

Section 3

Use of Networks in Business

1. Current Status of Network Use in Business

(1) In-house and Business-to-Business (B-to-B) Use of Networks

In recent years, new terminals, devices, and tools such as RFID tags, contactless IC cards, and new network-compatible devices (hereinafter referred to collectively as “ubiquitous tools”) have been put to practical application and demonstrative testing is also increasing.

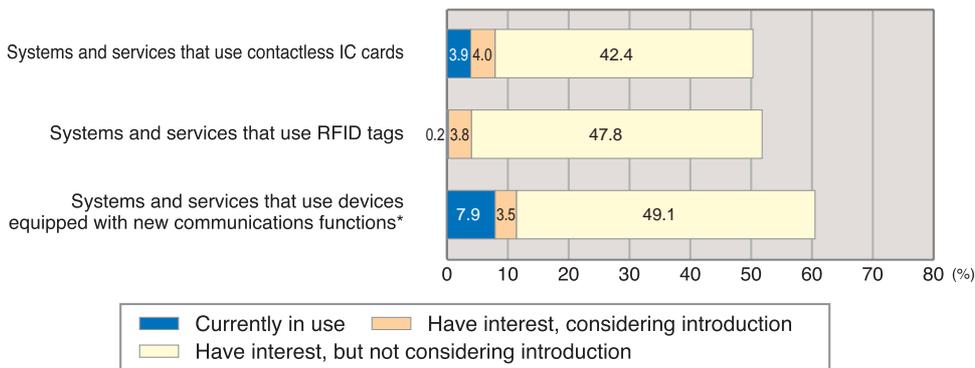
A survey of the use of systems and services that employ ubiquitous tools by businesses that do business mainly with other companies (B-to-B commerce) shows that 7.9% of such businesses have installed “systems and services that use devices equipped with new communica-

tions functions”, while 3.9% have installed “systems and services that use contactless IC cards”. Although the rates of use are currently low, many businesses are interested in using such systems and services (Figure 1-3-1).

Advanced information and communications network environments are providing benefits to numerous businesses that use those networks. For example, more than 70% of businesses using broadband and mobile networks believe that there are benefits to such use. In addition, nearly 50% of businesses believe that there are benefits from using ubiquitous tools (Figure 1-3-2).

As to details of the benefits, increasing the pace of business is considered highly significant in all network environments. A high percentage of businesses believe that the benefits of using ubiquitous tools will be even

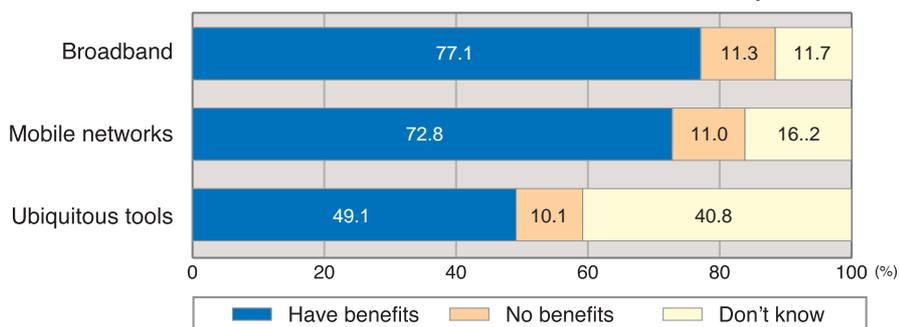
Figure 1-3-1 Introduction of Systems and Services that Use Ubiquitous Tools



*Devices newly equipped with communications functions refers to devices such as cars with GPS functions and remote-control cameras that in the past were not equipped with network functions but with advances in technologies have come to have such networks functions.

Source: Survey of Ubiquitous Network Usage Trend by Businesses

Figure 1-3-2 Existence of Benefits from the Use of Advanced Information and Communications Network Environments in In-house and B-to-B Operations*



* Percentage of businesses engaged in B-to-B commerce that have installed network environments

Source: Survey of Ubiquitous Network Usage Trend by Businesses

more substantial than the benefits from broadband and mobile networks including lowering business costs and reducing employee labor as well as high added value benefits including enhancing business analysis and proposal of business strategies, improving customer satisfaction, and promoting collaboration with business partners (Figure 1-3-3).

