

# Chapter 5

## Basic Data on the ICT Field

### Part 2

### Section 1 ICT Industry Trends

#### 1. Economic size of the ICT industry

##### (1) Market size (domestic production)

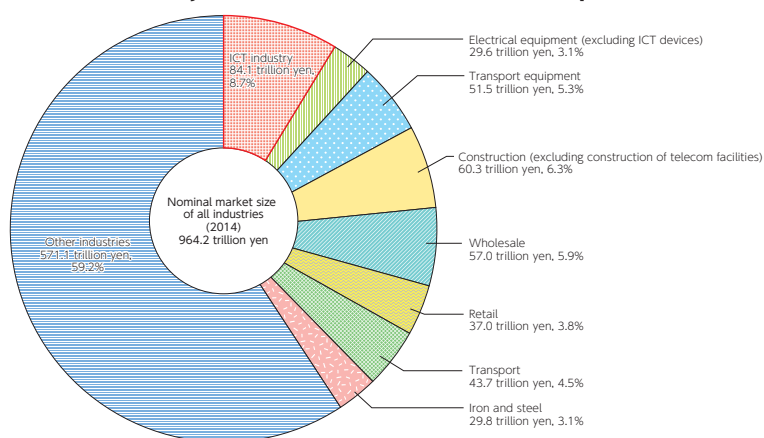
- ICT industry market accounted for about 8.7 percent of all industries, making it the largest industry

The ICT industry's market size in 2014 was 84.1 trillion yen (based on nominal domestic production), accounting for 8.7 percent of all industries and making it the largest industry in the country (Figure 5-1-1-1). Looking at the industry's performance over time finds that its production value cooled off for several years after 2000 in response to the collapse of the IT bubble. The industry entered positive growth territory again starting in 2005, but its production value plummeted between 2008 and 2009 due to the global economic crisis. ICT's

production value continued to slide even after 2010 until signs of recovery finally started to appear in the years between 2012 and 2014 (Figure 5-1-1-2).

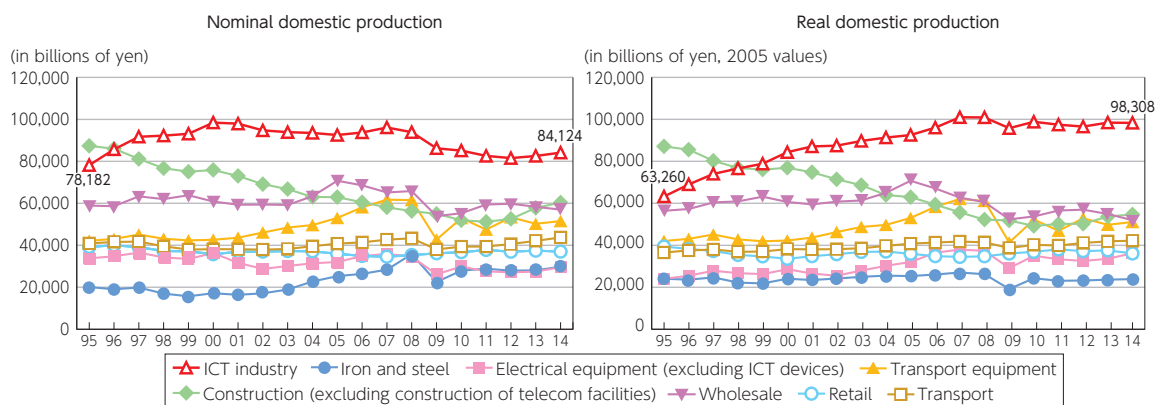
Looking at the transitions in market size (based on real domestic production) of the main industries in constant 2005 values reveals that the ICT industry recovered from the 2008 – 2009 global financial crisis to 98.3 trillion yen in 2010 but remained flat thereafter. The ICT industry's market size (based on real domestic production) in 2014 contracted by just 0.1 percent from the previous year to 98.3 trillion yen. The industry's average annual growth rate from 1995 to 2014 was 2.3 percent (Figure 5-1-1-2).

Figure 5-1-1-1 Market sizes of major industries (based on nominal domestic production) (breakdown) (2014)



(Source) "Study on Economic Analysis of ICT," MIC (2016)

Figure 5-1-1-2 Trends in market sizes of major industries (based on nominal domestic production and real domestic production)



(Source) "Study on Economic Analysis of ICT," MIC (2016)

## (2) Gross domestic product (GDP)

- The real GDP of the ICT industry in 2014 accounted for 10.8 percent of all industries

The nominal GDP of the ICT industry rose slightly in 2014 by 0.4 percent year-on-year to 37.1 trillion yen. Conversely, the real GDP of the ICT industry in constant 2005 values slipped 0.8 percent year-on-year in 2014 to 51.1 trillion yen. The nominal GDP has trended downward since the 2009 financial crisis, but the real GDP has been on a general upward direction (Figure 5-1-1-3).

Looking at the size of nominal GDP of the main industries finds that the ICT industry's nominal GDP accounts for 7.9 percent of the combined nominal GDPs of all industries and is the second largest after the wholesale industry. The growth rate of the ICT industry in terms of nominal GDP rebounded to plus 0.4 percent over 2013 and 2014. Examining the real GDPs of the main industries

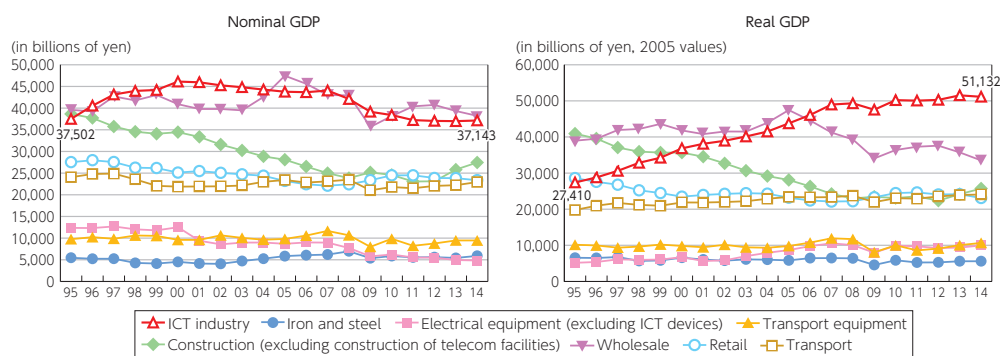
finds that the ICT industry's real GDP accounts for 10.8 percent of all industries, making it the largest of all major industries (Figure 5-1-1-4).

## (3) Employment

- ICT industry employment totaled 4.124 million in 2014 accounting for 7.2 percent of total employment in all industries

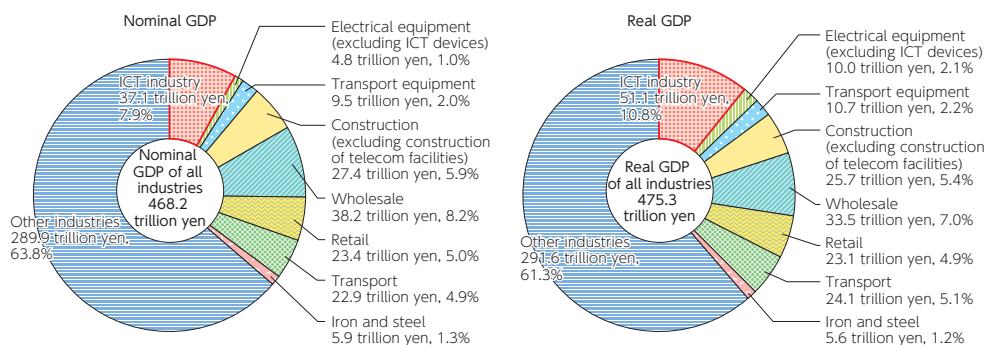
The ICT industry employed 4.124 million people in 2014 (up 1.1 percent from the previous year), accounting for 7.2 percent of total employment in all industries. Employment declined by 7.4 percent from 2013 in the ICT-related construction sector, by 2.8 percent in the ICT-related manufacturing sector, and by 1.3 percent in the Internet-related services sector. But employment in the communications sector and the video, audio, and text information production sector increased, by 5.5 percent and 1.7 percent respectively (Figure 5-1-1-5).

Figure 5-1-1-3 Transitions in the nominal GDP and real GDP of major industries<sup>6</sup>



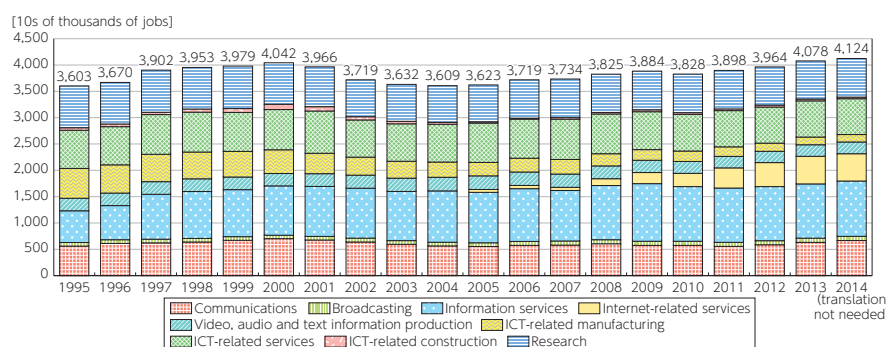
(Source) "Study on Economic Analysis of ICT," MIC (2016)

Figure 5-1-1-4 Nominal GDP and real GDP of major industries



(Source) "Study on Economic Analysis of ICT," MIC (2016)

Figure 5-1-1-5 Transitions in ICT industry employment



(Source) "Study on Economic Analysis of ICT," MIC (2016)

<sup>6</sup> See Data 3 and Data 4 at the end for details about these figures.

## 2. ICT industry contributions to the national economy

### (1) ICT industry's economic spillover effects

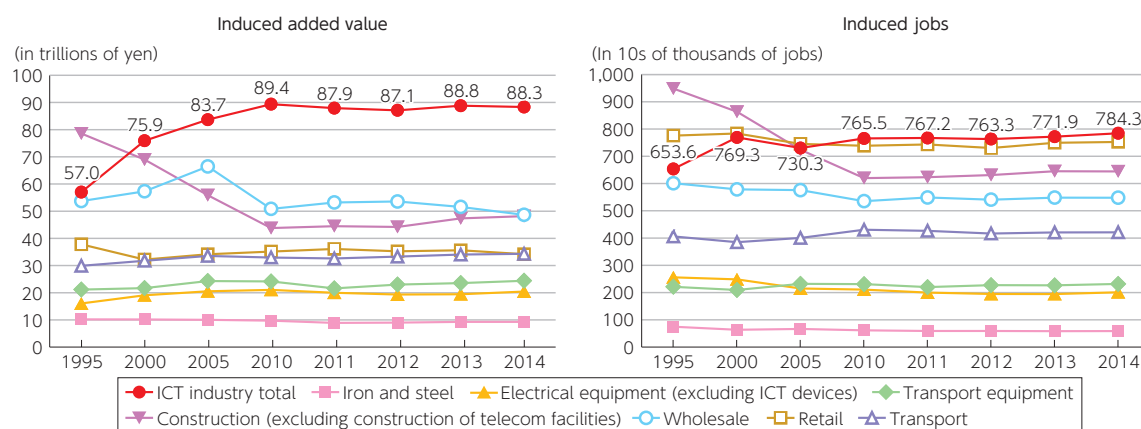
- The ICT industry contributes the largest economic spillover effects of all industries in terms of added value and employment inducements

The ICT industry's real domestic production in 2014 was 98.3 trillion yen. The industry's economic spillover effects,<sup>7</sup> estimated to be 88.3 trillion yen in added value and 7.843 million jobs, were the largest of all Japan's industries. By comparison, in 1995 the ICT industry's real domestic production value was 63.3 trillion yen, which contributed 57.0 trillion yen in added value and 6.536

million jobs. Because technological innovation has a large impact on the ICT industry, the industry is believed to be a stronger driver of added value than employment (Figure 5-1-2-1).

From the mid-1990s on, the added value and employment induced from primary industries, such as iron and steel and electrical equipment, have been flat. In contrast, contributions from the ICT industry (particularly in added value) soared until 2010 and have been maintained at a high level ever since.

**Figure 5-1-2-1 Transitions in economic spillover effects (induced added value and jobs) from major industries' production activities**



(Source) "Study on Economic Analysis of ICT," MIC (2016)

## 3. Research and development in the ICT field

### (1) Research and development spending

- The ICT industry<sup>8</sup> spent 4.0493 trillion yen on research in FY 2014, accounting for 29.8 percent of all corporate research spending

According to the "2015 Research Investigation Report on Science and Technology", Japan's total scientific and technological research spending (i.e., research spending) in FY 2014 stood at 18.9713 trillion yen (the combined research spending by enterprises, nonprofit organizations, public agencies, universities, etc.).

Corporate research spending, which accounts for about 70 percent of all research spending, was 13.5864 trillion yen. Of this amount, 4.0493 trillion yen (29.8 percent) was spent on research by the ICT industry. The ICT equipment and appliance manufacturing segment was largest research spender in the ICT industry (Figure 5-1-3-1).

