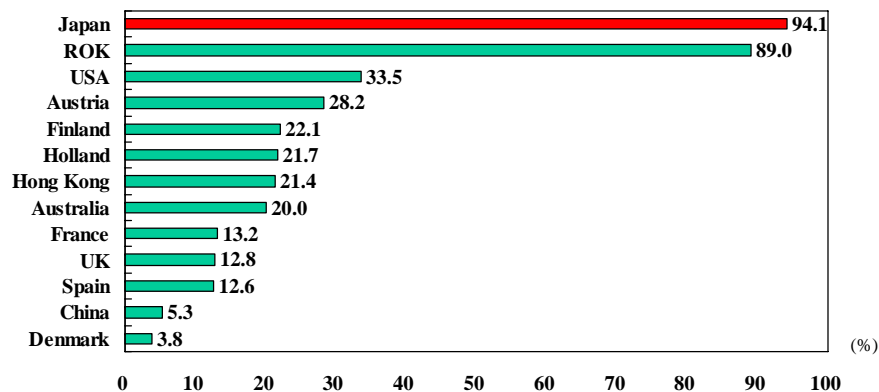
Produced from materials from the Telecommunications Carriers Association

Figure 2: Transition in the number of third-generation mobile phone subscribers



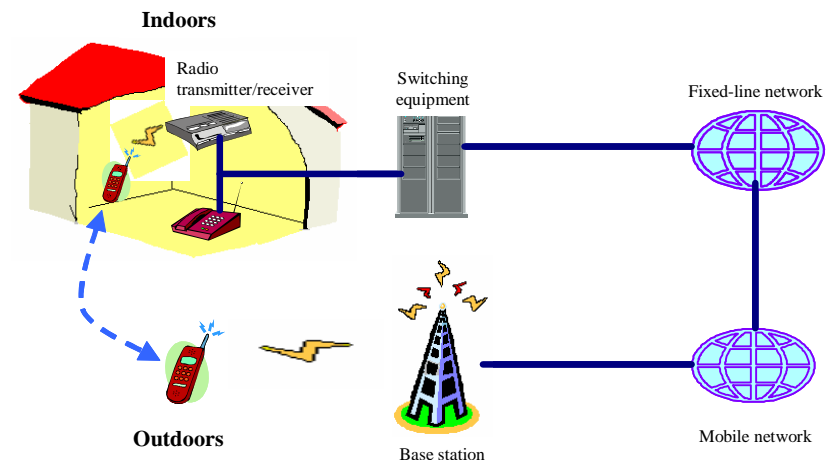
Produced from materials from the Telecommunications Carriers Association

Figure 3: Percentage of mobile phones supporting the Internet (as of the end of September 2004)



Source: Based on "3G Mobile"

Figure 4: Concept of FMC



2-2 Progress of Mobile Communications (Enhanced Functions of Mobile Phones)

- ◆ The functions of mobile phones have been further enhanced. Users have a high intention of using functions including the “camera,” “music player,” “applications,” and “TV reception” in the future. The not-so-diffused “music player” and “TV reception” functions are likely to become more popular in the future.

Figure 1: Functions provided by mobile phones

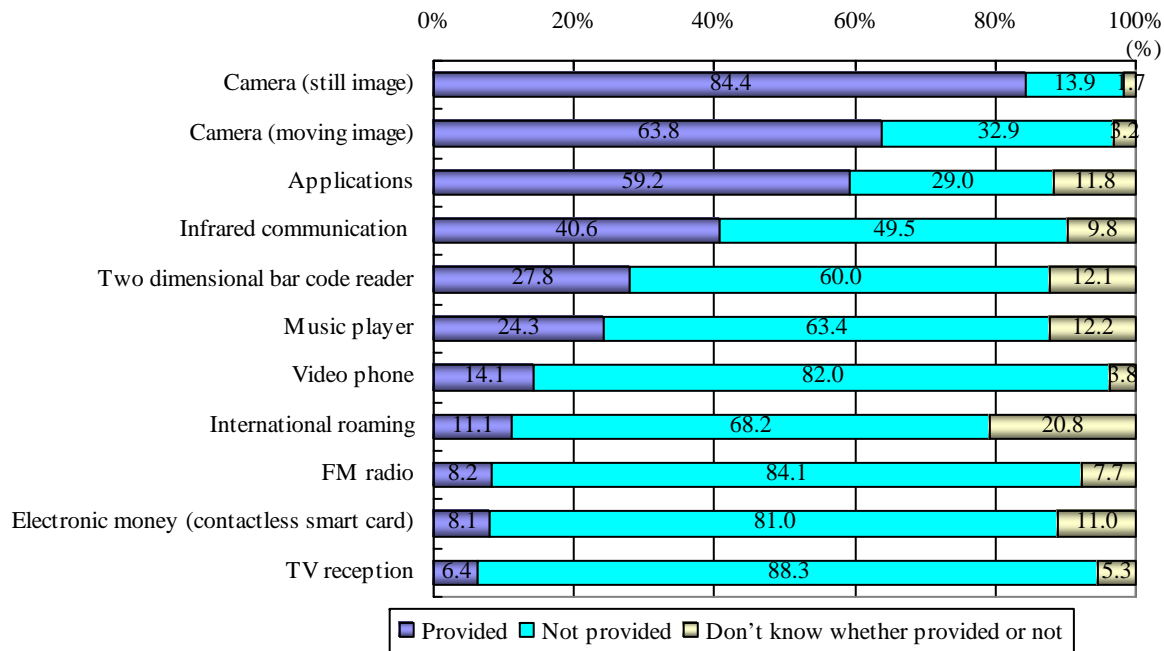
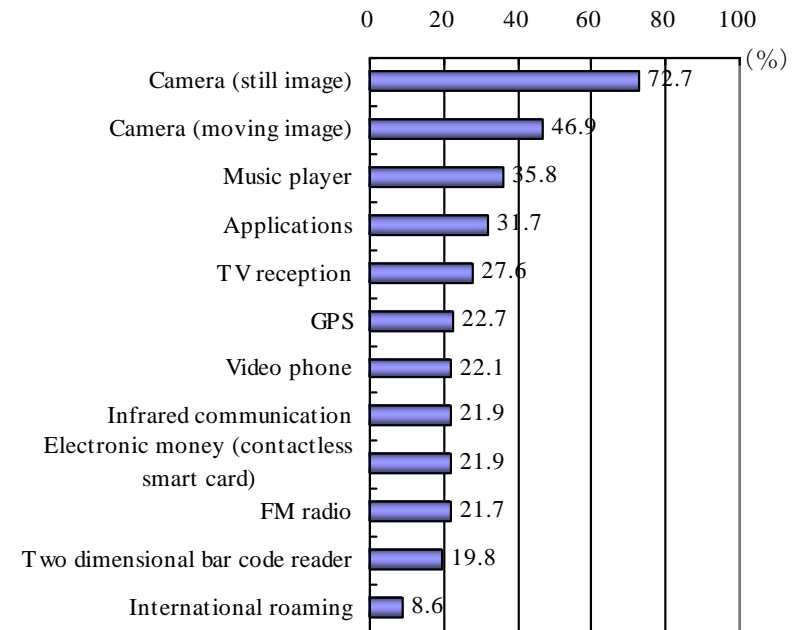


Figure 2: Intent of use of functions

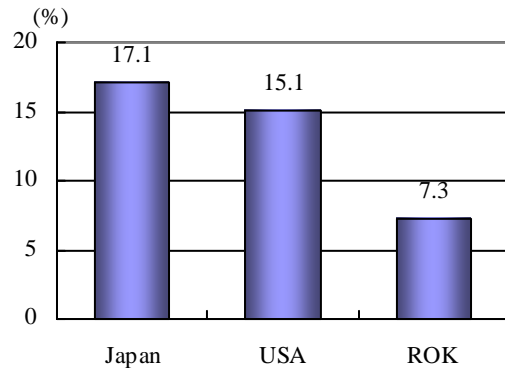


Source: “Survey on Networks and People’s Lives” (Web Survey)

2-3 Progress of Mobile Communications (Wireless LAN)

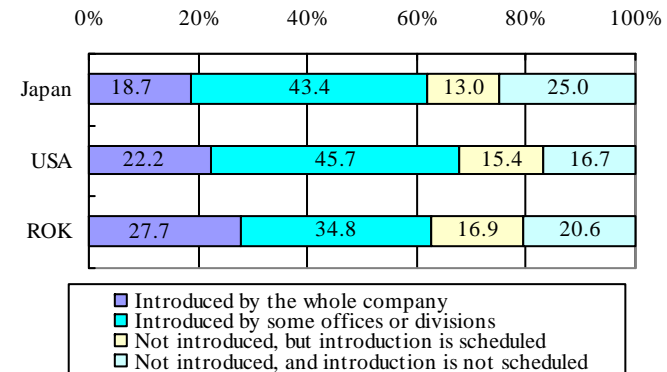
- ◆ Wireless LAN came into wide use at home and in companies.
- ◆ The number of base stations for public wireless LAN increased rapidly. The percentage of public wireless LAN users is 12.5%, which is lower than that in the United States and the Republic of Korea.