(2) Use of Networks in Business-to-Consumer (B-to-C) Commerce

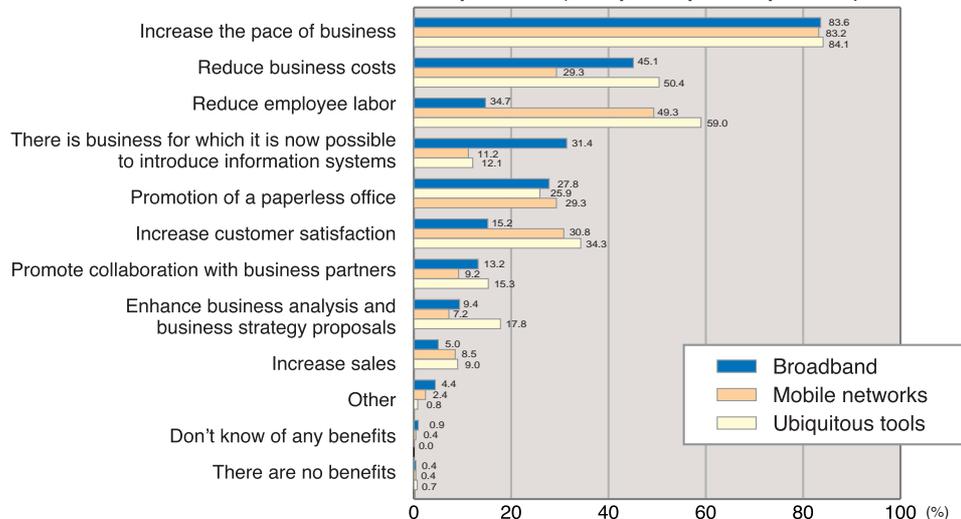
Of businesses currently engaged in B-to-C e-commerce using the Internet, 27.9% of businesses are conducting e-commerce suitable for broadband such as the distribution of large-volume content or the creation of sites suitable for viewing with broadband. When businesses that are currently interested in or considering engaging in such commerce are included, this figure

increases to 79.7% (Figure 1-3-4).

Benefits from the use of broadband engaged in B-to-C business are highly varied. More than 50% of businesses gave “increased service users,” “goods and services can be offered at all times,” and “expanded sales channels for goods and services” as benefits of using broadband in e-commerce (Figure 1-3-6).

Of businesses engaged in B-to-C e-commerce using the Internet, 46.0% engage in e-commerce that use mobile terminals such as Internet-compatible mobile phones; the percentage is higher than that of e-commerce suitable for broadband (Figure 1-3-5). More than 60% of businesses gave “expanded sales channels for goods and services,” “increased service users,” and “goods and services can be offered at all times” as benefits of engaging in B-to-C e-commerce suitable for mobile terminals (Figure 1-3-7).

Figure 1-3-3 Details of Benefits from the Use of Advanced Information and Communications Network Environments in In-house and B-to-B Operations (multiple responses possible)*



* Percentage of businesses engaged in B-to-B commerce that have installed/are considering to install network environments
Source: Survey of Ubiquitous Network Usage Trend by Businesses

Figure 1-3-4 Status of E-Commerce Suitable for Broadband *

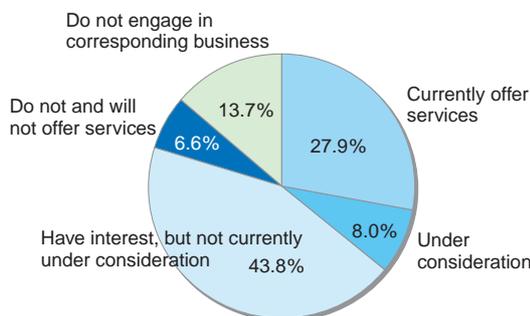
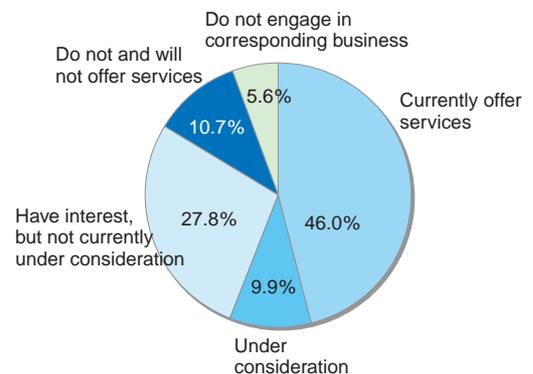


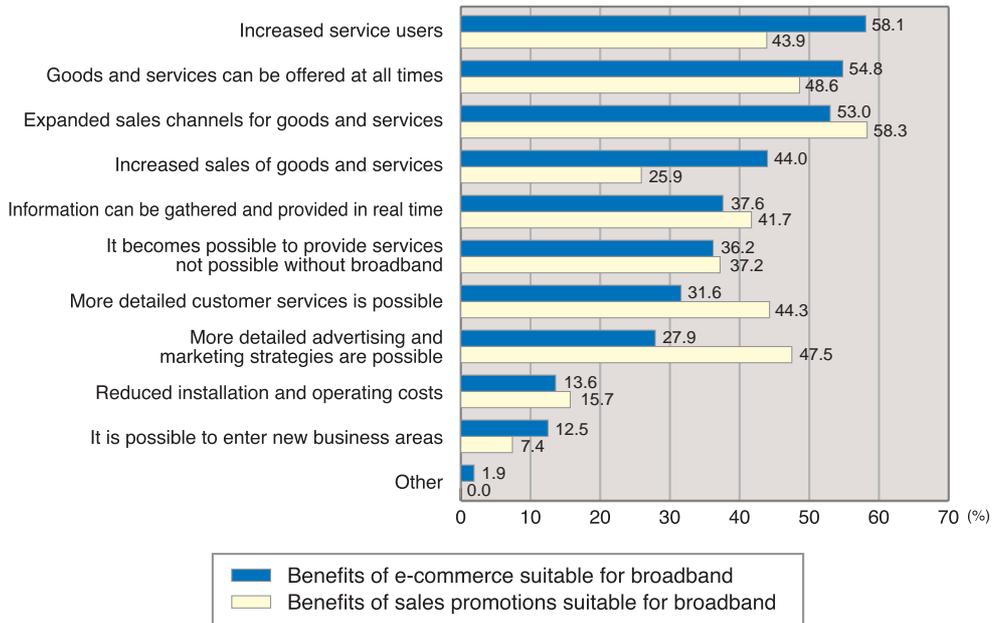
Figure 1-3-5 Status of E-Commerce Suitable for Mobile Terminals *



*Percentage of B-to-C businesses engaged in consumer-oriented e-commerce.