### (2) Technology trading

- The ICT industry posted a surplus in technology exports<sup>9</sup> in FY 2014

The value received from Japan's technology exports in FY 2014 totaled 3.6603 trillion yen, to which the ICT industry contributed 480.8 billion yen, or 13.1 percent. On the other side of technology trades, the costs of technology imports was 513.0 billion yen, of which the ICT industry paid out 256.7 billion yen, or 50.0 percent. Both Japan and the ICT industry posted export surpluses in technology.

The ICT equipment and appliance manufacturing segment accounted for the largest share of the ICT industry's technology imports and exports (Figure 5-1-3-2).

<sup>7</sup> There are two methods of calculating economic spillover effects: (1) calculating the economic spillover effects for all Japan's industries brought about by each industry sector's final demand, focusing on the goods and services that constitute the industry sector's final demand and (2) calculating the economic spillover effects for all Japan's industries brought about by each industry sector's production activities (total of final demand and intermediate demand), focusing on the industry sector itself. The latter method was used here.

<sup>8</sup> ICT industry here refers to the ICT equipment and appliance manufacturing industry, the electrical equipment and appliance manufacturing industry, the electronic component, device, and circuitry manufacturing industry, and the information and communications industry (including the information services, telecommunications, broadcasting, Internet-related services, and other ICT sectors).

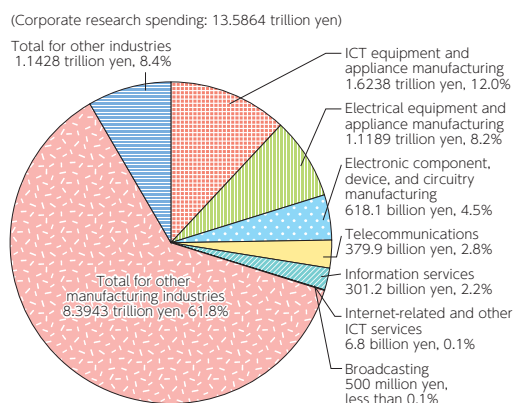
<sup>9</sup> The value of technology trade is the equivalent value received from the provision (export) of patents, knowledge, technical direction, and other forms of technology transfers to other countries or the equivalent value paid to receive (import) the same forms of technology transfers from other countries.

### (3) Number of researchers

- The ICT industry employed 182,730 researchers, or 36.1 percent of all corporate researchers in Japan

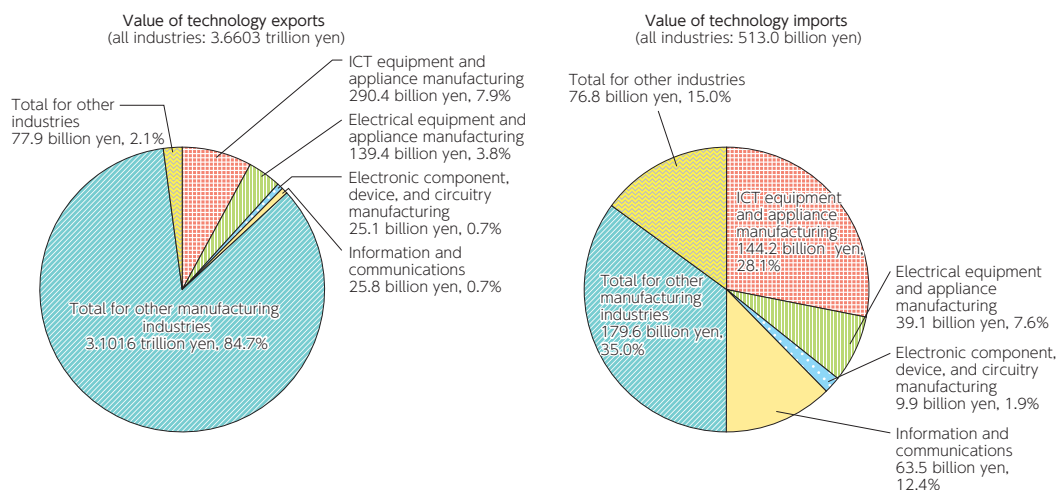
There were 866,900 researchers in Japan on March 31, 2015 (the total of all researchers at enterprises, non-profit organizations, public agencies, universities, etc.). Enterprises employed 506,134 researchers, or about 60 percent of the total. The ICT industry employed 182,730 researchers, or 36.1 percent of all corporate researchers in Japan. The ICT equipment and appliance manufacturing segment had the most researchers of any ICT industry sector (Figure 5-1-3-3).

**Figure 5-1-3-1 Breakdown of corporate research spending by industry (FY 2014)**



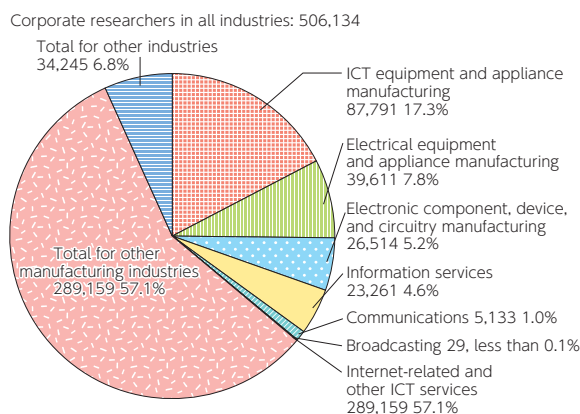
(Source) Prepared from the "2015 Research Investigation Report on Science and Technology," MIC

**Figure 5-1-3-2 Technology trading by industry (FY 2014)**



(Source) Prepared from the "2015 Research Investigation Report on Science and Technology," MIC

**Figure 5-1-3-3 Corporate researchers by industry (as of March 31, 2015)**



(Source) Prepared from the "2015 Research Investigation Report on Science and Technology," MIC



## 4. State of ICT enterprise operations

The Basic Survey on the Information and Communications Industry is a general statistical survey (started in 2010) that MIC and the Ministry of Economy, Trade and Industry jointly conduct under the Statistics Act (Law No. 53 of 2007) to clarify the operations of enterprises belonging to the ICT industry — a Large Category G in the Japan Standard Industry Classification — and to obtain basic data for ICT industry policies. The following sections provide an overview of the 2015 survey that pertains to ICT enterprises.

### (1) Summary of enterprises engaging in ICT business operations (activity-base results)

#### a. General summary of the survey results

- 5,639 enterprises were engaged in ICT business operations with sales in excess of 46 trillion yen

Sales attributed to ICT business operations in FY 2014 totaled 46.5275 trillion yen (total sales by the enterprises were 74.0824 trillion yen). By sector, the telecommunications sector accounted for 36.6 percent of all sales (up 0.2 percentage points from the previous year), the software sector 32.0 percent (up 0.5 points), and the infor-

mation processing services sector 11.2 percent (up 0.4 points) (Figure 5-1-4-1).

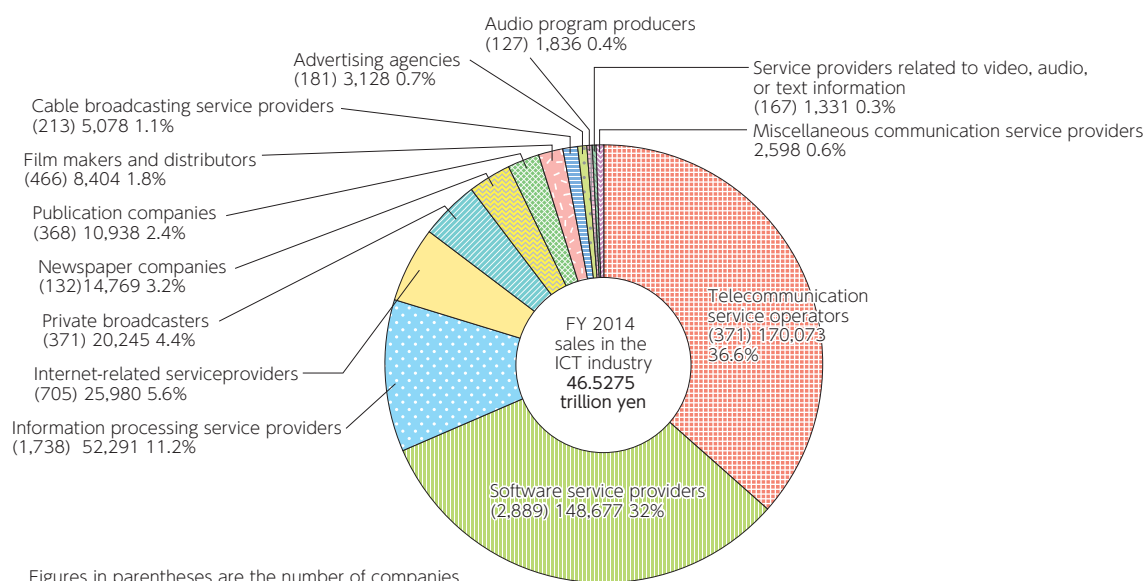
The number of enterprises engaging in ICT business operations (irrespective of whether ICT business operations are the enterprise's mainstay operations) stood at 5,519. Operating profits were 5.4997 trillion yen, ordinary income was 5.7321 trillion yen, and the enterprises held 9,510 subsidiaries and associated companies.

#### b. Breakdown of sales

- Enterprises capitalized at less than 100 million yen accounted for more than 50 percent of all enterprises in eight of the 12 ICT industry sectors

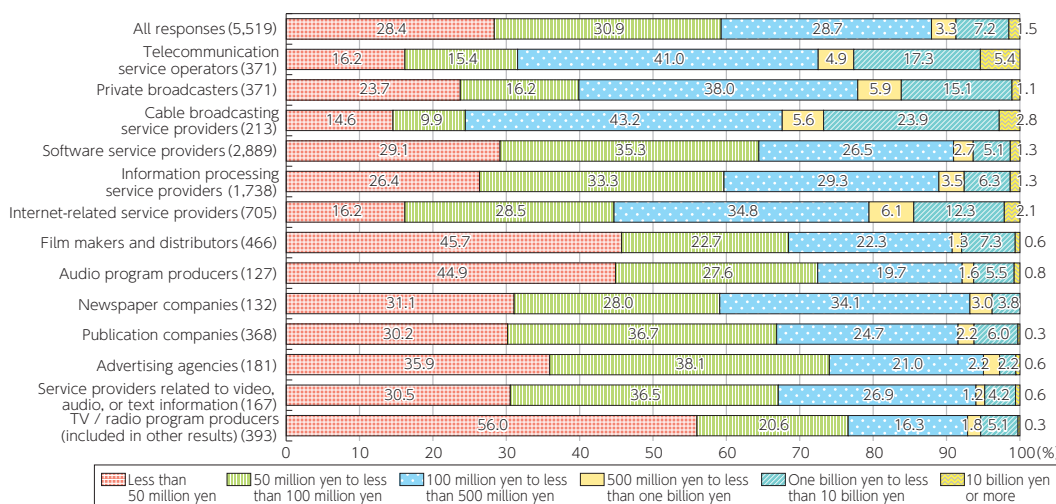
A breakdown of ICT industry enterprises by capital size discovers that enterprises capitalized at less than 100 million yen accounted for more than 50 percent of all enterprises in 8 of the 12 ICT industry sectors. Of particular note is the video information production and distribution sector and the audio information production sector, where enterprises capitalized at less than 50 million yen accounted for more than 40 percent of all enterprises in the respective sectors (Figure 5-1-4-2).

Figure 5-1-4-1 ICT industry sales



(Note) "Miscellaneous communication service providers" refers to enterprises that selected "other" as the primary business in the breakdown of sales attributable to ICT business operations.  
(Source) "2015 Basic Survey on the Information and Communications Industry," MIC / METI

Figure 5-1-4-2 Breakdown of ICT industry enterprises by capital size



(Source) "2015 Basic Survey on the Information and Communications Industry," MIC / METI

## 5. Telecommunication market trends

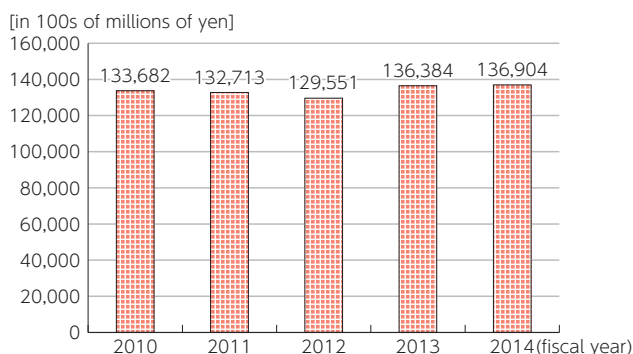
### (1) Market size

- Mobile communications accounted for about 60 percent of sales in the telecommunications sector, while, by service category, the data transmission services' share has been rising year by year

Sales in the telecommunications sector in FY 2014 were 136,904 trillion yen (an increase of 0.4 percent from the previous year) (Figure 5-1-5-1). Fixed-line communications accounted for 32.9 percent of all sales in FY 2013, and mobile communications (mobile phones and PHS

handsets) for 55.8 percent (Figure 5-1-5-2). Looking at sales by service category finds voice transmission services accounted for 30.5 percent and data transmission services for 49.5 percent (Figure 5-1-5-3). The average revenue per user (ARPU) among the main mobile communication service providers was 4,170 yen for NTT Docomo, 6,130 yen for KDDI, and 4,700 yen for SoftBank (Figure 5-1-5-4).