Figure 1: Wireless LAN introduction rate for households



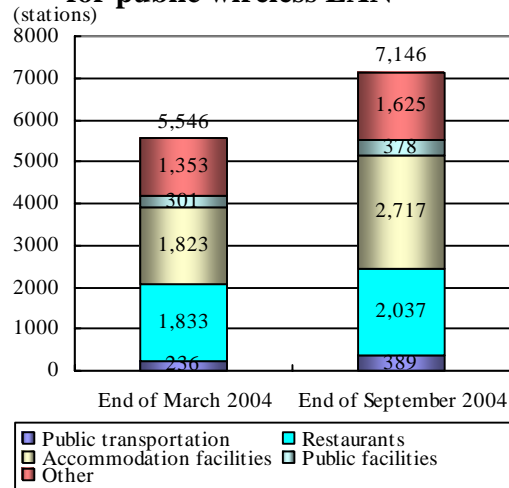
Source: "Survey on Networks and People's Lives" (Web Survey)

Figure 2: Wireless LAN introduction rate for companies using LAN



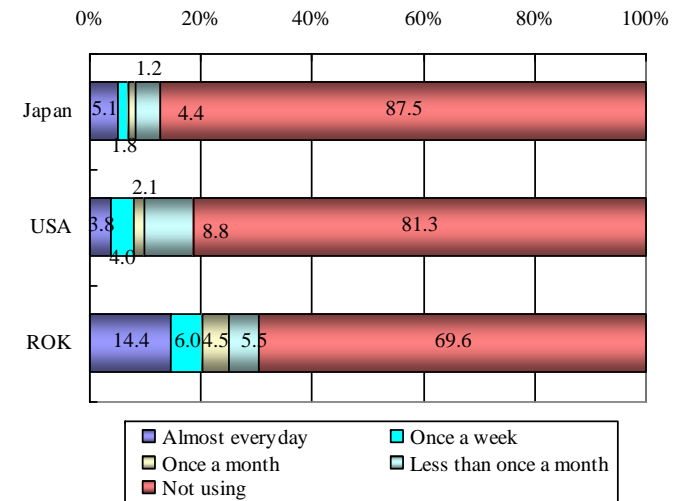
Source: "Survey on the Current Status of ICT Use by Companies" (Web Survey)

Figure 3: Transition in the number of base stations established for public wireless LAN



Source: "FY 2004 Survey of Supply-Side and Demand-Side Trends for Telecommunications Services"

Figure 4: Status of use of public wireless LAN

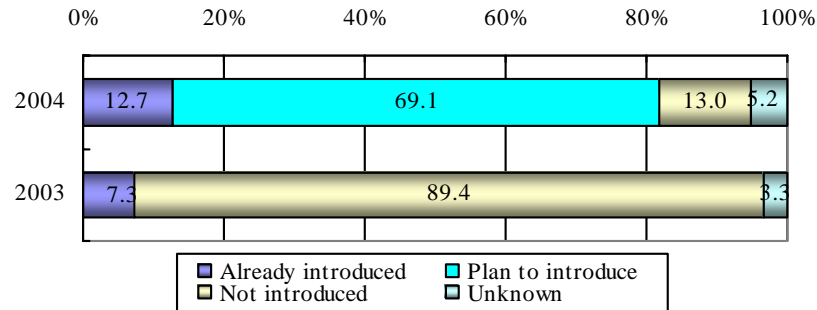


Source: "Survey on Networks and People's Lives" (Web Survey)

3 Progress of IP Networks

- ◆ The use of IP phones in households has become widespread. Since there are also many households that are planning to introduce the technology, the use of IP phones is expected to further expand in the future.
- ◆ “IP-VPNs” and “Internet VPNs” are becoming widely used as the trunk systems for corporate communications networks.
- ◆ About 40% of companies have introduced, updated to, or in the process of introducing or updating to IPv6, and about 40% have yet to introduce or update to IPv6. The situation is also the same for the United States and the Republic of Korea. About 60% of the companies believe that IPv6 will diffuse within three years.
- ◆ Japanese and overseas telecommunications carriers have successively announced the introduction of IP networks. Due to such circumstances, it has become increasingly important to secure the interconnection and operability of IP networks.

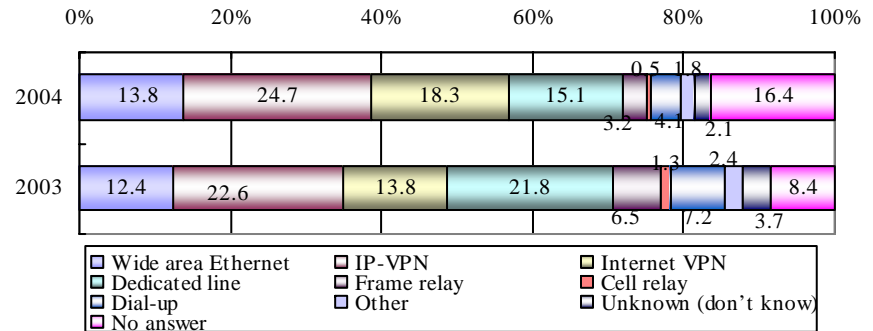
Figure 1: IP phone utilization rate for households



* The option “plan to introduce” was added in the 2004 survey.

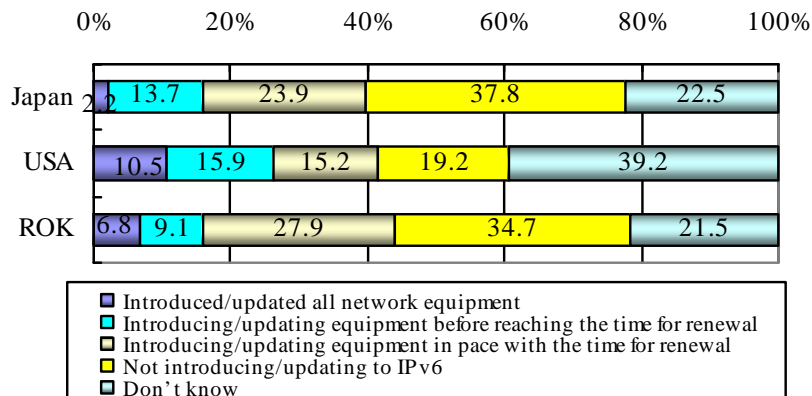
Source: “Communications Usage Trend Survey”

Figure 2: Services used for the trunk systems of corporate communications networks



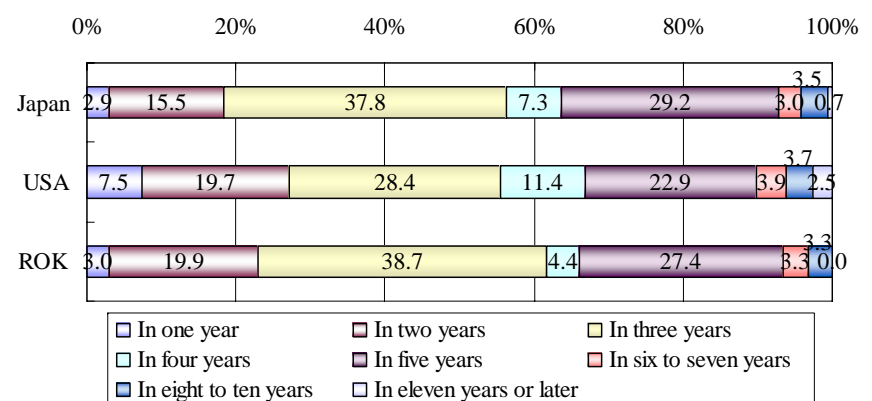
Source: “Communications Usage Trend Survey”