Source for Figures 1-3-4 and 1-3-5: Survey of Ubiquitous Network Usage Trend by Businesses

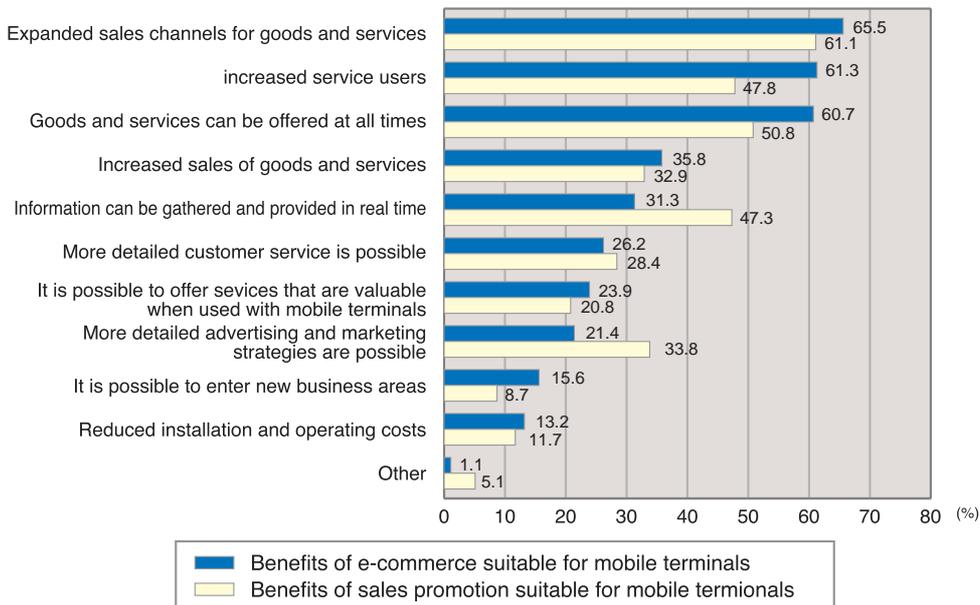
Figure 1-3-6 Benefits of E-Commerce and Sales Promotions Suitable for Broadband* (multiple responses possible)



* Percentages of responses by B-to-C businesses that are currently offering or considering e-commerce or sales promotions suitable for broadband.

Note: Broadband as used here for the purposes of comparison in Japan and the United States means an always-on connection with a fixed fee and a one-directional speed of at least 200 kbps. E-commerce means the sale of goods and the provision of services or contents for a fee using the Internet.

Figure 1-3-7 Benefits of E-Commerce and Sales Promotions Suitable for Mobile Terminals* (multiple responses possible)



* Percentages of responses by B-to-C businesses that are currently offering or considering e-commerce or sales promotions suitable for mobile terminals.

Source for Figures 1-3-6 and 1-3-7: Survey of Ubiquitous Network Usage Trend by Businesses

The provision of services to consumers using ubiquitous tools including RFID tags, contactless IC cards, intelligent home appliances, and network televisions has just started and there is only a small number of companies offering such services on a full scale. Consideration of practical applications is increasing, however, with 7.2% of companies considering the introduction of consumer services using contactless IC cards, and 6.2% considering the use of RFID tags.

Among companies that are using or are considering the use of ubiquitous tools, shopping (the sale of goods) is the most common application, accounting for more than 60% of such tools. In areas other than shopping, it is expected that mobile phones with embedded contactless IC cards will be used in entertainment and transportation, while RFID tags will be applied in foodstuff related areas (Figure 1-3-8).

The most common devices and terminals targeted by companies engaged in B-to-C commerce that currently

conduct e-commerce using the Internet are PCs at 89.7% and Internet mobile phones at 43.9%. When asked what types of terminals they would target for e-commerce newly in the future, however, the most common responses were Internet mobile phones followed by network televisions at 11.1% and other intelligent home appliances at 6.3% (Figure 1-3-9).

(3) Comparison of network use by businesses in Japan and the United States

Use of advanced information and communications networks environments by businesses in the United States is also progressing, and businesses are aware of a variety of benefits. Because of differences in network environments and in awareness concerning networks, there are some differences between Japan and the United States in the current network use and the perceived benefits of network use.