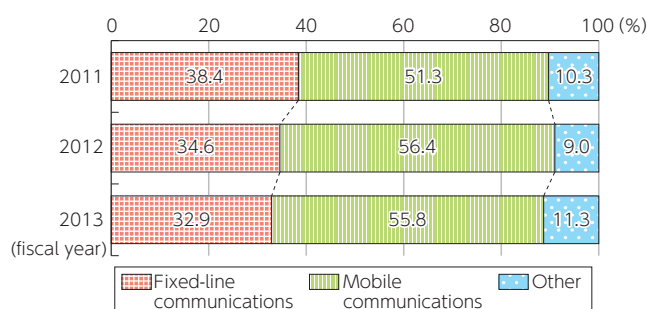
Figure 5-1-5-1 Transitions in telecommunications sector sales



(Note) Comparisons must be made with caution, as sales represent the simple sum of figures from all responding carriers and the number of responding carriers differs from year to year.

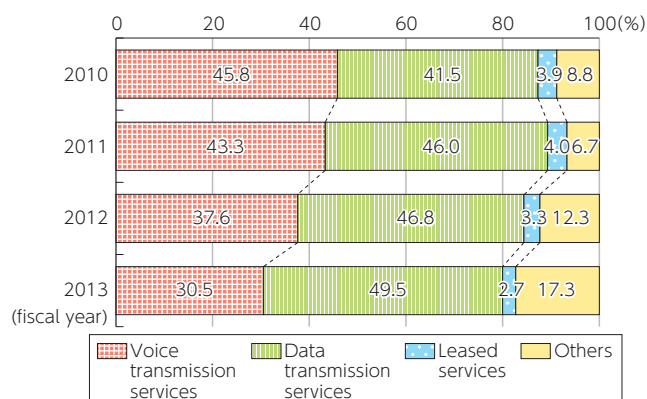
Prepared from "2015 Basic Survey on the Information and Communications Industry," MIC / METI

Figure 5-1-5-2 Telecom carriers' sales breakdown by fixed-line communications and mobile communications



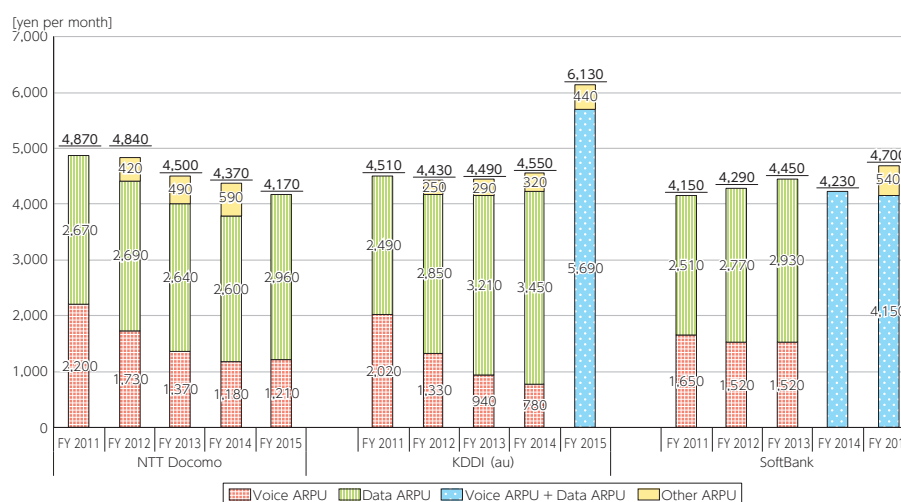
Prepared from "2014 Basic Survey on the Information and Communications Industry," MIC / METI

Figure 5-1-5-3 Transitions in sales by service category



Prepared from "2014 Basic Survey on the Information and Communications Industry," MIC / METI

Figure 5-1-5-4 Transitions in mobile ARPU in the past five years for three domestic mobile operators



(Notes) Each company's ARPU is calculated and released based on the respective company's criteria. The figures were not calculated using the same method.

Due to rounding, the total of individual ARPU figures may not equal the total ARPU figures.

NTT Docomo includes Smart ARPU, KDDI includes value added ARPU, and SoftBank includes service ARPU.

The ARPU figures for KDDI after FY 2012 were taken from au Communications ARPU under the personal segment.

Applied discount amounts were subtracted from the voice ARPU.

SoftBank ARPU figures included communication modules until FY 2011.

SoftBank Mobile took over SoftBank BB, SoftBank Telecom, and Y!Mobile on April 1, 2015 (name changed to SoftBank on July 1, 2015).

The FY 2015 ARPU figures for NTT Docomo and KDDI were monthly sales per user.

Prepared from financial statements from each company

## 6. Broadcasting market trends

### (1) Size of the broadcasting market

#### a. Broadcaster sales

- Broadcaster sales totaled 3.8759 trillion yen in FY 2014; the share of sales by terrestrial-based broadcasters has continued to expand in recent years

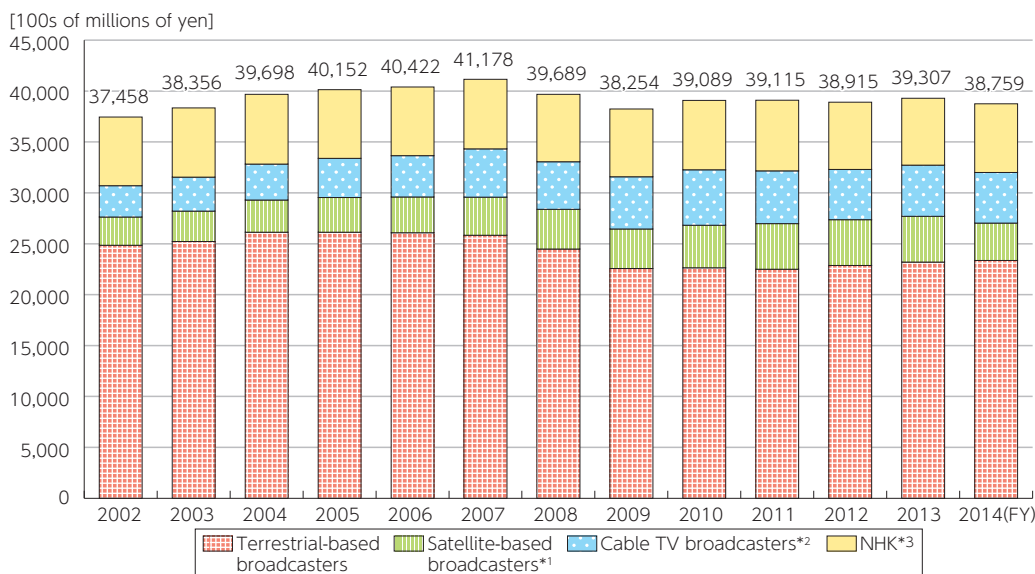
Japanese broadcasters are divided into two categories: Japan Broadcasting Corp., a public broadcaster known as NHK, which depends on reception fee revenues, and private broadcasters that depend on advertisements or paid programming. Apart from these categories, the Open University of Japan provides broadcasting services for educational purposes.

The entire broadcasting sector's sales, including revenues from broadcasting and non-broadcasting operations, decreased in FY 2014 (by 1.4 percent) from the

previous year to 3.8795 trillion yen. By category, terrestrial-based private broadcasters' sales were 2.3375 trillion yen (up 0.7 percent from the previous year), satellite-based private broadcasters' sales were 366.1 billion yen (down 18.5 percent), cable TV broadcasters' sales were 497.5 billion yen (down 1.1 percent), and NHK's ordinary operating income was 674.8 billion yen (up 2.7 percent).

In terms of market share, terrestrial-based private broadcasters accounted for 73.0 percent (up 2.1 percentage points from the previous year) of private broadcasters' sales. The market share of terrestrial-based broadcasters continued to grow from the previous year (Figure 5-1-6-1).

Figure 5-1-6-1 Transitions in and breakdown of the broadcasting sector market size (total sales)



Fiscal year		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Private broadcasters	Terrestrial-based broadcasters	24,863	25,229	26,153	26,138	26,091	25,847	24,493	22,574	22,655	22,502	22,870	23,216	23,375
	Community broadcasters included in total above*4	139	141	140	140	144	148	150	123	116	120	115	124	127
	Satellite-based broadcasters*1	2,769	2,995	3,158	3,414	3,525	3,737	3,905	3,887	4,185	4,490	4,510	4,491	3,661
	Cable TV broadcasters*2	3,076	3,330	3,533	3,850	4,050	4,746	4,667	5,134	5,437	5,177	4,931	5,030	4,975
NHK*3		6,750	6,803	6,855	6,749	6,756	6,848	6,624	6,659	6,812	6,946	6,604	6,570	6,748
Total		37,458	38,356	39,698	40,152	40,422	41,178	39,689	38,254	39,089	39,115	38,915	39,307	38,759

(Note 1) Figures for satellite-based broadcasters represent operating revenues from satellite-based broadcasting services.

(Note 2) Cable TV broadcasters until FY 2010 were business enterprises providing independent broadcasting services with facilities licensed under the former licensing scheme (under the former Act on Cable Television Broadcasting. Note that facilities registered under the former Act on Broadcast on Telecommunications Services included those that use the same broadcasting method as facilities licensed under the former licensing scheme). From FY 2011 on, cable TV broadcasters were registered business enterprises with wired telecommunication facilities providing independent broadcasting services. (Both exclude business operators using IP multicasts.)

(Note 3) Figures for NHK represent ordinary operating income.

(Note 4) Community broadcasting operators that also provide cable TV broadcasting services are excluded.

Prepared from MIC materials and the "NHK Yearbook" for each fiscal year

## 7. Content market trends

### (1) Size of Japan's content market

- The Japanese content market was valued at 11.4722 trillion yen, over 50 percent of which was attributable to video content, about 40 percent to text-based content, and less than 10 percent to audio-based content

The Japanese content market was valued at 11.4722 trillion yen in 2014. By content segment, video content accounted for over 50 percent of the market, text-based content, about 40 percent, and audio-based content, under 10 percent.<sup>10</sup>

The primary components of the video content segment, worth 6.2426 trillion yen (54.4 percent of the entire market), were terrestrial TV programs, worth 2.8056

trillion yen, game software, 1.2211 trillion yen, satellite and cable TV broadcast programs, 905.2 billion yen, movies, 675.3 billion yen, videos, 421.6 billion yen, and original Internet videos, 213.8 billion yen. The primary components of the audio-based content segment, worth 750.3 billion yen (6.5 percent of the entire market), were music, worth 538.6 billion yen, and radio programs, 202.9 billion yen. And the primary components of the text-based content segment, worth 4.4794 trillion yen (39.0 percent of the entire market), were newspaper articles, worth 1.6598 trillion yen, magazines,<sup>11</sup> 1.0931 trillion yen, books, 788.1 billion yen, comics, 495.5 billion

<sup>10</sup> The market size was measured and analyzed by assessing the primary nature of the content works and recalculating the value at each distribution level, such as primary distribution or multiuse. The value of content was not calculated by media channel.

<sup>11</sup> The magazine category includes free newspapers.



yen, database information, 247.4 billion yen, and original Internet text-based content,<sup>12</sup> 195.4 billion yen (Figure 5-1-7-1).

The overall size of the content market in 2014 has remained essentially unchanged since 2009 on. The size of each content segment as well stayed flat between 2009 and 2012, after which the video content segment expanded while the text-based content segment contracted (Figure 5-1-7-2).

## (2) Trends in the online content market

- The market for online content, which is downloaded or streamed via the Internet to computers or mobile phones, grew to 2.7385 trillion yen, accounting for 23.9 percent of the entire content market

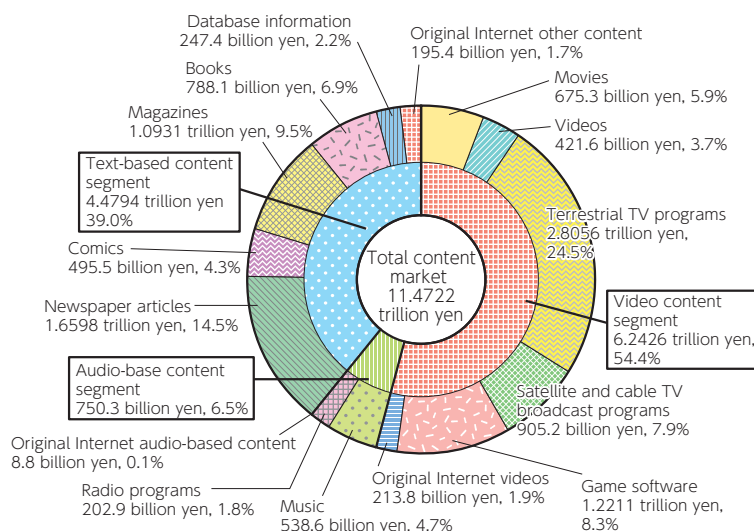
As part of the overall content market, the market for online content, which is downloaded or streamed via the Internet to computers or mobile phones, reached 2.7385 trillion yen. By content segment, the video content segment accounted for 58.8 percent of the online content market, the text-based content segment, 30.1 percent,

and the audio-based content segment, 11.1 percent.