Figure 3: Status of IPv6 introduction/updating in companies



Source: “Survey on the Current Status of ICT Use by Companies” (Web Survey)

Figure 4: Prospected time of diffusion of IPv6

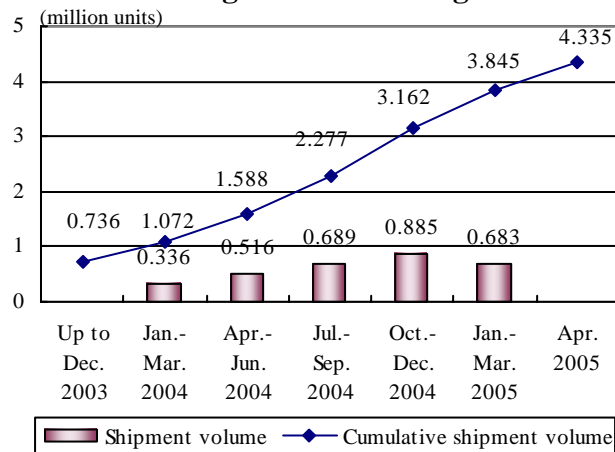


Source: “Survey on the Current Status of ICT Use by Companies” (Web Survey)

4 Diffusion of Terrestrial Digital Broadcasting

- ◆ Terrestrial digital broadcasting steadily expanded its service areas. The shipment volume of receivers supporting terrestrial digital broadcasting also increased rapidly.
- ◆ The degree of satisfaction for terrestrial digital broadcasting is high. People have high expectations for the provision of programs with high-quality sound and images and an increase in local information and disaster information with regard to terrestrial digital broadcasting in the future.

Figure 1: Shipment volume of receivers supporting terrestrial digital broadcasting



Produced from materials from the Japan Electronics and Information Technology Industries Association

Figure 2: Degree of satisfaction for terrestrial digital broadcasting

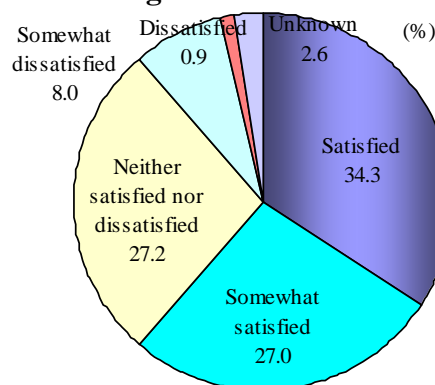
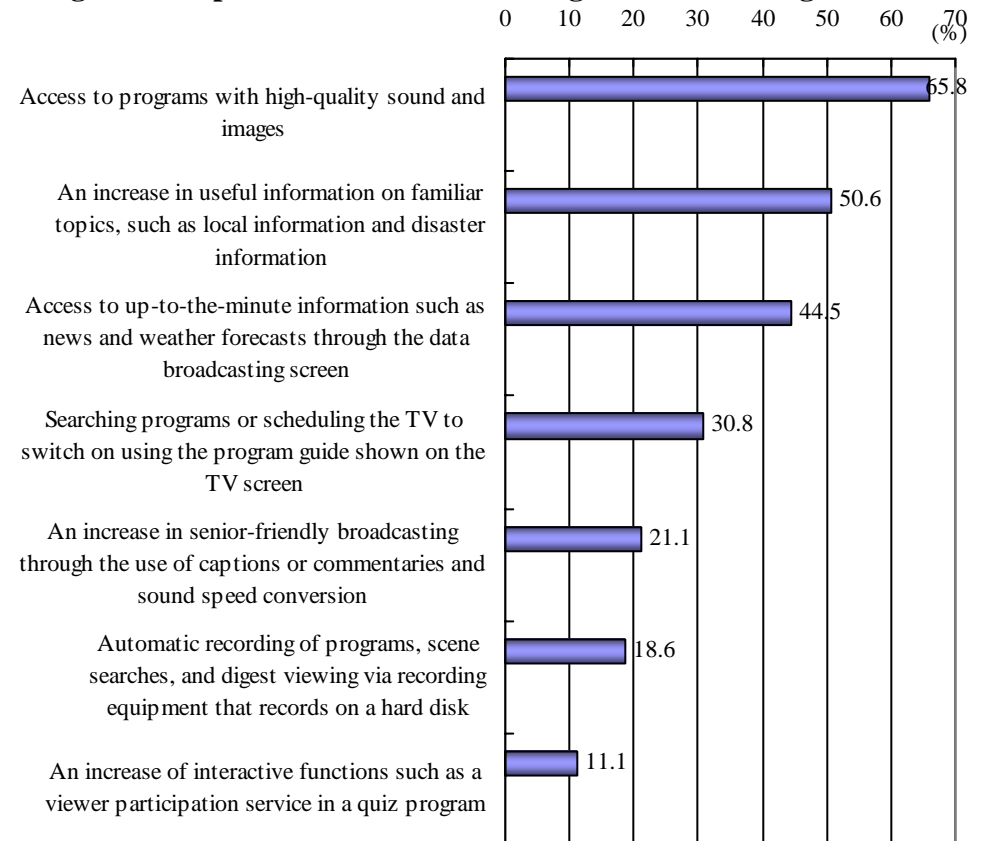


Figure 3: Expectations in terrestrial digital broadcasting



Source for Figures 2 and 3: "Survey on Penetration Rate of Terrestrial Digital Television Broadcasting"

5 Japan's Advantage in Information and Communications Equipment and Technology

- ◆ Japan has an advantage in intelligent home appliances and related parts. Although Japan has minor dominance in the market of mobile phone handsets, it has an edge in mobile phone parts.
- ◆ With respect to ubiquitous network related technology, Japan has the advantage in "FTTH," "next-generation mobile phones," "network robots," "high-definition imaging technology," "home networks," etc. On the other hand, ICT for safety and security, such as "IP traceback technology," is more advanced in North America.

Figure 1: Japan's world market shares for main information and communications equipment