The percentage of B-to-C businesses that are cur-

Figure 1-3-8 Ubiquitous Tools Currently in Use or Being Considered for Use (multiple responses possible)

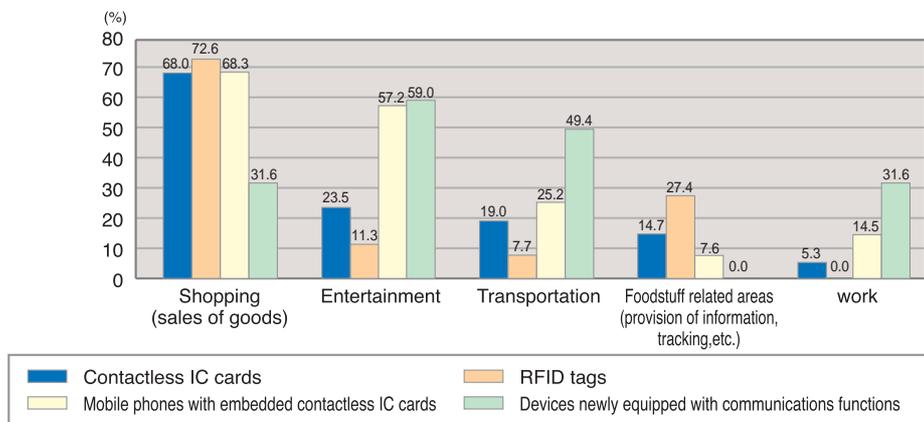
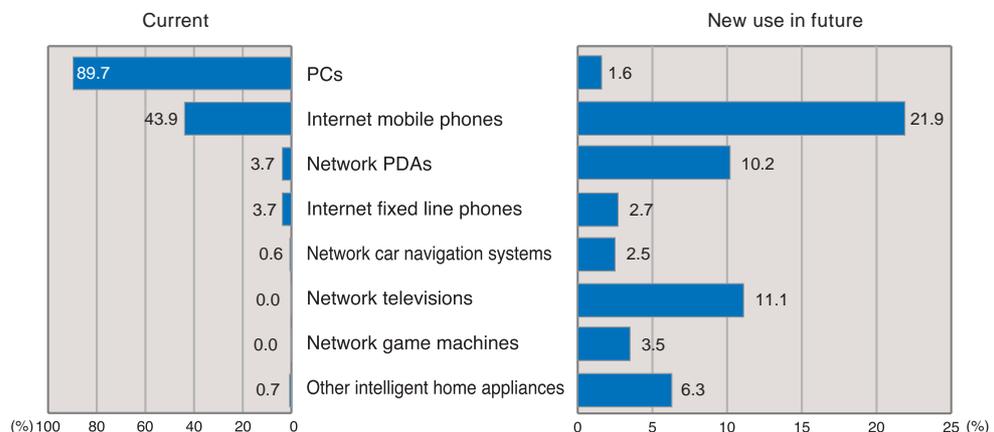


Figure 1-3-9 Devices and Terminals Targeted for E-Commerce Using the Internet* (currently in use and being considered for new use) (multiple responses possible)



* Percentages of B-to-C companies currently offering e-commerce using the Internet.

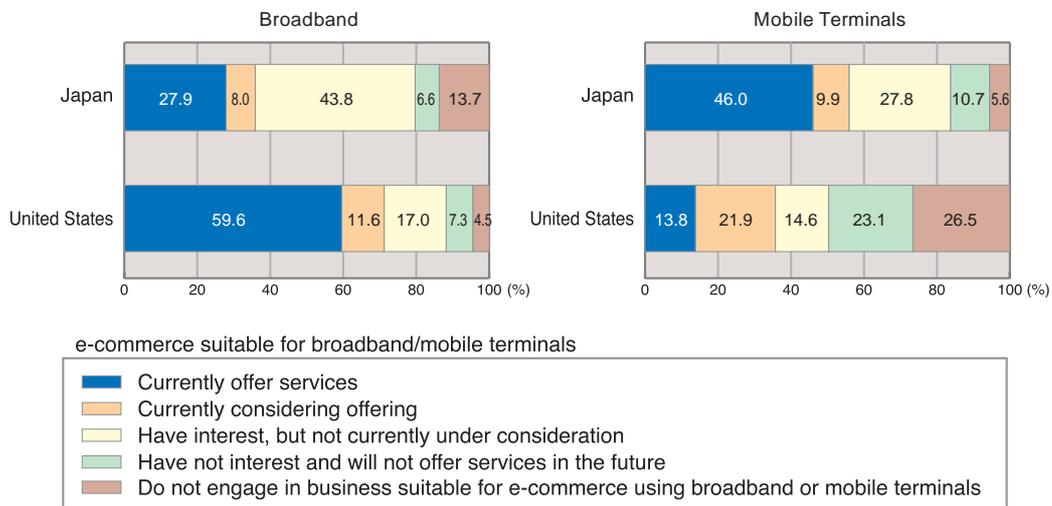
Source for Figures 1-3-8 and 1-3-9: Survey of Ubiquitous Network Usage Trend by Businesses

rently conducting e-commerce suitable for broadband is higher in the U.S., but the percentage of companies conducting e-commerce suitable for mobile terminals is higher in Japan (Figure 1-3-10). This indicates that in Japan, the use of mobile Internet is more widespread and that business using Internet mobile phones is flourishing.

When asked about the benefits of using advanced information and communications network environments, more companies in Japan responded that it will “increase

the pace of business.” There were no substantial differences between Japan and the U.S. in categories relating to business efficiency such as “reduce business costs” and “reduce employee labor,” but Japan is higher than the U.S. in some categories. In categories concerning increases in added value such as “increase sales” and “enhance business analysis and business strategy proposals,” more U.S. companies perceived benefits than Japanese companies (Figure 1-3-11).