The video content segment of the 2014 online content market was worth 1.6106 trillion yen, which consisted of 921.0 billion yen for game software, 213.8 billion yen for original Internet videos, 200.7 billion yen for videos, 141.6 billion yen for movies, 72.1 billion yen for terrestrial TV programs, and 61.3 billion yen for satellite and cable TV broadcast programs. Music accounted for 286.4 billion yen of the 303.9 billion yen audio-based online content market. The 823.9 billion yen text-based online content market consisted of 195.4 billion yen for original Internet text-based content, 187.5 billion yen for database information, 154.0 billion yen for books, and 154.6 billion yen for newspaper articles (Figure 5-1-7-3).

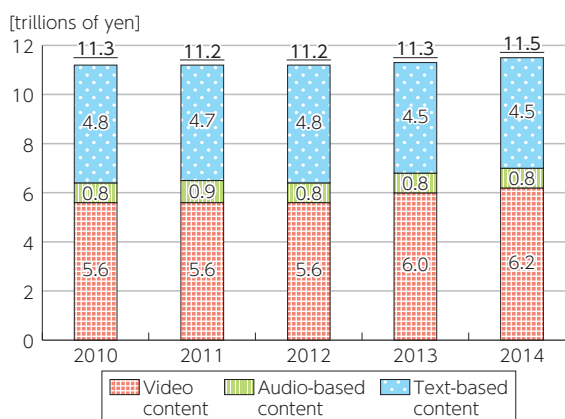
The online content market has been growing steadily since 2010. Looking at the market by content segment shows that the video content segment (which more than doubled from 2010 to 2014), and in particular the hot game software portion, has been driving the online content's market expansion (Figure 5-1-7-4).

Figure 5-1-7-1 Breakdown of Japan's content market (2014)



(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

Figure 5-1-7-2 Transitions in Japan's content market size (by content segment)



(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

<sup>12</sup> Original Internet text-based content includes blogs, social media, email newsletters, and similar text-based content.

- The 2015 mobile content industry's market increased 13.3 percent from the previous year to 4.4228 trillion yen

The Japanese mobile content industry's market,<sup>13</sup> which is made up of the mobile content market<sup>14</sup> and the mobile commerce market, continued to expand in 2015, reaching 4.4228 trillion yen (a 13.3 percent increase year-on-year), due to the growth and proliferation of smartphones and tablets. By individual segments, the mobile content market reached 1.5632 trillion yen (up 7.3 percent) and the mobile commerce market reached 2.8596 trillion yen (up 16.8 percent) (Figure 5-1-7-5).

### (3) Trends in the broadcast content market

- Export value of Japanese broadcast content was 18.25 billion yen in FY 2014

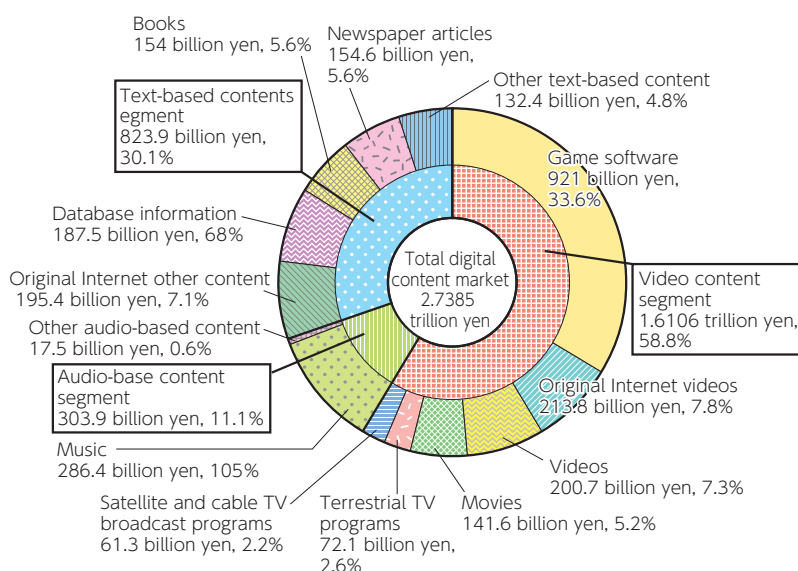
The export value of Japanese broadcast content in FY 2014 was 18.25 billion yen. Note that from FY 2010 on-

ward, Internet distribution rights, video and DVD rights, format and restaging rights, merchandising rights, and similar rights, in addition to program broadcast rights, have been included in the export value of broadcast content (Figure 5-1-7-6). The traditional method of exporting broadcast content had been to sell the program broadcast rights. But today, methods have diversified, so that revenue streams other than program broadcast rights account for more than half of all revenue.

- Cartoons and animations account for over 60 percent of export value by program category, followed by dramatic programs and variety shows, and Asia accounts for about 60 percent of exports, followed by North America and Europe

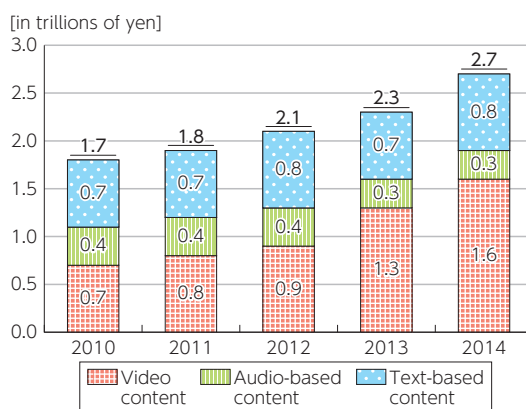
Looking at the broadcast content export value by program category finds cartoons and animations account for 64.3 percent of total, dramatic programs, 17.0 percent, and variety shows, 11.4 percent, followed by docu-

Figure 5-1-7-3 Breakdown of the online content market (2014)



(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

Figure 5-1-7-4 Transitions in the online content market size (by content segment)



(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

<sup>13</sup> The mobile content market refers to the market for digital content provided over the mobile Internet (including ringtones, music streaming, videos, games, and fortune-telling). The mobile commerce market refers to the sales of physical goods (mail-order sales, etc.), sales of services (ticket sales), and transaction fees (including stock brokerage commissions, auction fees, and other payments) conducted over the mobile Internet.

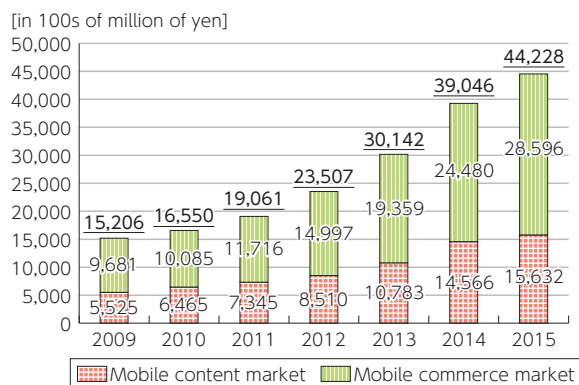
<sup>14</sup> In 2010, the scope of the mobile content market was expanded to encompass the open platform market (such as smartphones).

mentaries and sports programs (Figure 5-1-7-7). The largest export market for broadcast content was Asia, at 58.5 percent of the total, followed by North America at

24.2 percent, Europe at 13.3 percent, and South and Central America. Diverse export destinations for Japanese broadcast content are developing, particularly in Asia.

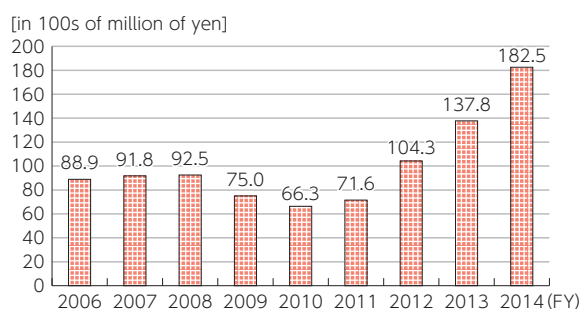
## Part 2

**Figure 5-1-7-5 Mobile content industry market size**



(Source) "Study Report on Technical Factors and Systems Pertaining to Open Platforms Promoting Mobile Content Business," MIC

**Figure 5-1-7-6 Export value of Japanese broadcast content**

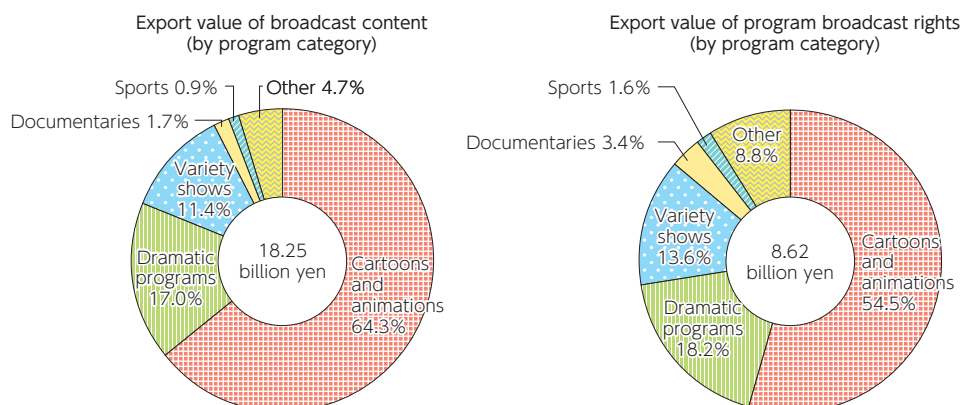


(Notes) Export value of broadcast content: total export value of program broadcast rights, Internet distribution rights, video and DVD rights, format and restaging rights, merchandising rights, and similar rights.

From FY 2010 onward, the export value from other revenue streams has been included along with program broadcast rights in the export value of broadcast content. Figures prior to FY 2010 are the export value for program broadcast rights only.

(Source) "Survey on the State of Overseas Expansion of Broadcast Content (FY 2014)," Institute for Information and Communications Policy, MIC

**Figure 5-1-7-7 Export value of Japanese broadcast content by program category**



(Source) "Survey on the State of Overseas Expansion of Broadcast Content (FY 2014)," Institute for Information and Communications Policy, MIC

## Section 2 ICT Service Usage Trends

### 1. Internet usage trends

#### (1) State of Internet proliferation

##### a. State of major ICT device proliferation (households)

- ICT device proliferation has matured overall, but smartphone ownership has increased year by year, now topping 70 percent

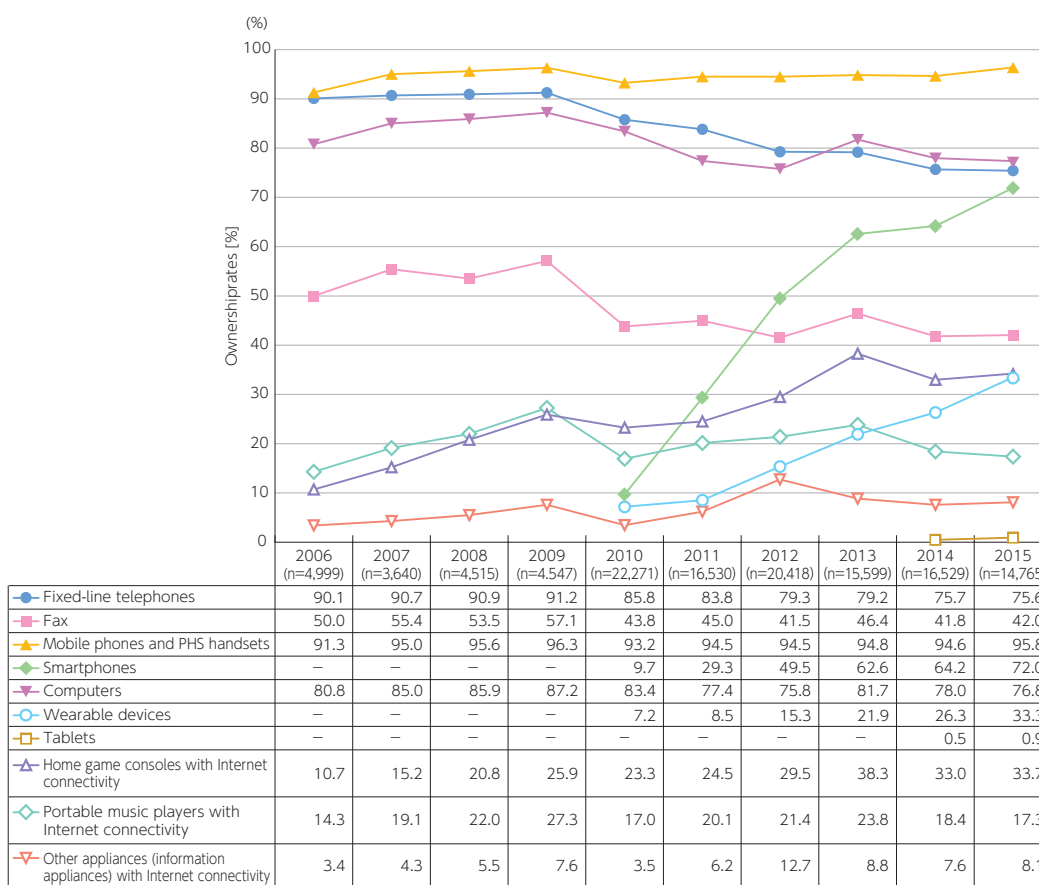
The household penetration rate at the end of 2015 was 95.8 percent for mobile phones and PHS handsets<sup>15</sup> and 76.8 percent for computers. The penetration rate for smartphones, which are included in the mobile phone and PHS handset category, has shot up to 72.0 percent (up 7.8 percentage points from a year earlier), reducing the ownership gap with computers from 13.7 percentage points to just 4.8 percentage points (Figure 5-2-1-1).