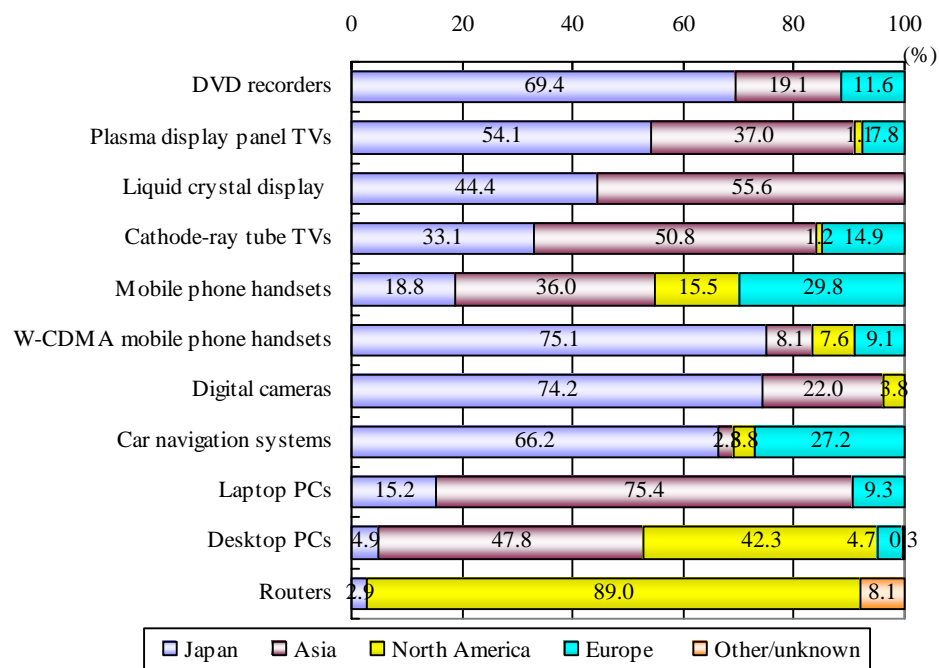
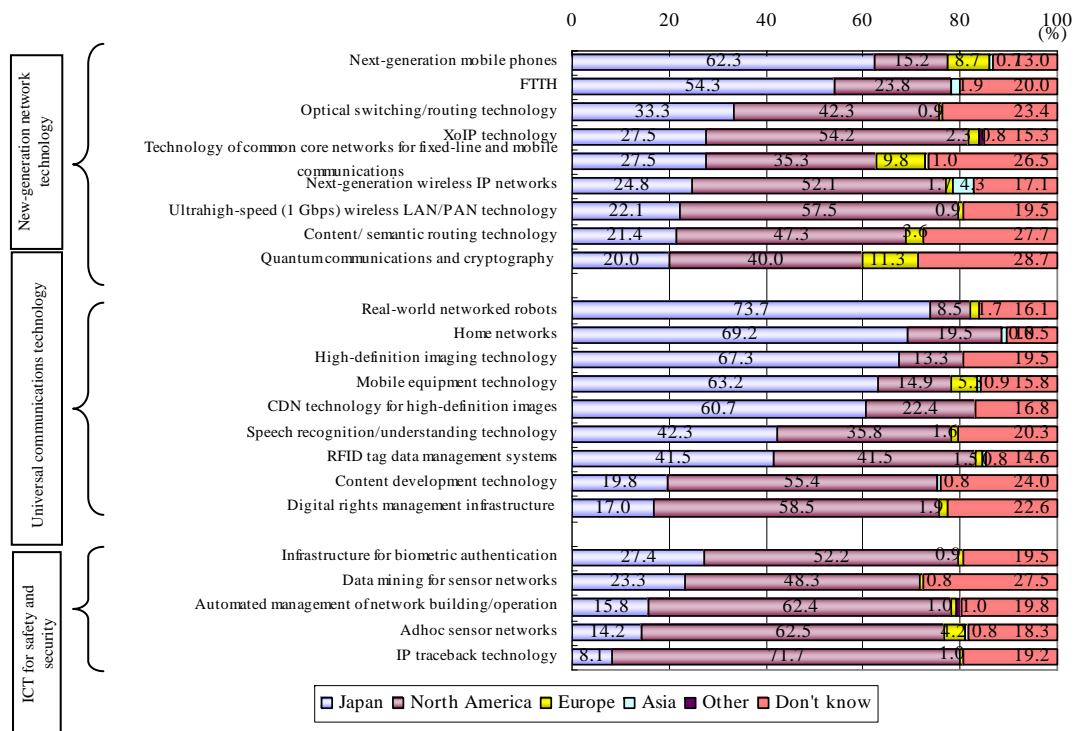


Figure 2: International comparison of the advantages in ubiquitous network related technology



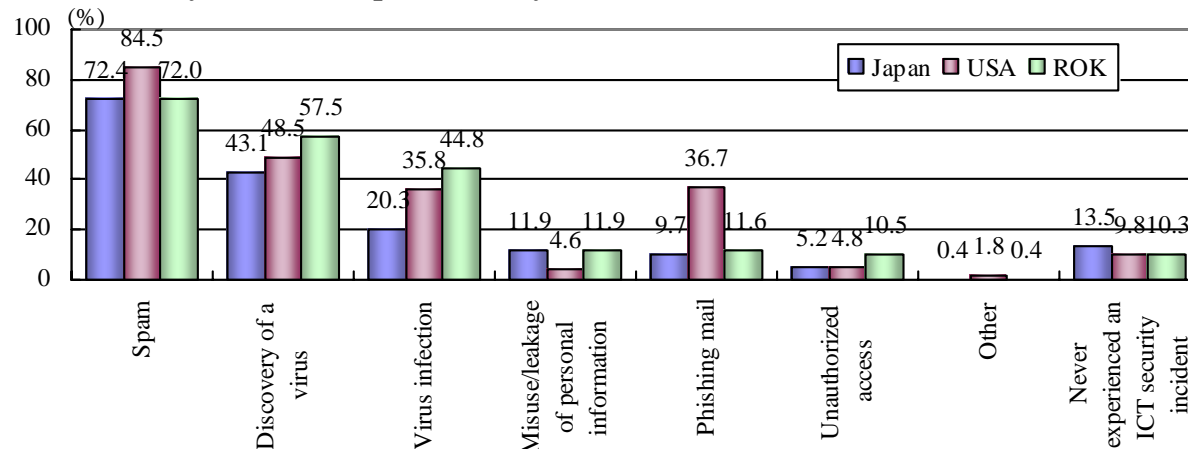
Source: "Survey on Trends Concerning a Ubiquitous Network Society"

V Challenges Toward Achieving u-Japan

1-1 Safe and Secure ICT Use (ICT Security Incidents Experienced by Individuals and Companies)

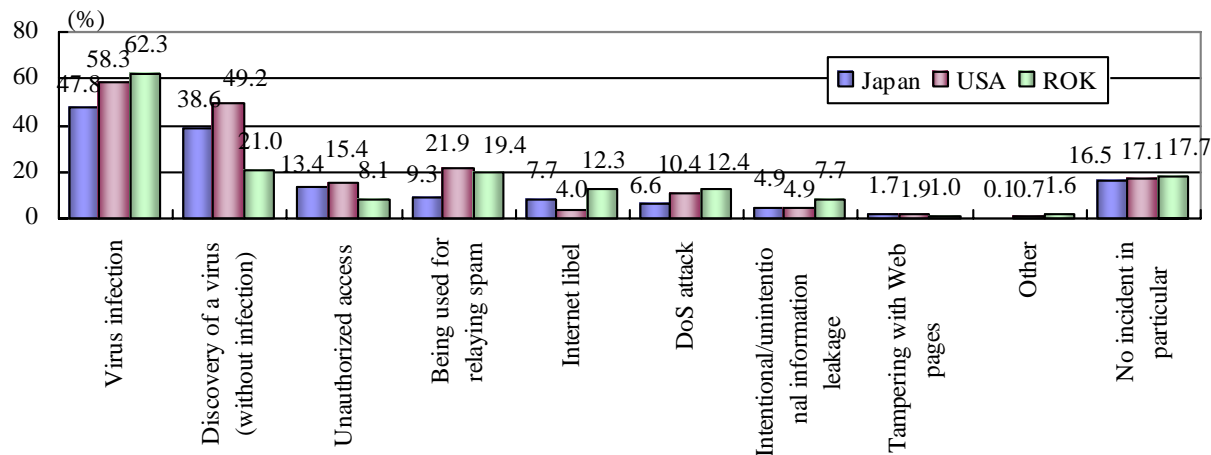
- ◆ From 80 to 90% of individual and corporate Internet users in Japan, the United States, and the Republic of Korea are victims of ICT security incidents.
- ◆ The most frequently occurred incident is “spam” for individuals and “virus infection” for companies.