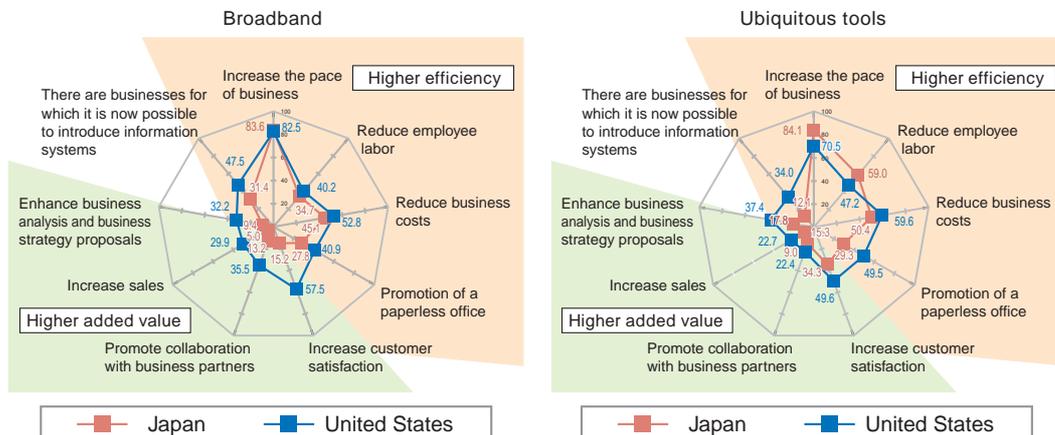
Figure 1-3-10 E-Commerce of B-to-C companies suitable for Broadband and Mobile Terminals in Japan and the United States



* Percentages of B-to-C companies currently conducted consumer-oriented e-commerce.

Source for Figures 1-3-10: Survey of Ubiquitous Network Usage Trend by Businesses

Figure 1-3-11 Comparison of Benefits Obtained from the Use of Advanced Information and Communications Network Environments in Japan and the United States



Source for Figures 1-3-11: Survey of Ubiquitous Network Usage Trend by Businesses

A comparison of the percentages of companies that believe there are benefits to using broadband and of companies that believe there are benefits to using ubiquitous tools, a lower percentage of U.S. companies perceive benefits to using ubiquitous tools while higher percentages of Japanese companies believe there are benefits to using ubiquitous tools relating to higher added value such as “increase customer satisfaction,” “increase sales,” and “promote collaboration with business partners” (Figure 1-3-12). This indicates that expectations concerning the use of ubiquitous tools such as RFID tags

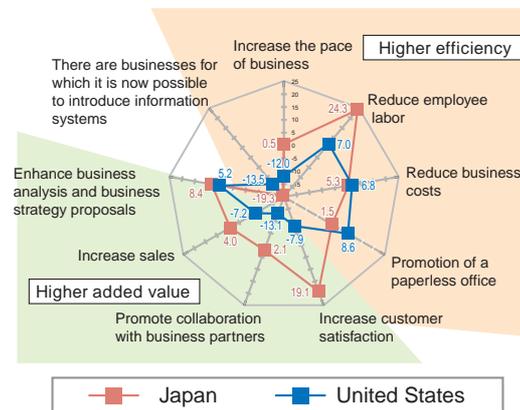
and contactless IC cards are higher among Japanese companies than U.S. companies and Japanese companies are considering different methods of application of existing information and communications networks.

2. Future Prospects for Network Use by Businesses

(1) Examples of new network applications in Japan and overseas

Networks are becoming increasingly advanced and

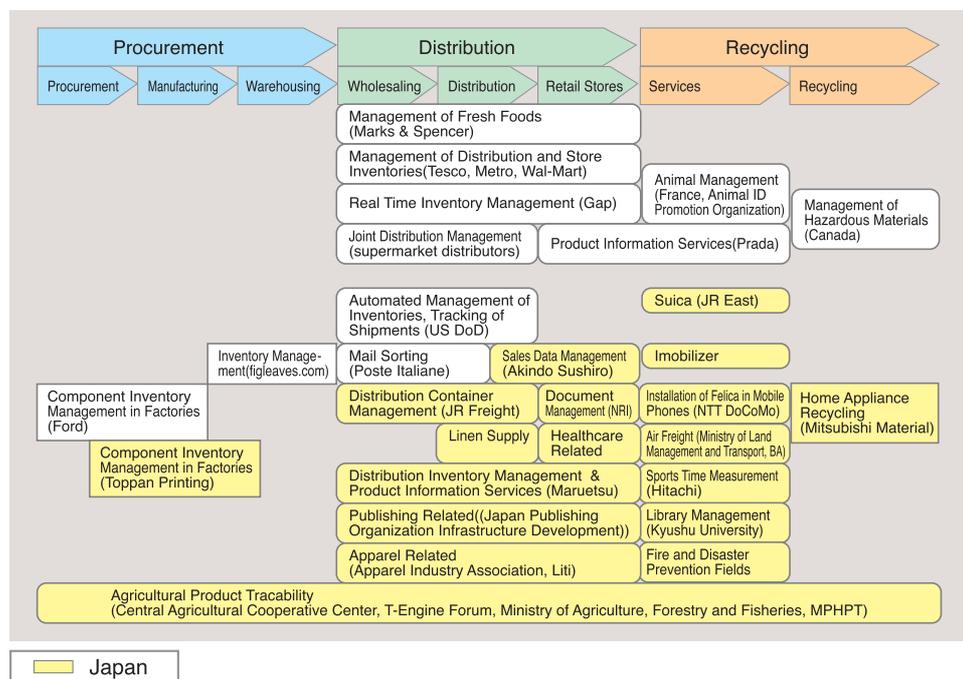
Figure 1-3-12 Comparison of Benefits Obtained from the Use of Ubiquitous Tools and those from the Use of Broadband* in Japan and the United States



*The percentage of companies that have enjoyed benefits from the use ubiquitous network tools minus the percentage of companies that have enjoyed benefits from the use of broadband.