##### b. State of Internet usage

- Both the number of Internet users and the Internet population penetration rate rose

The number of Internet users<sup>16</sup> at the end of 2015 was 100.46 million, an increase of 280,000 (0.3 percent) from the end of 2014. The Internet penetration rate as a percent of the general population was 83.0 percent (Figure 5-2-1-2). Those using computers to access the Internet accounted for 56.8 percent of all Internet users, the largest portion, followed by 54.3 percent for smartphones and 18.3 percent for tablets (Figure 5-2-1-3).

Figure 5-2-1-1 Transitions in household ownership rates for ICT devices



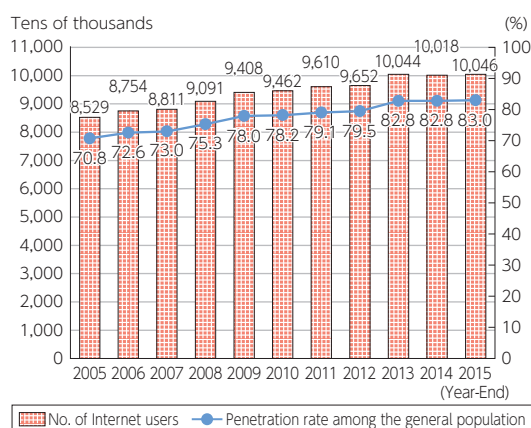
(Source) "Communications Usage Trend Survey," MIC

<sup>15</sup> The figures for mobile phones and PHS handsets have included personal digital assistants, or PDAs, since the end of 2009 to the end of 2012 and smartphones since the end of 2010.

<sup>16</sup> (1) The survey covers an age range of 6 and up. (2) The estimated number of Internet users is based on the results to a question on whether the respondents, aged 6 or older, had used the Internet in the year covered by the survey. Internet access devices include computers, mobile phones / PHS handsets, smartphones, tablets, game consoles, and all other devices (irrespective of device ownership). The purposes of using the Internet cover all possible purposes including personal, work, and school. (3) The number of Internet users was calculated by multiplying the estimated population aged 6 or older (estimated from Population Census and death table data) by the Internet usage rate obtained in the survey for people aged 6 or older. (4) The Communications Usage Trend Survey does not include the number of 'no answer' responses in the calculations (except for Figure 5-2-1-1).

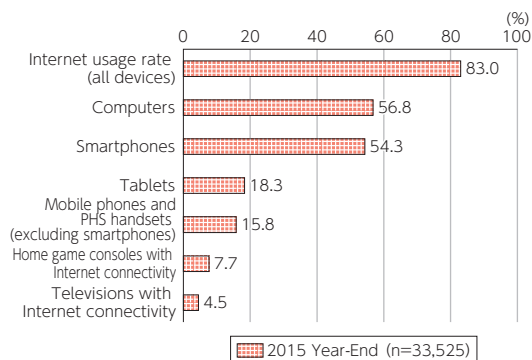


**Figure 5-2-1-2 Transitions in the number of Internet users and the penetration rate among the general population**



(Source) "Communications Usage Trend Survey," MIC

**Figure 5-2-1-3 Internet usage by device (at the end of 2015)**



(Note) Figures indicate the percentage of people who accessed the Internet using the corresponding device during 2015.  
(Source) "Communications Usage Trend Survey," MIC

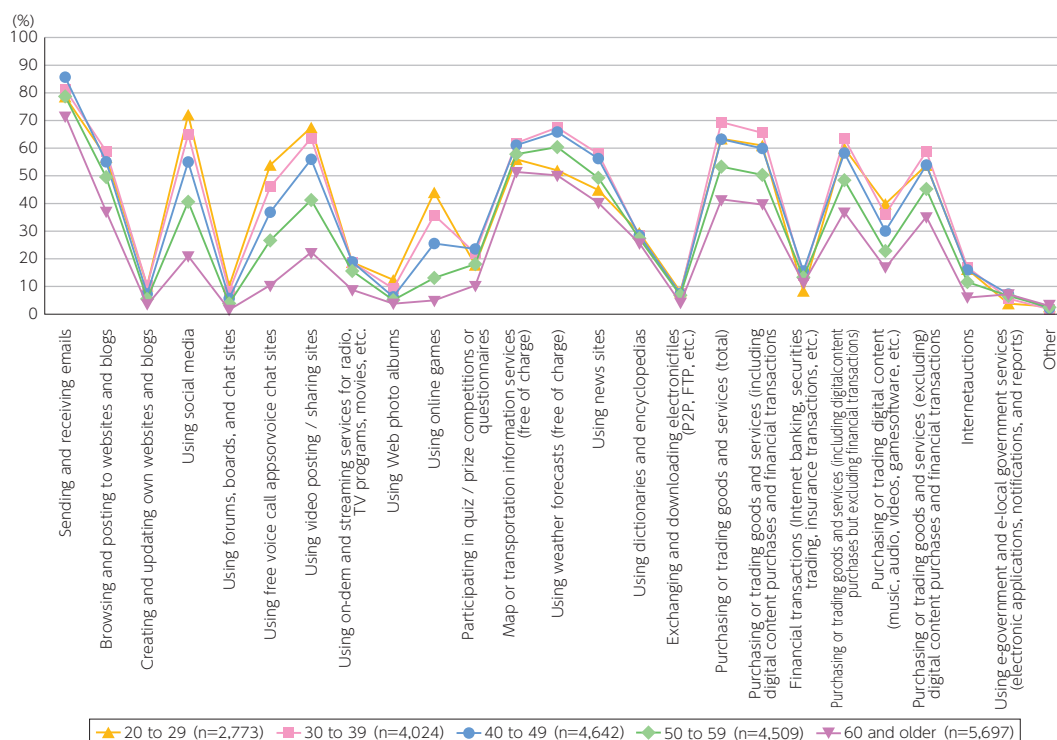
### c. Purposes of using the Internet

- "Sending and receiving emails" was the most common purpose of using the Internet

Among all age groups, the most common purpose of using the Internet was "sending and receiving emails."

Viewing the results by age group finds that more than half of users in all age groups use the Internet for "sending and receiving emails," "map or transportation information services," and "accessing weather forecasts" (Figure 5-2-1-4).

**Figure 5-2-1-4 Applications / purposes of using the Internet by age group**



(Source) "Communications Usage Trend Survey," MIC

### (2) Challenges for safe, secure Internet usage

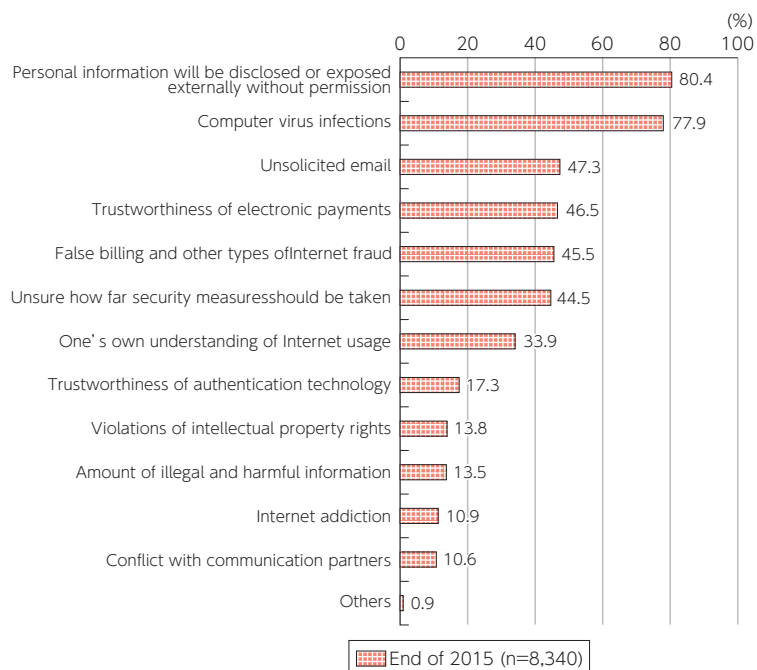
#### a. Matters of concern with Internet usage and problems with ICT networks

- Households are concerned about personal information, and enterprises are concerned about security

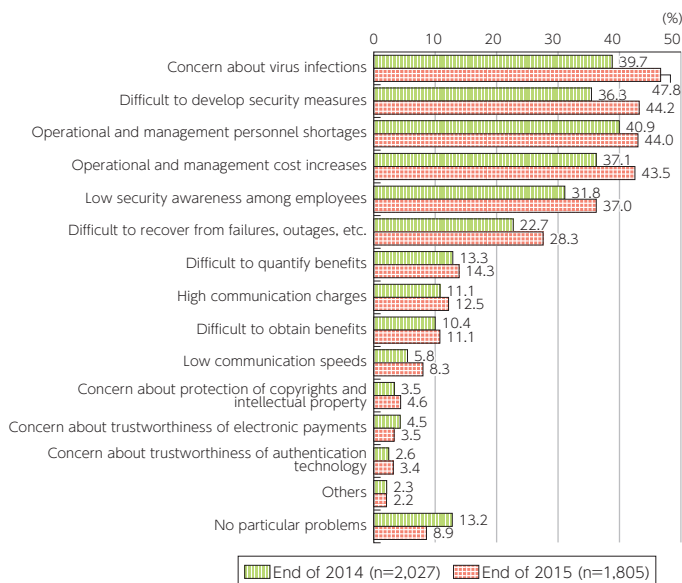
Among households with concerns about using the Internet, 80.4 percent cited "personal information will be disclosed or exposed externally without permission" as a concern. This was followed, in order, by "computer vi-

rus infections" (77.9 percent) and "trustworthiness of electronic payments" (47.3 percent) (Figure 5-2-1-5).

Among enterprises, 47.8 percent, the highest response rate, mentioned "concern about virus infections" as a problem when using the Internet, internal LANs, or other networks. This was followed "difficult to develop security measures" (44.2 percent), indicating heightened security concerns among enterprises (Figure 5-2-1-6).

**Figure 5-2-1-5 Matters of concern with Internet usage at households (multiple answers permitted)**

(Source) "Communications Usage Trend Survey," MIC

**Figure 5-2-1-6 Problems with Internet and intranet LAN usage at enterprises (multiple answers permitted)**

(Source) "Communications Usage Trend Survey," MIC

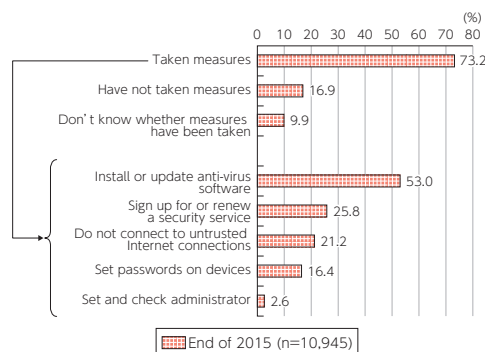
**b. Information security measures**

- **Violations (number of arrests) of the ACT on Prohibition of Unauthorized Computer Access rose slightly, and almost 80 percent of households and more than 90 percent of enterprises have implemented some form of information security measures**

Looking at the state of information security measures taken by households that use the Internet finds that 73.2 percent of households have taken some form of information security measures. The leading security measures were "install or update anti-virus software" (53.0 percent) and "sign up for or renew a security service" (25.8 percent) (Figure 5-2-1-7).

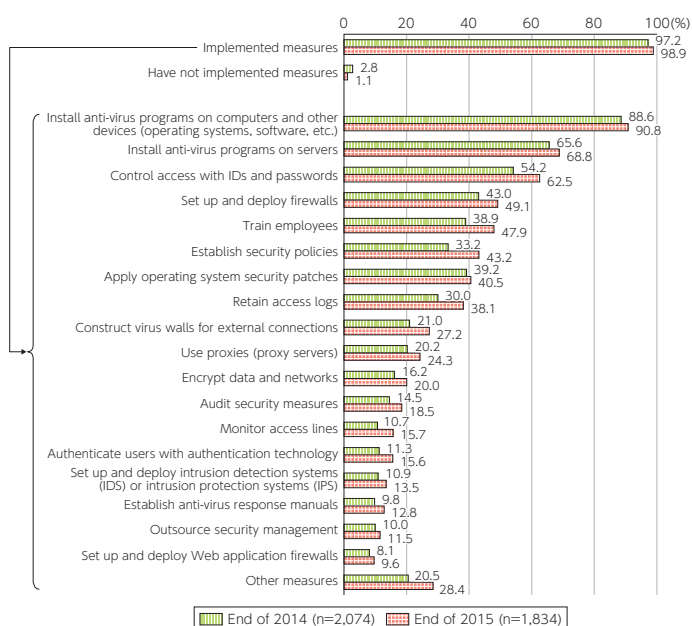
Looking at the state of information security measures implemented by enterprises that use ICT networks finds that 98.9 percent of enterprises have implemented some form of information security measures, an increase from the previous year. The leading security measure was "install anti-virus programs on computers and other devices (operating systems, software, etc.)," which is done by 90.8 percent of enterprises. This was followed, in order, by "install anti-virus programs on servers" (68.8 percent) and "control access with IDs and passwords" (62.5 percent). The response rate for every security measure survey increased from the end of 2014 (Figure 5-2-1-8).