Figure 1: ICT security incidents experienced by PC Internet users



Source: “Survey on Networks and People’s Lives” (Web Survey)

Figure 2: ICT security incidents experienced by companies

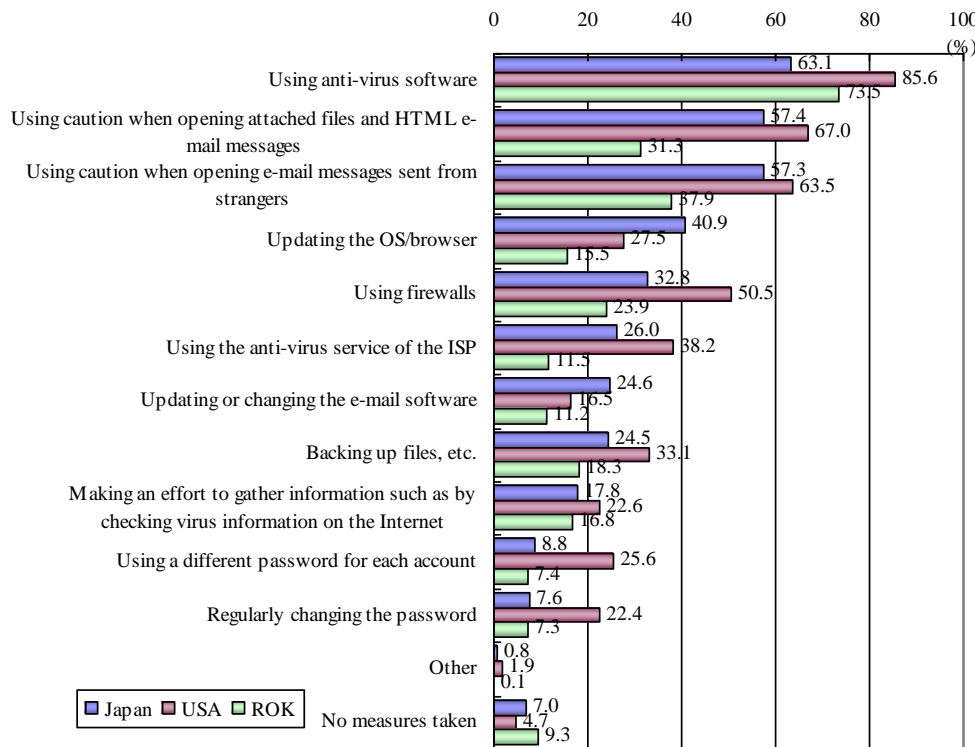


Source: “Survey on the Current Status of ICT Use by Companies” (Web Survey)

1-2 Safe and Secure ICT Use (Virus/Unauthorized Access)

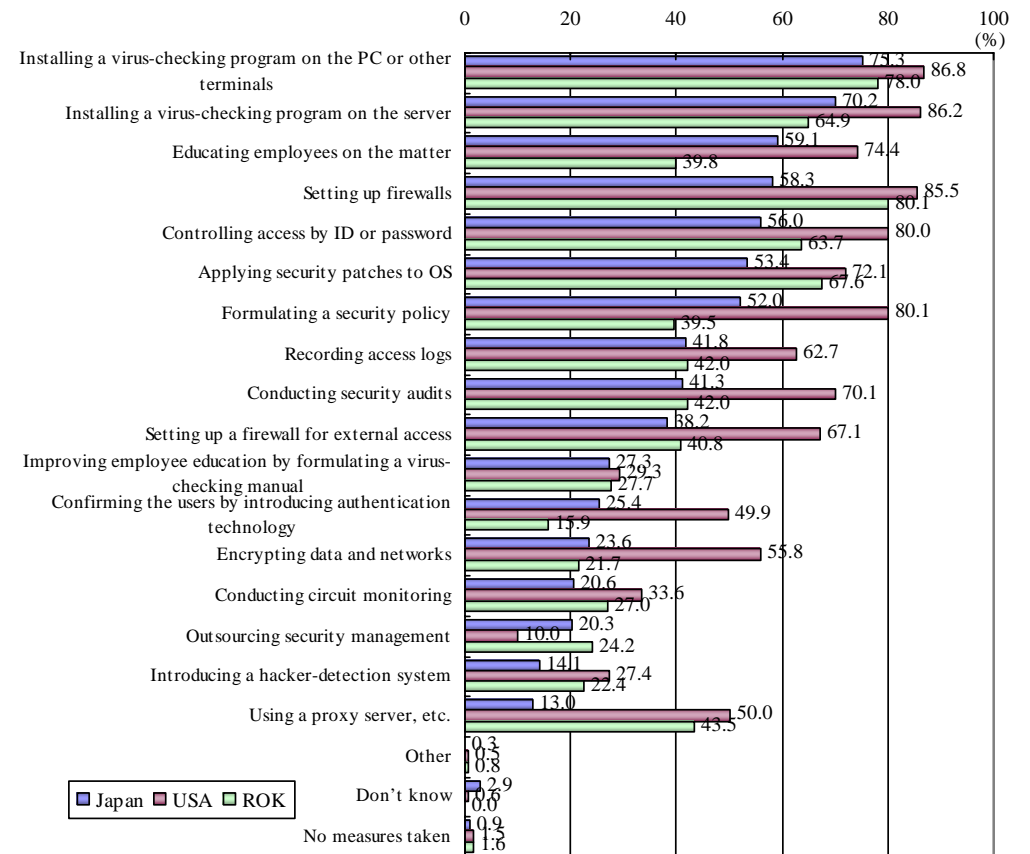
- ◆ The anti-virus measure most frequently taken by individuals is the introduction of “anti-virus software.” The same applies to the United States and the Republic of Korea. Overall, U.S. users are taking the strongest measures.
- ◆ The main ICT security measures taken by companies are “virus-checking programs,” “employee education,” and “firewalls.” Overall, the U.S. companies are taking the strongest measures.

Figure 1: Anti-virus measures and measures against unauthorized access taken by Internet users



Source: “Survey on Networks and People’s Lives” (Web Survey)

Figure 2: IT security measures taken by companies



Source: “Survey on the Current Status of ICT Use by Companies” (Web Survey)

1-3 Safe and Secure ICT Use (Spam)

- ◆ Indeed, 80% of PC users and 70% of mobile phone users have received spam in the past. The most common anti-spam measures taken by PC users was “using the device’s built-in anti-spam tool, rejecting e-mails through the specified senders function, or accepting e-mails only from the specified senders function” and the one taken by most mobile phone users was “using a complicated e-mail address.” In the United States and the Republic of Korea, mobile phone users were hardly taking any measures although PC users were taking measures.
- ◆ Phishing has grown into a social problem in the United States. Phishing incidents were also seen and caused problems in Japan last year.