Source for Figures 1-3-12: Survey of Ubiquitous Network Usage Trend by Businesses

Figure 1-3-13 Examples of Uses of RFID Tags in Japan and Other Countries



Produced from the report of the Research Study Group for High-Level Usage of Electronic Tags in the Age of Ubiquitous Networks, MPHPT

their use is expanding to a variety of fields, and diverse services using broadband and mobile networks, which have grown rapidly in the past several years are being developed. At the same time, new terminals, devices, and tools (ubiquitous tools) such as RFID tags, contactless IC cards, and intelligent home appliances are being put into practical application. Amidst these developments, examples of new network businesses can be seen.

For example, the application of RFID tags is for the most part limited to use within individual companies, but in the future, comprehensive application including use among multiple companies and services that provide information to consumers are expected. Demonstration tests of such applications are currently being conducted in Japan and other countries (Figure 1-3-13).

(2) Expectations of businesses concerning ubiquitous networks

When asked about the features of ubiquitous networks that have an impact on their business, both Japanese and American businesses listed a wide range of features created by ubiquitous networks. Japanese businesses have a strong awareness that ubiquitous networks will offer “ability to use networks regardless of location,” and make it possible “historical tracing and management using RFID tags,” while American businesses have high expectations of “improved network stability.”

In addition, many American businesses have high expectations concerning features that will enhance existing network function such as “ability to exchange large volumes of data at low cost” and engage in “communications with high security levels,” while many Japanese

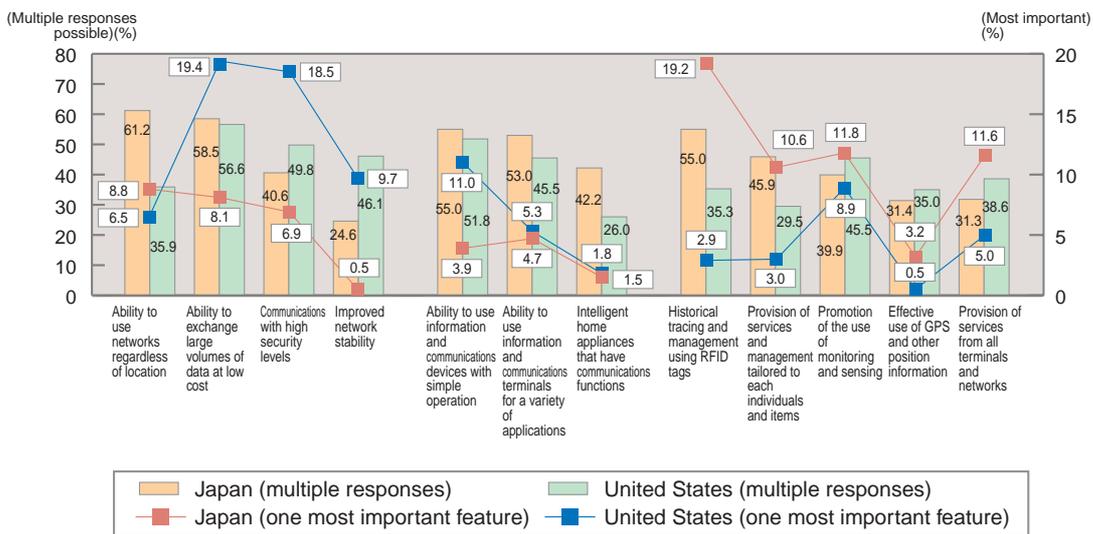
businesses mentioned features that make use of the properties of ubiquitous networks including “historical tracing and management using RFID tags” and “provision of services from all terminals and networks” (Figure 1-3-14). Japanese businesses see ubiquitous networks as information and communications technologies with new functions, while American businesses tend to see than as an extension of existing networks.

(3) The direction of network use by businesses

As a result of the broader bandwidths and lower cost of Internet lines and the higher performance and lower cost of information and communications terminals including PCs and mobile terminals in the past several years, information and communications networks are making significant qualitative and quantitative strides. For example, initially the main mode of use of the Internet was a PC connected to a narrow-band dial-up telephone line, but owing to the adoption of broadband, the proliferation of mobile Internet, the use of large-volume data and Internet access from outside the home have become expected as a matter of course by consumers. As a result, the number of companies providing services to consumers using broadband and mobile networks is increasing and markets are expanding.