Figure 5-2-1-7 Implementation of information security measures at households (multiple answers permitted)



(Source) "Communications Usage Trend Survey," MIC

Figure 5-2-1-8 Implementation of information security measures at enterprises (multiple answers permitted)



(Source) "Communications Usage Trend Survey," MIC

## c. Personal information protection measures

- Nearly 90 percent of all enterprises have implemented personal information protection measures

The percentage of enterprises that have implemented some form of personal information protection measures was 87.7 percent, up 9.3 percentage points from the end of 2014. The most cited protection measure, given by 49.5 percent of enterprises, was "appoint a personal information protection and management officer" followed, in order, by "enhance internal training" (46.9 percent) and "establish a privacy policy" (30.8 percent) (Figure 5-2-1-9).

## (3) Cloud service usage trends

## a. State of cloud service usage in Japan

- The percentage of enterprises using cloud services rose from the end of 2014

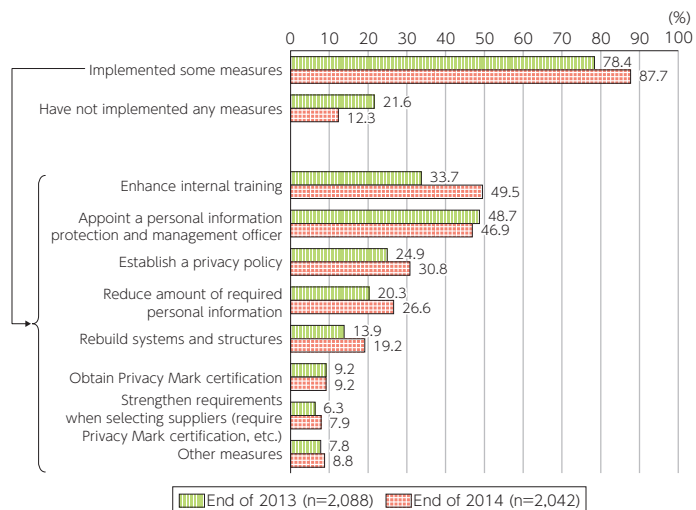
Of enterprise respondents to the survey, 44.6 percent said they had used cloud services either partially or extensively, up 5.9 percentage points from 38.7 percent at the end of 2014 (Figure 5-2-1-10).

## b. Breakdown of cloud service usage

- The most frequently used cloud service is "email"

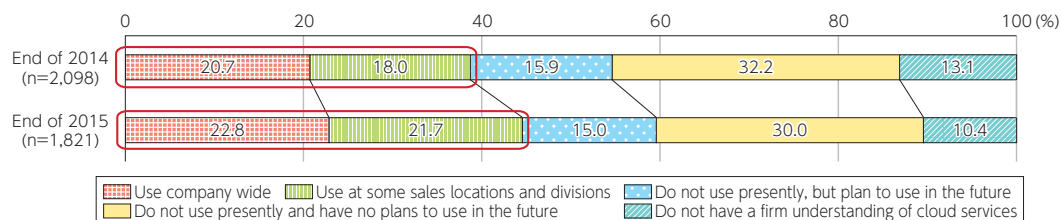
The most frequently used cloud service is "email," cited by 51.9 percent of respondents, followed, in order, by 51.3 percent for "file storage and data sharing" and 42.9 percent for "server usage" (Figure 5-2-1-11).

**Figure 5-2-1-9 Implementation of personal information protection measures at enterprises (multiple answers permitted)**



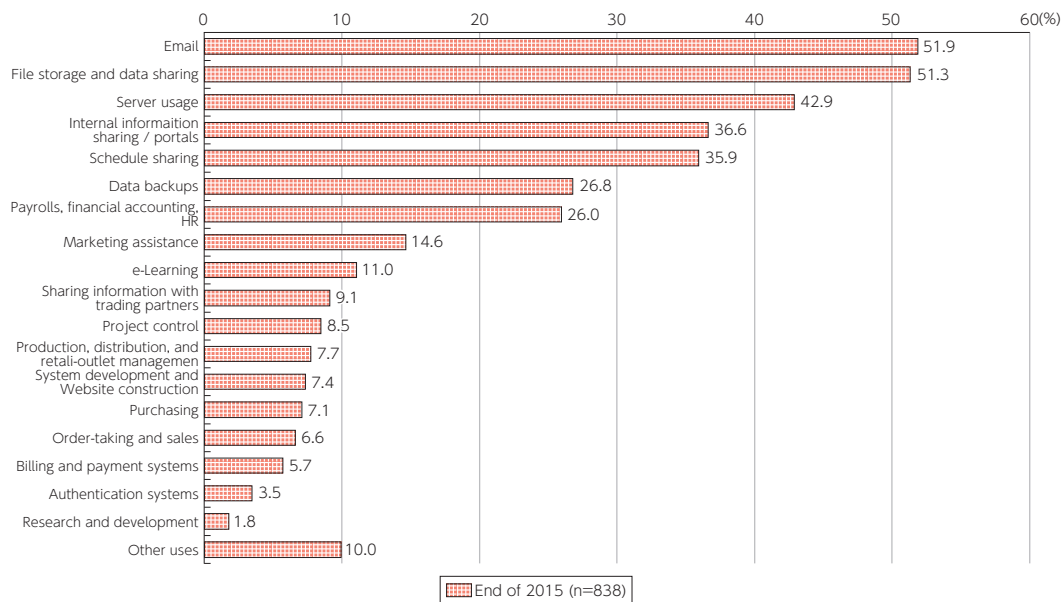
(Source) "Communications Usage Trend Survey," MIC

**Figure 5-2-1-10 State of cloud service usage in Japan**



(Source) "Communications Usage Trend Survey," MIC

**Figure 5-2-1-11 Breakdown of cloud service usage**



(Source) "Communications Usage Trend Survey," MIC



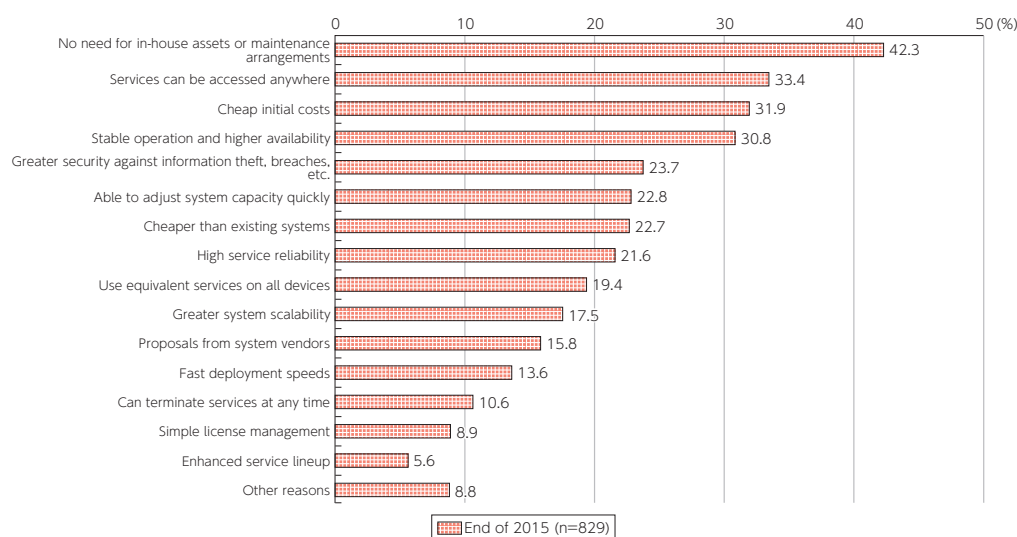
### c. Reasons for introducing cloud services

- “No need for in-house assets or maintenance arrangements” was the most frequently cited reason for introducing cloud services, chosen by about 40 percent

“No need for in-house assets or maintenance arrangements” was the most frequently cited reason for intro-

ducing cloud services, chosen by 42.3 percent of respondents, followed, in order, by “services can be accessed anywhere” (33.4 percent) and “cheap initial costs” (31.9 percent). Respondents mainly cited functional and cost reasons for introducing cloud services (Figure 5-2-1-12).

Figure 5-2-1-12 Reasons for introducing cloud services



(Source) “Communications Usage Trend Survey,” MIC

## 2. State of telecommunication service provision and usage

### (1) State of telecommunication service provision

#### a. Overview

##### (i) Subscriptions to telecommunication services

- Subscriptions to fixed-line communications are trending downward while subscriptions to mobile communications and 0ABJ-IP phone services have increased steadily

Subscriptions to fixed-line communication services (including NTT East and West subscriber telephone services (including ISDN), non-NTT telephone services,<sup>17</sup> and cable TV-based telephone services but excluding 0ABJ-IP phone services) have been declining, while those to mobile communication services (mobile phone and PHS handset services) and 0ABJ-IP phone services have been growing steadily. Subscriptions to 050-IP phone services have been flat in recent years.

There were about 6.4 times more mobile communication subscriptions than fixed-line communication subscriptions (Figure 5-2-2-1).

##### (ii) State of broadband development and usage

- Ultra-high-speed broadband services<sup>18</sup> were available at 99.98 percent of Japanese households at the end of March 2015

At the end of March 2015, ultra-high-speed broadband services were available at 55.94 million households, or 99.98 percent of all Japanese households. Broadband services<sup>19</sup> were available at 100 percent of Japan's 55.95 million households (Figure 5-2-2-2).

- Subscriptions to mobile ultra-high-speed broadband services have leaped dramatically year by year

The number of subscriptions to fixed-line broadband services<sup>20</sup> at the end of FY 2015 stood at 37.81 million (up 2.8 percent from the previous year). Subscriptions to mobile ultra-high-speed broadband services broke down into 87.39 million for 3.9G and 4G (LTE) services (up 28.9 percent) and 35.21 million for BWA services (up 80.9 percent) (Figure 5-2-2-3). As for FTTH and DSL services, DSL services continued to experience a net decrease while FTTH services have seen consistent net increases. The number of subscriptions to BWA services has also increased in recent years.

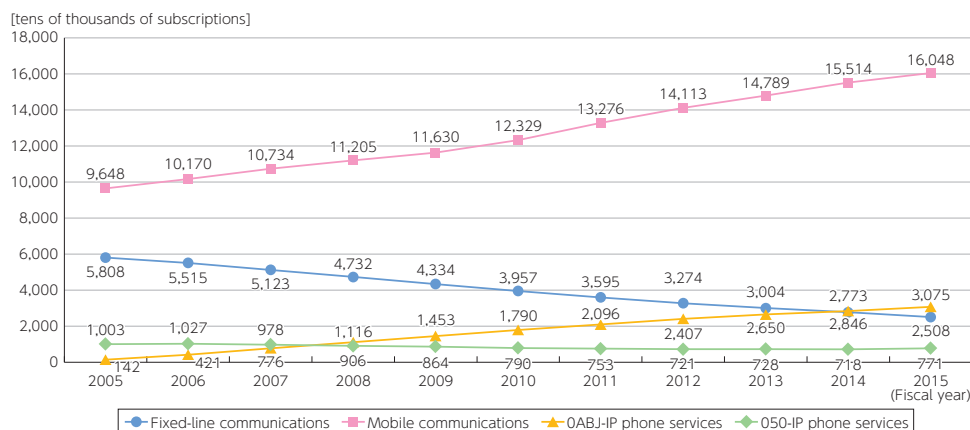
<sup>17</sup> Non-NTT services are subscriber phone services provided by telecom carriers other than NTT East and West and cover direct subscriber telephone and ISDN services and new-type non-NTT telephone and ISDN services.

<sup>18</sup> Households with ultra-high-speed broadband service availability are the total of households with FTTH, cable TV Internet, FWA, BWA, or LTE service availability. (Besides FTTH and LTE services, this definition includes only those services with download speeds of 30 Mbps or more.)

<sup>19</sup> Households with broadband service availability are the total of households with FTTH, DSL, cable TV Internet, FWA, satellite, BWA, LTE, and 3.5G mobile phone service availability.

<sup>20</sup> Figures for subscriptions to fixed-line broadband services cover FTTH, DSL, cable TV, and FWA services.

Figure 5-2-2-1 Transitions in subscriptions to telecommunication services



(Notes) Subscriptions to mobile communication services cover mobile phone and PHS services.