Figure 1: Number of spam messages received per day

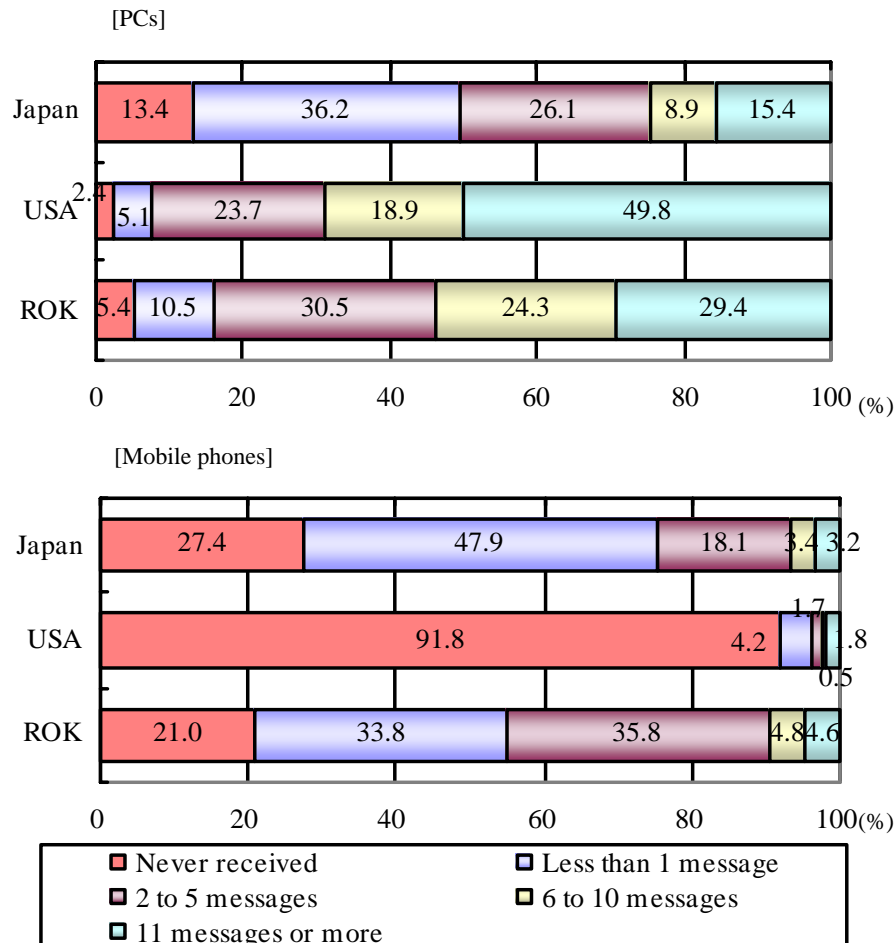
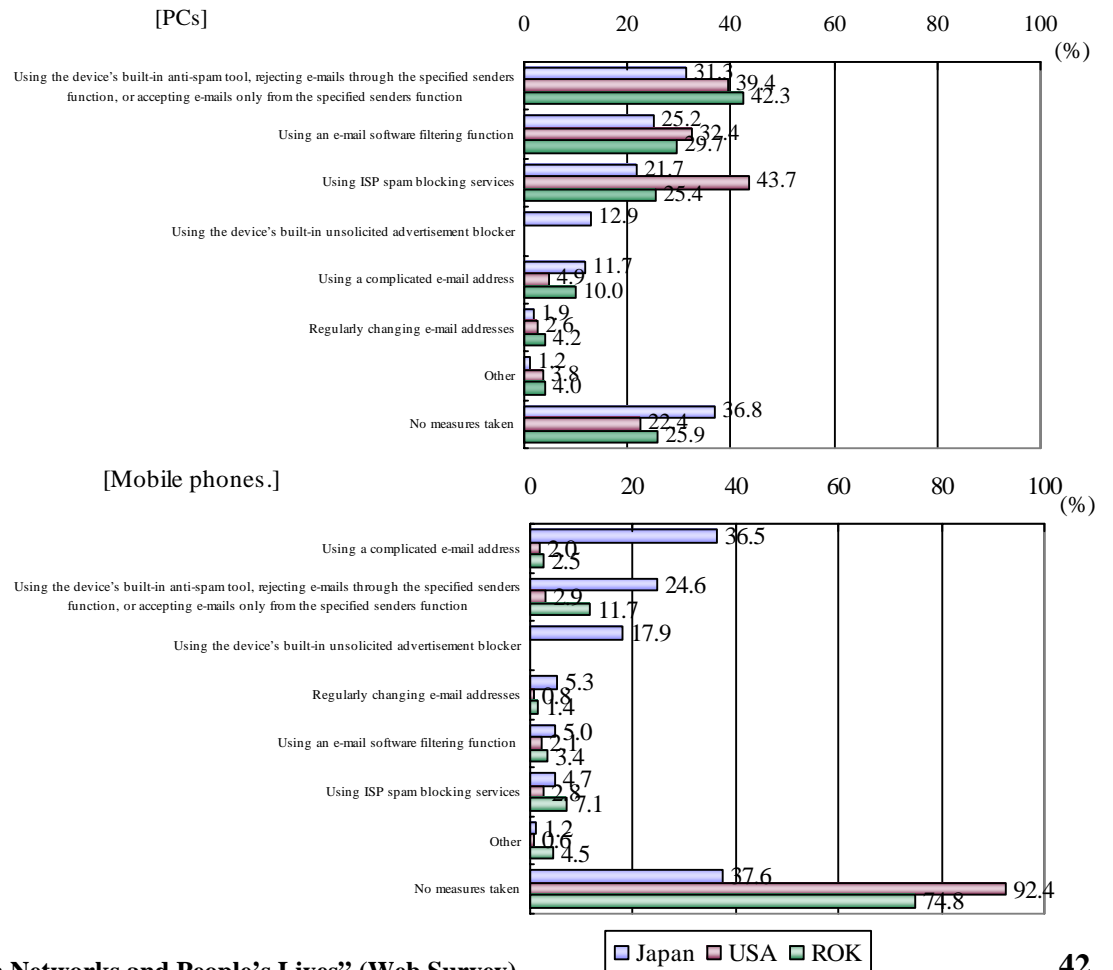


Figure 2: Implementation of anti-spam measures



Source: “Survey on Networks and People’s Lives” (Web Survey)

1-4 Safe and Secure ICT Use (Protection of Personal Information)

- ◆ The Law Concerning the Protection of Personal Information came into force in April 2005. Companies' efforts for protecting personal information made progress.
- ◆ Recognition rate of spyware is low, and hardly any measures are taken against it.

Figure 1: Technical and ICT systems-related measures for protection of personal information

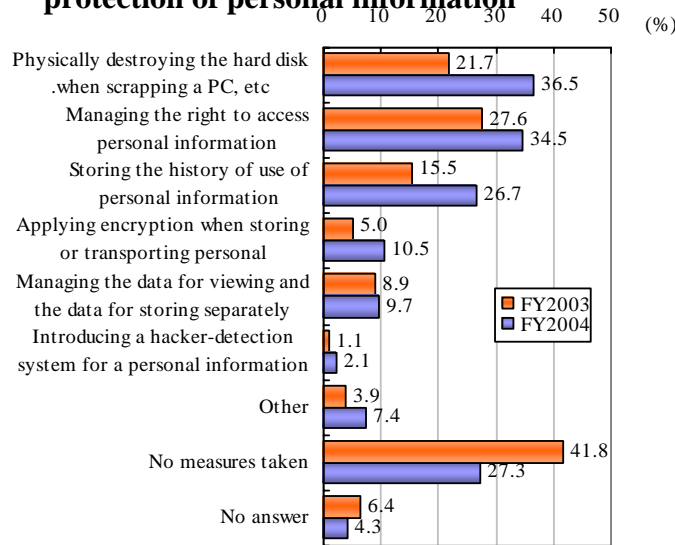
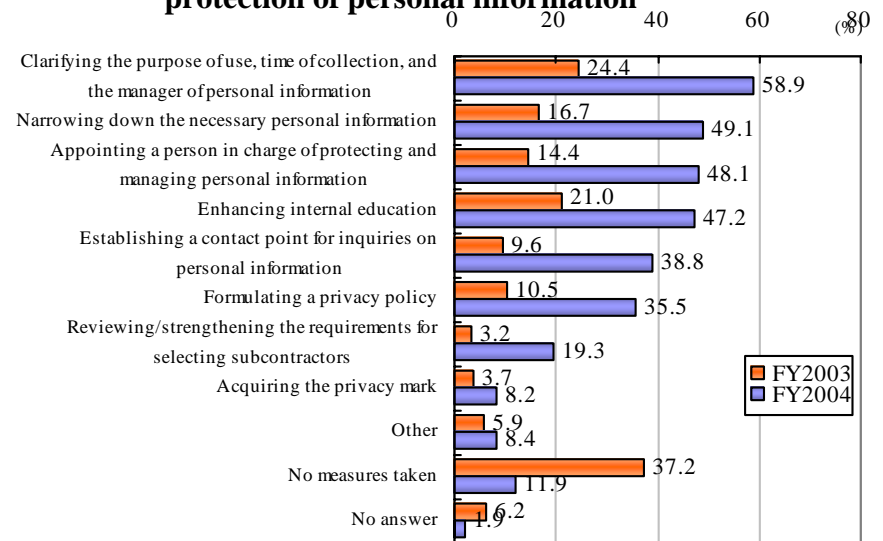
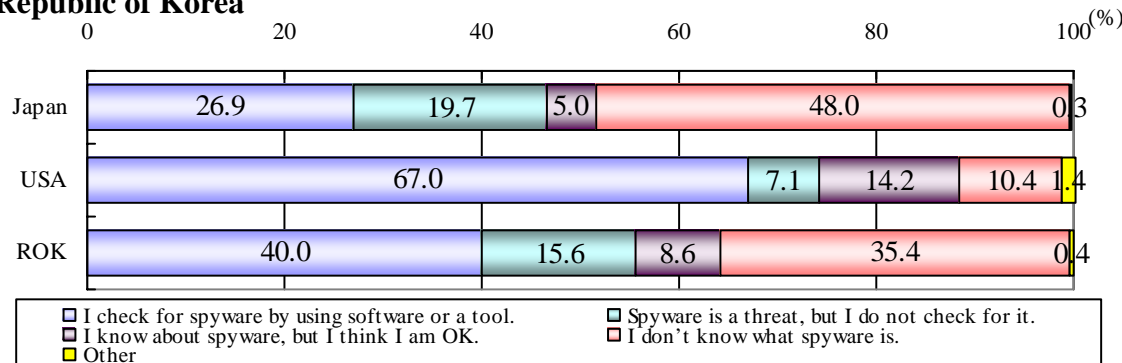