In conjunction with these developments in broadband and mobile network use, new applications for information and communications networks are also starting to appear in Japan. For example, RFID tags and contactless IC cards are tools that can increase operational efficiency and make possible the provision of high value added services, and some companies are already starting

Figure 1-3-14 Comparison of the Effects of the Features of Ubiquitous Networks on the Business and Operations of Japanese and U.S. Companies*



* Percentages of B-to-B companies.

Source: Survey of Ubiquitous Network Usage Trend by Businesses

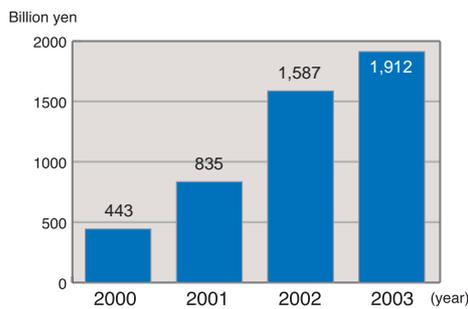
to use them. In the future, businesses will overcome the barriers imposed by existing lines, terminals and communications volumes to provide services intended for environments with diverse terminals. We can also expect the development of new services customized for specific individuals and objects using various devices, RFID tags, and contactless IC cards connected to networks as well as direct links between objects that will further increase the efficiency of business operations and increase the added value provided to consumers. Business and services formats are likely to change in virtually all areas.

In this way, ubiquitous networks will enhance existing networks as well as link and combine individual networks, including fixed line and mobile communications or communications and broadcasting, devices, and terminals. This will make technologically possible the distribution of services and contents with a high degree of

freedom. For businesses to enjoy the true value of this, however, they must not only consider the benefits to themselves, but must also provide services that have real benefit to all the businesses and consumers. Otherwise, the introduction of systems through industry and their use by consumers will not progress, and there will be little benefit to investing in networks.

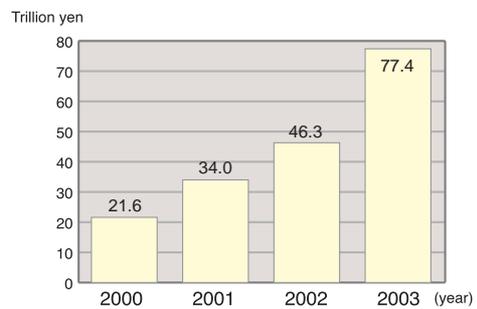
In order to continue the construction of service systems and infrastructure that will promote the development of network use and enable both businesses and consumers to enjoy their benefits, each company must consider the use of information and communications systems that go beyond simply increasing efficiency but also increase added value and keep in mind the construction of services that can be used in an integrated fashion throughout industry and society.

Figure 1-3-15
Scale of B-to-C Electronic Commerce Markets



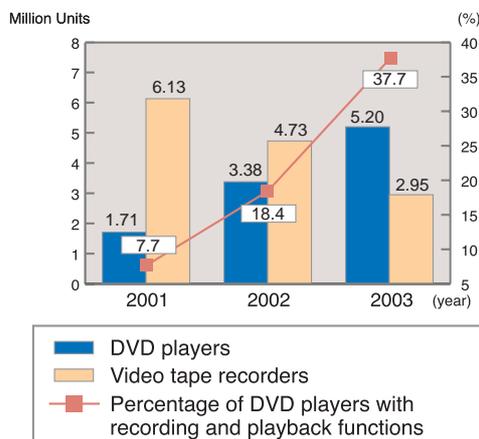
Source: Survey on the Economic Analysis of IT

Figure 1-3-16
Scale of B-to-B Electronic Commerce Markets



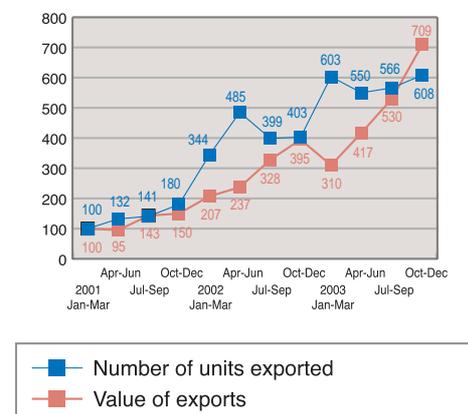
Source: Market Research on Electronic Commerce in FY2003, Ministry of Economy, Trade and Industry, Electronic Commerce Promotion Council of Japan, NTT Data Institute of Management Consulting

Figure 1-3-17 Domestic Shipments of DVD Players and Video Tape Recorders



Produced from Japan Electronics and Information Technology Industries Association documents.

Figure 1-3-18 Number and Value of Color Television Exports (for broadcast use, excluding CRT televisions) (with the first quarter of 2001 set to 100)



Source: Survey on the Economic Analysis of IT

3. The Impact of Ubiquitous Networks on the Japanese Economy

(1) Developments in evolving advanced information and communications network environments and markets

Against a backdrop of a rapid expansion of broadband and mobile networks in recent years and advances in information and communications technologies, various business and service markets that make use of advanced information and communications network environments have grown rapidly.

The scale of B-to-C e-commerce markets was 1911.7 billion yen in 2003 (a 20.5% increase over the previous year) while B-to-B e-commerce markets reached 77.4 trillion yen (a 67.2% increase over the previous year) (**Figures 1-3-15 and 1-3-16**).