Figures for mobile communication services from FY 2013 forward are the figures after adjusting for *internal group transactions*. After adjusting for internal group transactions refers the adjustments made to count one mobile phone device as one contract and not two contracts so as not to diverge from the actual state of affairs, when an MNO receives mobile phone or BWA services as an MVNO from another MNO in the same group and provides these services together with its own services to one mobile phone device.

Past figures have been revised based on detailed data analyses.

Prepared from "Announcement of Quarterly Data on Telecommunication Service Contracts and Market Shares (4Q of FY 2015 (March 31, 2016))," MIC

Figure 5-2-2-2 Transitions in the provision of broadband infrastructure

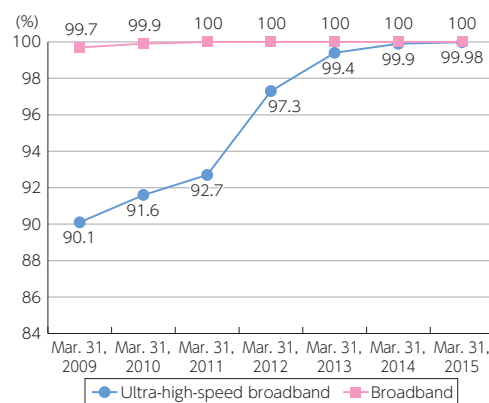
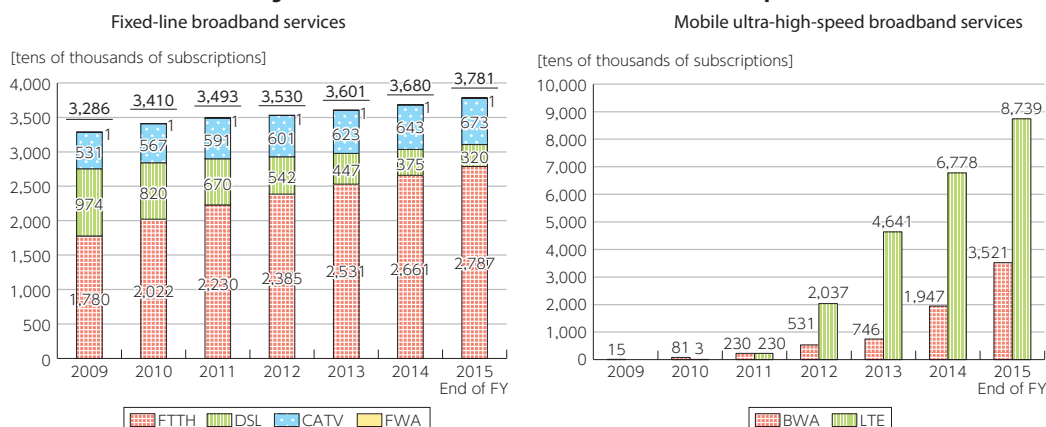


Figure 5-2-2-3 Transitions in broadband service subscriptions



Prepared from "Announcement of Quarterly Data on Telecommunication Service Contracts and Market Shares (4Q of FY 2015 (March 31, 2016))," MIC

## b. Mobile communications

- Subscriptions to mobile communication services have risen each year; subscriptions to MVNO services counted as mobile communication subscriptions also surged

Subscriptions to mobile communication services<sup>21</sup> (mobile phones, PHS handsets, and BWA) at the end of FY 2015 totaled 162.76 million (an increase of 3.5 percent from the previous year). The net growth was 5.54 million subscriptions, which continues the upward trend (Figure 5-2-2-4).

The carrier (Group) shares by mobile communication subscription numbers were 43.6 percent for NTT Docomo (up 1.2 percentage points from the previous year), 28.9 percent for the KDDI Group (up 0.3 percentage points), and 27.5 percent for the SoftBank Group (down 1.5 percentage points) (Figure 5-2-2-5).

Subscriptions to MVNO services<sup>22</sup> counted as subscriptions to mobile communication services (mobile phones, PHS handsets, and BWA) continue to increase, reaching 12.69 million (an increase of 32.5 percent from the previous year) at the end of FY 2015 (Figure 5-2-2-6).

## (2) State of telecommunication usage

### a. Traffic conditions

#### (i) Internet traffic

- Total download traffic by broadband service subscribers in Japan reached an average of 5.4 Tbps during November 2015, a 52.8 percent increase from the same month one year ago

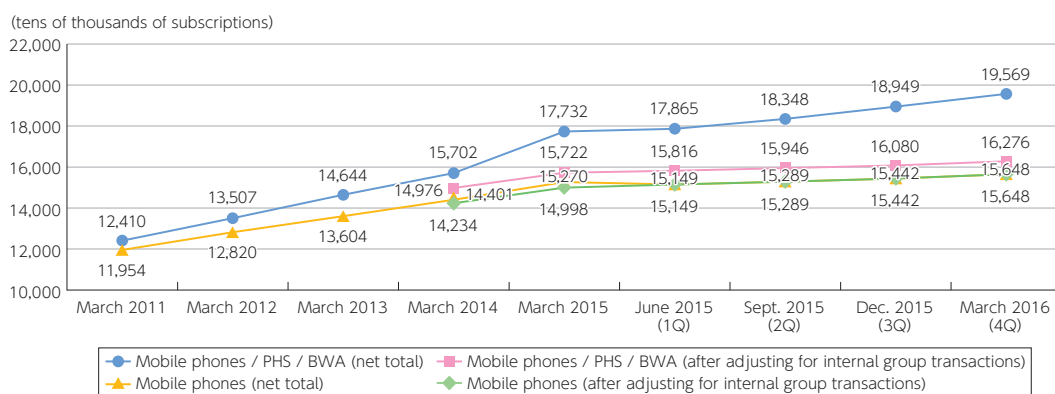
#### (a) Transitions in traffic by broadband subscribers

Traffic by ISP5<sup>23</sup> broadband service subscribers continues to grow, with download traffic (A1 OUT) reaching a monthly average of 2336.1 Gbps in November 2015 (a 50.0 percent increase from the same month one year ago). Download traffic (A1 OUT) widened its gap with upload traffic (A1 IN: 452.9 Gbps), from 3.8 times last fiscal year to 5.2 times. Thus, most traffic is download traffic (Figure 5-2-2-7).

#### (b) Transitions in traffic exchanged between ISPs

The traffic exchanged between domestic ISPs without passing through major domestic Internet exchanges (IX)<sup>24</sup> (B2 IN: 1306.4 Gbps) has exceeded traffic exchanged with overseas ISPs (B3 IN: 1059.7 Gbps) since May 2015 (Figure 5-2-2-7).

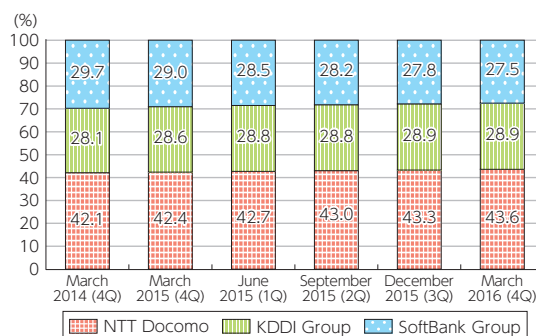
Figure 5-2-2-4 Transitions in mobile phone subscriptions



(Note) After adjusting for internal group transactions refers the adjustments made to count one mobile phone device as one contract and not two contracts so as not to diverge from the actual state of affairs, when an MNO receives mobile phone or BWA services as an MVNO from another MNO in the same group and provides these services together with its services to one mobile phone device.

Prepared from "Announcement of Quarterly Data on Telecommunication Service Contracts and Market Shares (4Q of FY 2015 (March 31, 2016))," MIC

Figure 5-2-2-5 Transitions in carrier shares in mobile communication subscriptions (after adjusting for internal group transactions)



(Note) KDDI Group share includes KDDI, Okinawa Cellular, and UQ Communications; SoftBank Group share includes SoftBank, Y!Mobile, and Wireless City Planning.

Prepared from "Announcement of Quarterly Data on Telecommunication Service Contracts and Market Shares (4Q of FY 2015 (March 31, 2016))," MIC

<sup>21</sup> Figures after adjusting for internal group transactions.

<sup>22</sup> Figures after subtracting subscriptions to MVNOs that are MNOs.

<sup>23</sup> ISP5 is the total for five cooperating ISPs, namely the Internet Initiative Japan (IIJ), NTT Communications, K-Opticom, KDDI, and SoftBank.

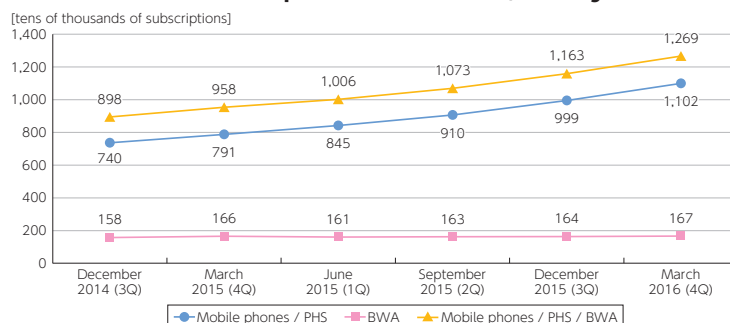
<sup>24</sup> Total for IXs run by Internet Multifield, Equinix Japan, Japan Internet Exchange, BBIX, and WIDE Project.

## (c) Transitions in traffic passing over the Internet in Japan

We estimated the total download traffic by broadband service subscribers in Japan from A1 — the traffic of ISP5 broadband service subscribers (DSL, FTTH, etc.) — and the percentage of ISP5 subscriptions among all broadband subscriptions in Japan. This estimate found

that an average of approximately 5.4 Tbps of traffic passed over the Internet during November 2015. This was a 52.8 percent increase from the same month one year ago, continuing the increase in traffic over the Internet (Figure 5-2-2-7).

**Figure 5-2-2-6 Transitions in subscriptions to MVNO services (excluding MVNOs that are MNO)**



Prepared from "Announcement of Quarterly Data on Telecommunication Service Contracts and Market Shares (4Q of FY 2015 (March 31, 2016))," MIC

**Figure 5-2-2-7 Tabulations and estimates of Internet traffic in Japan**

Traffic tabulations and estimates

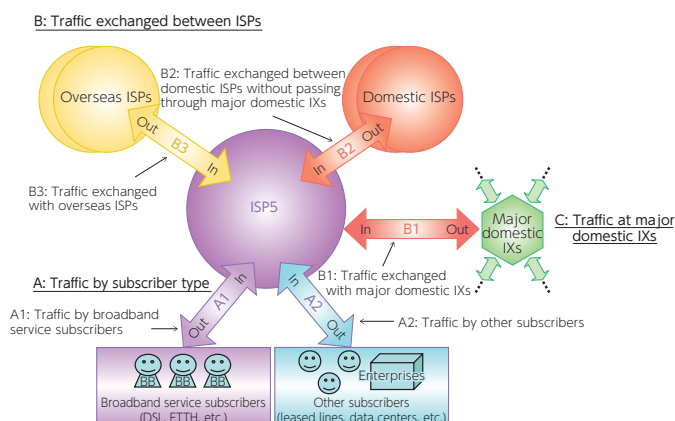
Year	Month	Total traffic by broadband service subscribers in Japan (estimated) [Gbps]		Traffic per broadband service subscriber (estimated) [kbps]		(A1) Traffic by broadband service subscribers (DSL, FTTH, etc.) [Gbps]		(A2) Traffic by other subscribers (leased lines, data centers, etc.) [Gbps]		(B1) Traffic exchanged between major domestic IXs and ISP5 [Gbps]		(B2) Traffic exchanged between domestic ISPs and ISP5 without passing through major domestic IXs [Gbps]		(B3) Traffic exchanged between overseas ISPs and ISP5 [Gbps]		(X) ISP5 share (calculated from subscription numbers)
		In	out	In	out	In	out	In	out	In	out	In	out	In	out	
2011	May	693	1516	20.2	44.1	302.5	662.0	193.9	174.4	98.4	90.0	242.9	131.5	420.9	160.5	43.67%
	November	640	1600	18.4	46.0	281.1	702.3	221.9	207.5	102.9	89.4	265.1	139.1	498.5	169.6	43.89%
2012	May	658	1730	18.8	49.3	287.8	756.6	251.5	243.0	118.4	98.6	317.4	145.1	528.7	178.8	43.74%
	November	666	1905	18.9	54.0	294.0	840.3	268.3	257.2	103.2	83.2	316.6	135.7	517.3	201.6	44.12%
2013	May	770	2275	21.7	64.2	347.8	1027.8	300.3	286.4	114.5	85.5	423.3	161.3	633.9	231.6	45.18%
	November	834	2584	23.3	72.3	370.0	1146.3	336.5	326.2	138.9	94.9	520.8	186.2	714.5	259.7	44.36%
2014	May	905	2892	25.2	80.4	398.9	1274.5	359.2	317.2	163.6	101.5	614.9	214.3	808.3	282.3	44.07%
	November	99	3549	25.7	98.1	407.6	1557.0	496.1	426.1	192.3	104.6	765.1	246.5	924.6	340.6	43.83%
2015	May	1086	4582	29.3	123.5	457.0	1928.9	525.6	440.2	198.9	117.5	955.6	287.5	941.5	308.1	42.10%
	November	1051	5423	27.9	144.1	452.9	2336.1	581.1	503.0	251.9	137.1	1306.4	366.6	1059.7	307.9	43.08%

(Notes) ISP5 is the total for five cooperating ISPs, namely the Internet Initiative Japan (IIJ), NTT Communications, K-Opticom, KDDI, and SoftBank.