Figure 2: Organizational/institutional measures for protection of personal information



Source for Figures 1 and 2: "Survey on the Status Trend of Information Security"

Figure 3: Comparison of anti-spyware measures in Japan, the United States, and the Republic of Korea

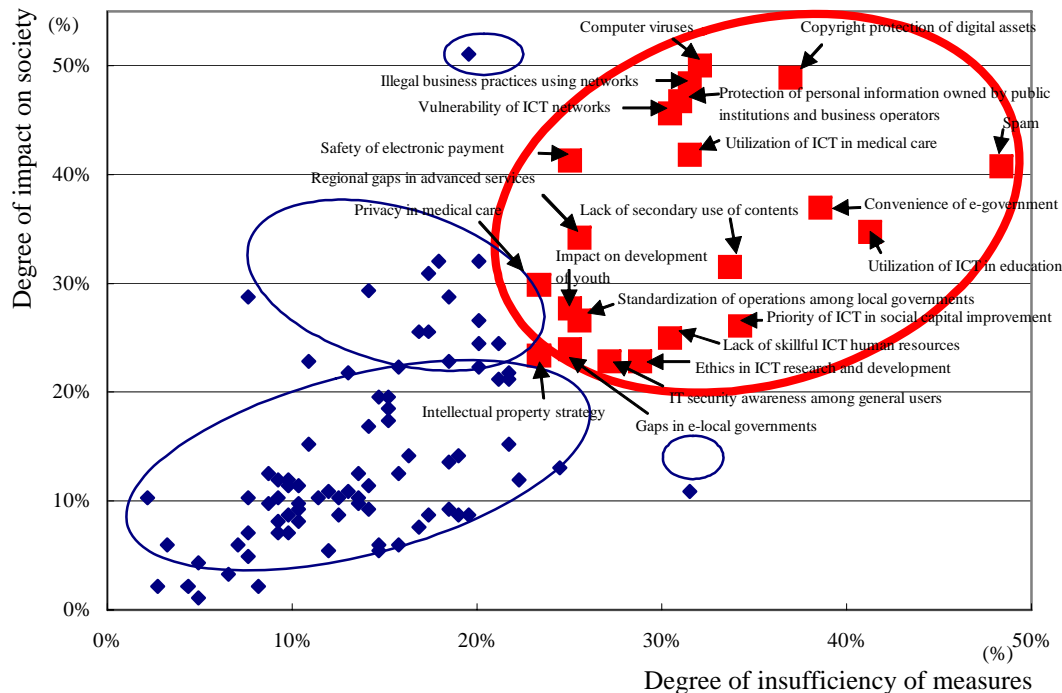


Source: "Survey on Networks and People's Lives" (Web Survey)

1-5 Safe and Secure ICT Use (Challenges Toward a Ubiquitous Network Society)

- ◆ The priority challenges toward a ubiquitous network society include the vulnerability of ICT networks, illegal business practices using networks, copyright protection of digital assets, the regional gaps in advanced services, and convenience of e-government.
- ◆ Japan is carefully promoting the construction of a ubiquitous network society, while the United States is seeing a considerable number of people opposing the construction, and the Republic of Korea is actively promoting it.
- ◆ Many people in Japan, the United States, and the Republic of Korea indicate the need for both institutional/technical measures in advance and the self-responsibility of the users in dealing with the negative effects of a ubiquitous network society. The awareness of self-responsibility is relatively high in the United States.

Figure 1: Priority challenges toward a ubiquitous network society



Produced from materials from the “Policy Roundtable for Realizing a Ubiquitous Network Society”

Figure 2: Approval/disapproval for construction of a ubiquitous network society

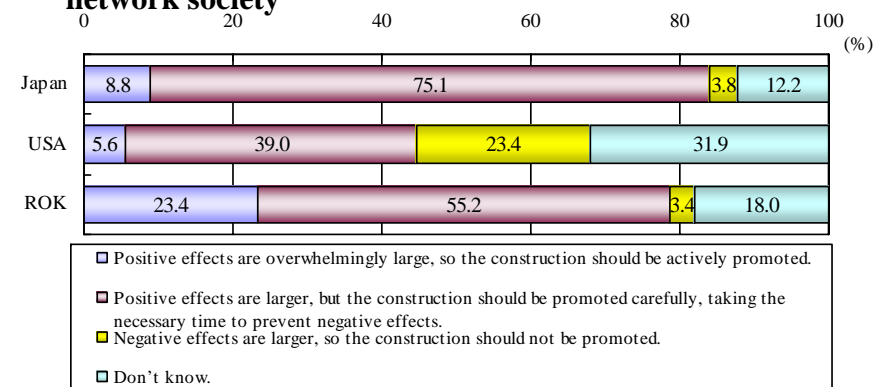
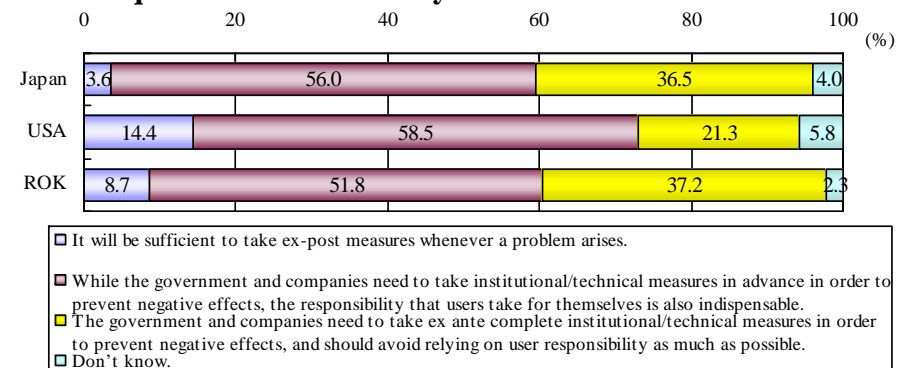


Figure 3: Opinions on measures against the negative effects of a ubiquitous network society



Source for Figures 2 and 3: “Survey on Networks and People’s Lives” (Web Survey)

2. Digital Divide

◆ There are regional gaps in the availability of broadband services. The gaps are particularly large for FTTH.

Figure 1: Diffusion of broadband services (as of the end of March 2005)