The number of DVD players shipped exceeded the number of video tape recorders shipped, reaching 5.2 million units in 2003 (a 54.0% increase over the previous year) (**Figure 1-3-17**). In addition, total domestic shipments of flat-panel televisions including liquid crystal display and plasma display panel (LCD, PDP) televisions are increasing rapidly, reaching 1.77 million units in 2003 (a 47.7% increase over the previous year). Sales of televisions compatible with terrestrial digital broadcasts began in June 2003, and in the half year until terrestrial digital broadcasts began in December of that year, sales were strong at 0.44 million units.

Demand is high in Japan and overseas for the high-performance products concerning which Japanese manufacturers exhibit strong competitiveness, and the value of exports is increasing. The number of units and the value of exports of color televisions other than cathode ray tube units have been increasing over the past several years as a result of higher exports of LCD and PDP televisions (**Figure 1-3-18**).

The Japanese economy is recovering steadily, supported by increased activity in markets for advanced information and communications devices, increases in capital investment, and growing exports. The real GDP growth rate has improved and the rate was positive for the entire year in 2003 for the first time in three years.

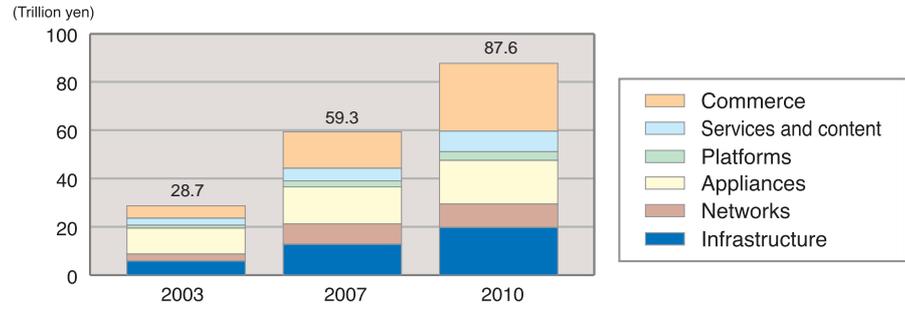
In the future, new business activities, services, and goods that use advanced network environments and meet the needs of consumers will continue to expand in a wide range of markets and will continue to support the Japanese economy and be put to use around the world.

(2) Current size of ubiquitous network related markets and future prospects

As advanced information and communications network environments develop, industries that will support ubiquitous networks in the future such as information and communications device manufacturing and network services as well as businesses whose use of networks has been limited by various problems with information and communications networks are supposed to create new services using networks and develop new businesses and services, thereby stimulating the Japanese economy.

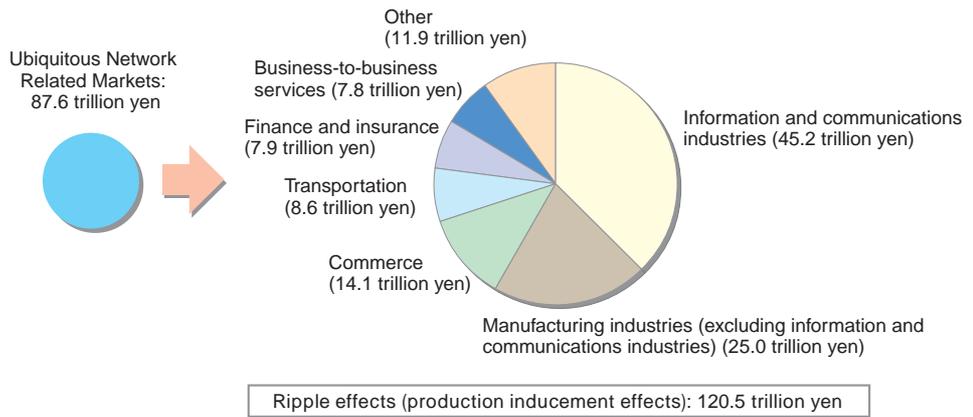
It is estimated that the scale of the markets supporting ubiquitous networks including infrastructure, network services, information and communications devices, and platforms as well as the markets for services and commerce using advanced information and communications network environments will reach 59.3 trillion yen in 2007 and 87.6 trillion yen in 2010. Compared to 2003, ubiquitous network related markets are expected to be 3.1 times larger in 2010 (**Figure 1-3-19**). Also, the economic ripple effects (production inducement effects) of ubiquitous network related markets (final demand) on all industries are forecast to reach 120.5 trillion yen in 2010 (**Figure 1-3-20**).

Figure 1-3-19 Forecast of Ubiquitous Network Related Markets



Billion Yen	2003	2007	2010	2010/2003
Commerce	5,133	15,104	28,070	5.5 times
Services and contents	2,898	5,195	8,498	2.9 times
Platforms	1,212	2,481	3,590	3.0 times
Appliances	10,720	15,338	18,056	1.7 times
Networks	2,929	8,466	9,693	3.3 times
Infrastructure	5,785	12,733	19,738	3.4 times
Ubiquitous network related markets	28,675	59,316	87,644	3.1 times

Figure 1-3-20 Economic Ripple Effects of Ubiquitous Network Related Markets (production inducement effects on all industries in 2010)



Source for Figures 1-3-19 and 1-3-20: Survey on the Economic Analysis of IT