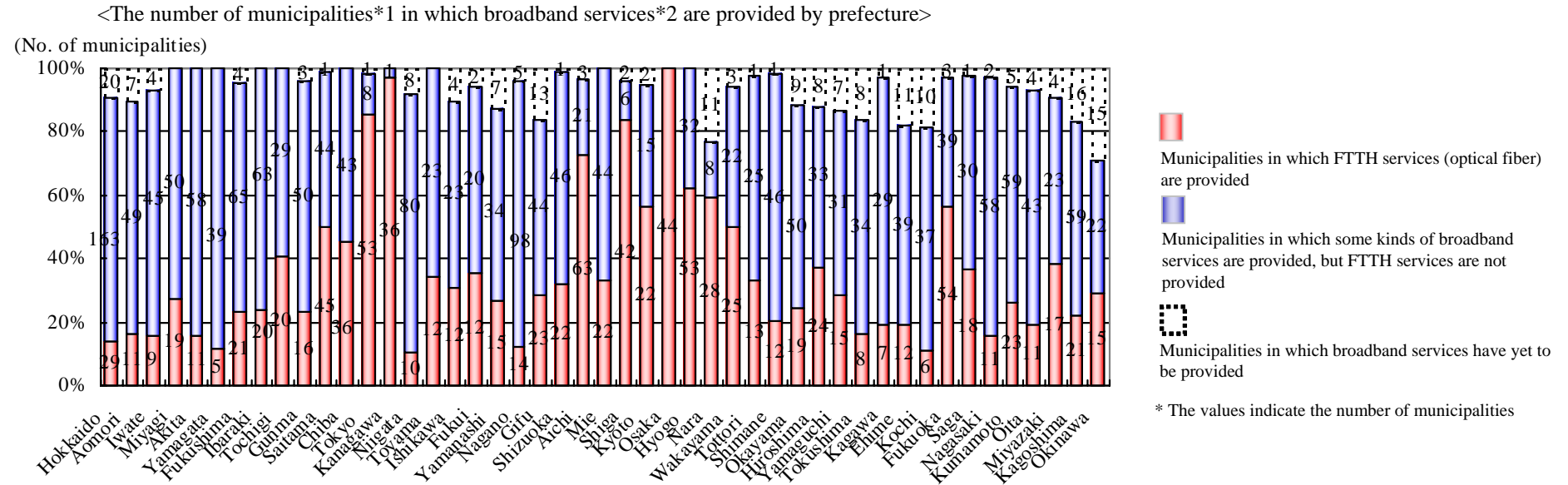
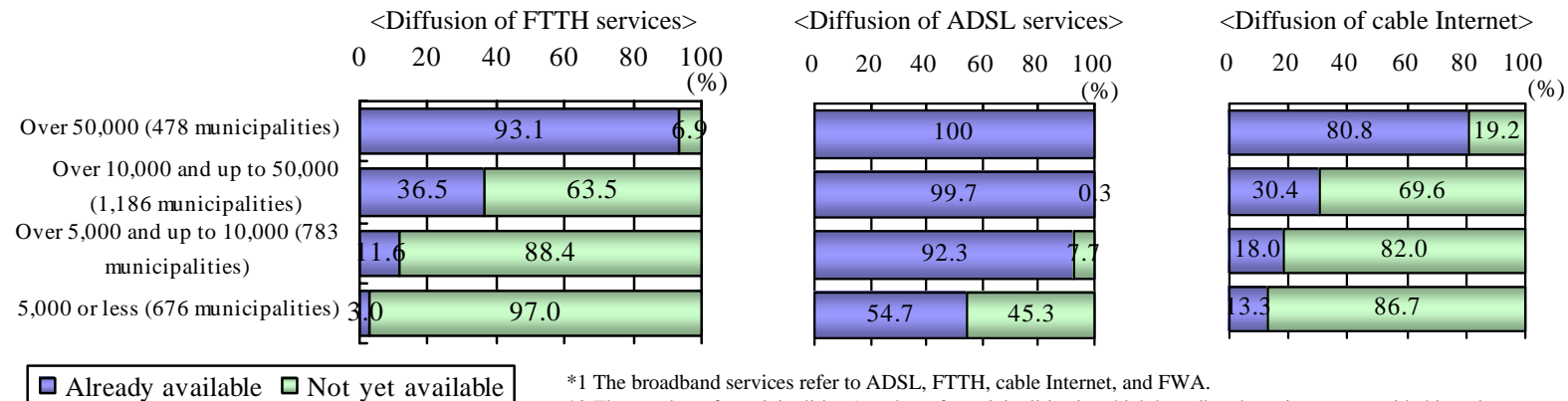


Figure 2: Diffusion of broadband services by population of the municipality (as of the end of March 2005)



*1 The broadband services refer to ADSL, FTTH, cable Internet, and FWA.

*2 The number of municipalities (number of municipalities in which broadband services are provided in at least part of the territory) was calculated by the MIC based on the information published on service providers' Websites, etc.

*3 The number of municipalities in Japan is based on the number as of April 1, 2004.

3 Backbone Circuit

- ◆ The Internet traffic surged in line with the progress of broadband. However, there is hardly any traffic data available.
- ◆ The MIC conducted an aggregation and trial calculation of traffic data with the cooperation of seven ISPs. As a result, it estimated the total traffic of broadband subscribers to be over 300 Gbps (133 Gbps [traffic of the broadband subscribers of the seven ISPs] divided by 0.411 [total market shares of the seven ISPs]).
- ◆ The traffic exchanges on the Internet are concentrated in Tokyo. Since this gives rise to vulnerability against cyber attacks and large-scale disasters, decentralization of traffic exchanges will be a future task.

Figure 1: Traffic by type of subscribers (transition in the average monthly traffic from September to November 2004; Gbps)

	In*	Out*
Broadband (DSL, FTTH) subscribers of seven ISPs	98.1 → 108.3 → 116.0	118.1 → 124.9 → 133.0
Other (dial-up, dedicated line, data center) subscribers of four ISPs	14.0 → 15.0 → 16.2	13.6 → 14.9 → 15.6

* "In" indicates the traffic coming in from subscribers to the seven (or four) ISPs (uploading), while "Out" indicates the traffic going out from the seven (or four) ISPs to subscribers (downloading).

Figure 2: Circuit capacity of 14 major ISPs for IX exchanges (February 2004)

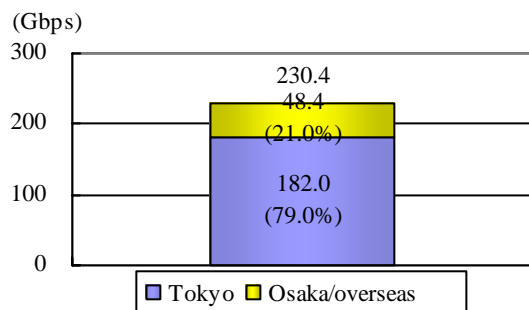
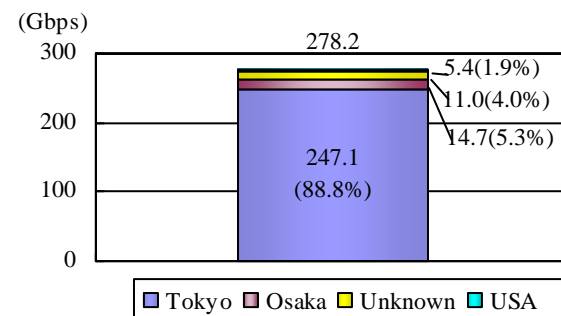


Figure 3: Circuit capacity of 14 major ISPs for private peering (February 2004)



<Reference> ICT Policy Toward Achieving u-Japan

◆ The measures shown below should be taken to realize u-Japan.

Development of ubiquitous networks

Developing seamless access environment for both fixed networks and mobile networks
(Release of radio spectrum, fixed and mobile convergence, integration between communications and broadcasting, etc.)

Nationwide establishment broadband infrastructure
(Elimination of the digital divides, provision of local information, digital broadcasting, competition policy, etc.)

Networking real objects
(RFID tags, sensor networks, intelligent home appliances, ITS, ubiquitous terminals, etc.)

Developing infrastructure for network collaboration
(Platforms, interoperability, high reliability, e-commerce, etc.)

Advanced Usage of ICT

Sophisticated social system reform by ICT
(Social/management innovations, institutional reforms, e-government/e-local governments, etc.)

Promoting creation, trading, and use of contents
(Distribution/payment, digital archives, contents creation, soft power, etc.)

Promoting universal designs
(Agent technology, user interface, information accessibility, etc.)

ICT human resource development
(Human resources development, promotion of joint ventures, educational reform, citizen participation, etc.)

Upgrading to a more enabling environment

Sorting out/clarifying challenges concerning the “shadows”
(Sorting out of the “shadows” into 100 challenges in ten fields to clarify the whole picture)

Promoting the “21 Strategies for ICT’s Safety and Security”
(Extraction of 21 priority issues and presentation of the countermeasures)

Addressing the surfacing of important issues
(Extraction of the surfacing of important issues for the future)

Establishing the Ubiquitous Network Society Charter
(Sorting out the basic principles and common awareness, and sending them out to the world as a charter)

International/technology strategies

International strategies
(Asia Broadband Program, elimination of international digital divides)

Technology strategies
(R&D in the priority areas for safe and secure ICT, strategic promotion of standardization, promotion of innovations toward sustainable development)

[Major Objective of u-Japan]

To become a leading ICT nation by 2010

(Front-runner)