*In* stands for uploads and *Out* stands for downloads in the Total traffic by broadband service subscribers in Japan (estimated), the Traffic per broadband service subscriber (estimated), A1, and A2 columns.

Total traffic by broadband service subscribers in Japan was estimated from the traffic of ISP5 broadband service subscribers (A1) and the ISP5 share of all subscriptions.

### Types of tabulated traffic



A1 includes the following types of traffic:

- Traffic on interior Wi-Fi
- Some traffic on public Wi-Fi services from some ISP carriers
- Some traffic on femtocell services from some mobile communication carriers
- Some mobile communication traffic between mobile phone networks from some ISP carriers (since May 2011)

Of the traffic exchanged without passing through major domestic IXs, B2 includes traffic exchanged via private peering with domestic ISPs, transit, and public peering at other domestic IXs.

Of the traffic exchanged without passing through major domestic IXs, B3 includes traffic exchanged via private peering with overseas ISPs, transit, and public peering at overseas IXs.

Prepared from "Announcement Japan's Internet Traffic Tabulations and Estimates for November 2015," MIC



(ii) Mobile communication traffic

- Mobile communication traffic increased at a pace of about 1.4 times over the last year

The rapid increase in traffic, particularly data communications, in recent years is a significant factor in radio spectrum congestion in the frequencies assigned to mobile communication systems. In view of this, five mobile communication carriers (NTT Docomo, KDDI, Soft-

Bank, UQ Communications, and Wireless City Planning) worked together to tabulate and analyze data on mobile communication traffic volumes (non-voice traffic). According to this group's figures, as of March 2016 mobile communication traffic increased about 1.4 times over the last year, reaching an average of 1328.7 Gbps (Figure 5-2-2-8).

**Figure 5-2-2-8 Transitions in the monthly average mobile communication traffic in Japan**

Tabulated month	June 2014			September 2014			December 2014			March 2015			June 2015			September 2015			December 2015			March 2016		
Average monthly traffic	Up	Down	Total	Up	Down	Total	Up	Down	Total	Up	Down	Total	Up	Down	Total	Up	Down	Total	Up	Down	Total	Up	Down	Total
Average (Gbps)	90.5	639.3	729.8	96.0	726.4	882.4	113.4	575.5	870.9	123.3	845.7	969.0	141.1	891.2	1032.3	154.6	1027.1	1181.6	169.1	1047.9	1216.9	184.5	1144.1	1328.7

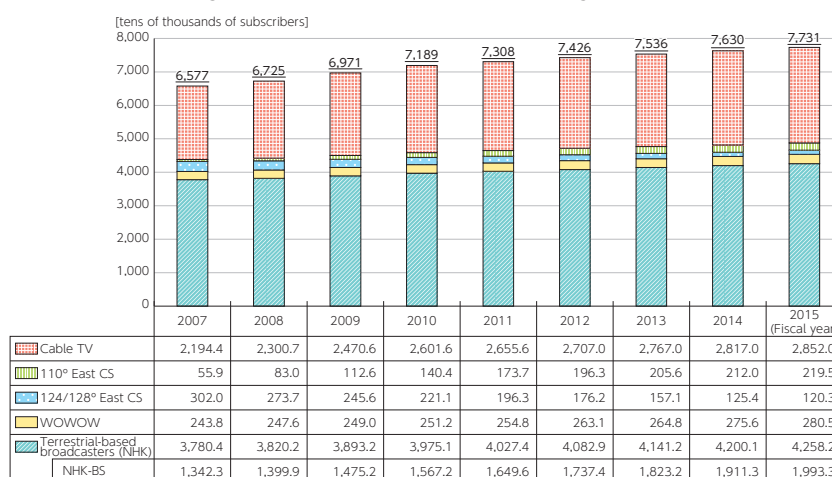
Prepared from "Information and Communications Statistics Database," MIC

### 3. State of broadcasting service provision and usage

- Subscriptions to NHK terrestrial, NHK-BS, WOWOW, 110° East CS, and cable TV services in FY 2015 increased from the previous year
- Subscriptions to all broadcasting services, except

124/128° East CS broadcasts, increased in FY 2015 (Figure 5-2-3-1).

**Figure 5-2-3-1 Subscribers to broadcasting services**



(Notes) NHK terrestrial subscribers are the number of all NHK subscription contracts.

NHK-BS subscribers are the number of NHK satellite contracts.

WOWOW subscribers are the number of WOWOW contracts.

124/128° East CS subscribers are the number of Sky PerfectTV premium service contracts.

110° East CS subscribers are the number of Sky PerfectTV contracts.

Cable TV subscribing households are the number of subscribing households to business enterprises providing independent broadcasting services with facilities licensed under the former licensing scheme, until FY 2010, and to registered business enterprises with wired telecommunication facilities providing independent broadcasting services, from FY 2011 on. (Both exclude broadcasts using IP multicasts.)

(Source) Prepared using materials from Japan Electronics and Information Technology Industries Association, materials from Japan Cable Laboratories, materials from NHK, and "State of Satellite Broadcasting" and "State of Cable Television" from MIC

### 4. Promoting ICT applications in government services

#### (1) Promoting e-government

- The online usage rate increased for procedures handled by national administrative bodies

The usage rate of applications, notifications, and other national administrative procedures filed online<sup>25</sup> versus all applications, notifications, and procedures filed was

45.4 percent (226,076,760 procedures were filed online, an increase of 1.3 percentage points from the previous fiscal year). The online usage rate of the improvement promotion procedures<sup>26</sup> frequently used by citizens and enterprises was 41.2 percent (162,577,184 procedures were filed online) (Figure 5-2-4-1).

<sup>25</sup> The total number of applications, notifications, and procedures filed is for those procedures placed online.

<sup>26</sup> Improvement promotion procedures are frequently used procedures that are filed 1 million or more times a year by citizens or enterprises or that are mainly used iteratively or continuously by enterprises even if annual filings are less than 1 million. In FY 2014, the improvement promotion procedures accounted for 79.4 percent of all filings made for applications, notifications, and procedures available online. Improvement promotion procedures excluded procedures with high usage rates (90 percent or more) from the priority procedures selected in the New Online Usage Plan, which operated until FY 2013.

## (2) Promoting ICT applications in local governments

- The usage rate of local government procedures selected for online-usage promotion increased over the previous fiscal year

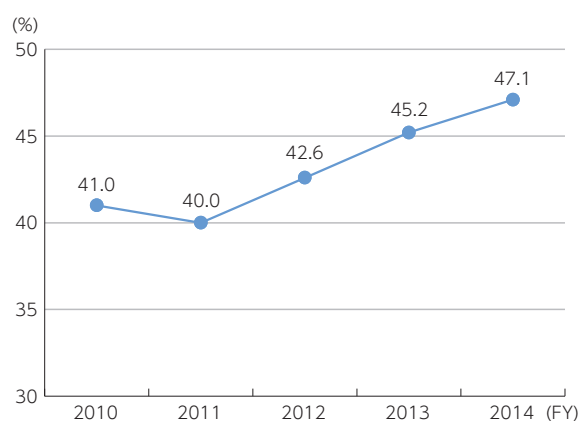
The online usage rate of local government administrative procedures<sup>27</sup> was 47.1 percent in FY 2014 (Figure 5-2-4-2).

**Figure 5-2-4-1 Transitions in the online usage of applications, notifications, and procedures handled by national administrative bodies**

Fiscal year	All application, notification, and other procedure filings		Filings done online		Online usage rate [%]	
		Improvement promotion procedures		Improvement promotion procedures		Improvement promotion procedures
2014	497,521,456	394,918,846	226,076,760	162,577,184	45.4	41.2
		(Priority procedures)		(Priority procedures)		(Priority procedures)
2013	475,409,156	432,579,446	209,558,511	199,656,173	44.1	46.2
2012	458,496,901	421,297,165	188,960,305	181,479,301	41.2	43.1
2011	442,868,928	405,824,947	170,504,798	163,807,924	38.5	40.4

(Source) Prepared from "State of Online Administrative Procedures in FY 2014," MIC press materials

**Figure 5-2-4-2 Transitions in the usage of local government procedures selected for online-usage promotion**



Fiscal year	Total procedure filings for the year	Filings done online	Online usage rate [%]
2010	317,100,000	130,010,591	41.0
2011	337,590,000	135,031,153	40.0
2012	349,000,000	148,496,598	42.6
2013	367,327,000	165,922,189	45.2
2014	368,733,000	173,807,766	47.1

(Note) The total yearly filings are an estimate for the entire country calculated based on the total number of filings and the populations in the jurisdictions of local governments that had already placed the targeted procedures online.

(Source) "State of Online Administrative Procedures in FY 2014," MIC

## Section 3 Radio Spectrum Usage Trends

### 1. State of radio spectrum usage and number of radio stations

#### (1) Radio stations

- The number of radio stations in Japan has increased steadily since 2006

The number of radio stations (excluding PHS and wireless LAN handsets and other radio stations for which no license is required) at the end of FY 2015 increased by 12.6 percent from a year earlier to 199.84 million,

including 197.11 million mobile phones and other land mobile stations, a jump of 12.7 percent. Mobile phones and other mobile land stations accounted for a huge 98.6 percent of all radio stations. The number of convenience stations climbed by 8.0 percent to 1.05 million (Figure 5-3-1-1).

### 2. Radio surveillance to eliminate interference with key radio communications

- There were 676 reports of interference with key radio communications in FY 2015, and 2,386 actions were taken against illegal radio stations

In the interests of eliminating radio interference and obstructions and maintaining a favorable radio spec-

trum usage environment, officials at the 11 Regional Bureaus of Telecommunications and elsewhere use illegal radio station search vehicles and sensor stations installed in towers and on building rooftops in major urban areas nationwide to investigate the sources of radio sig-

<sup>27</sup> The targeted procedures were those selected for online-usage promotion under the E-Local Government Online Usage Advancement Policy.

nals that interfere with fire and emergency services radio, aeronautical and maritime radio, mobile phones, and other key radio communications. Officials also crack down on illegal radio stations and undertake public awareness activities to ensure more people use the radio spectrum properly.

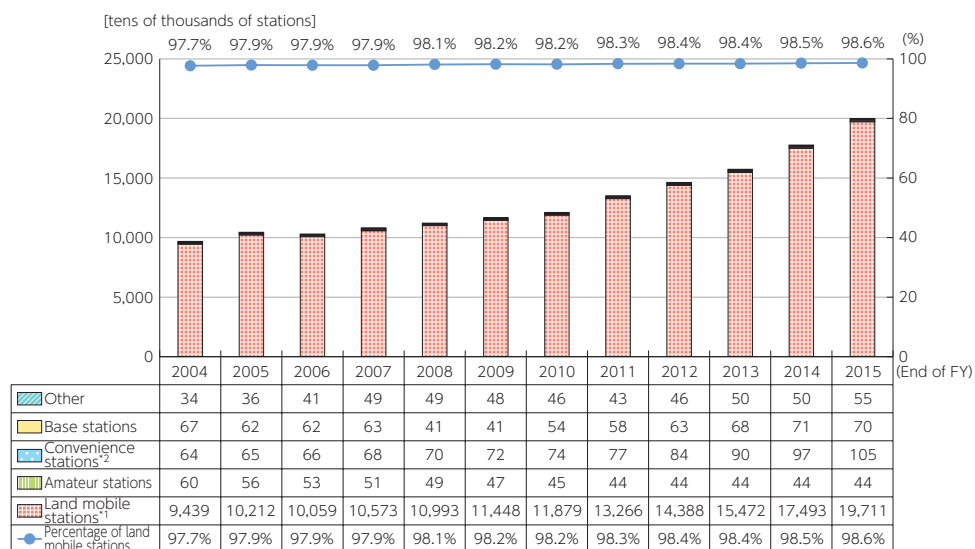
Since FY 2010, radio authorities have been working to promptly eliminate interference with key radio communications with a system that accepts interference reports around the clock. Radio authorities also monitor short-wave radio and cosmic radio waves at international radio surveillance facilities registered with the International Telecommunication Union (ITU).

In FY 2015, there were 2,497 reports of radio interfer-

ence or obstructions of all kinds, 269 fewer (9.7 percent) than the previous year. Among these, there were 676 reports of interference with key radio communications, 95 fewer (12.3 percent) than the previous year. In response to these reports, 2,348 actions<sup>28</sup> were taken in FY 2015 (Figure 5-3-2-1).

In FY 2015, 5,152 illegal radio stations were detected, 2,169 fewer (29.6 percent) than the previous year. In response, 2,386 actions were taken in FY 2015, an increase of 706 actions (42.0 percent) from the previous year. These actions included 230 indictments (9.6 percent of all actions) and 2,156 directives (90.4 percent of all actions).

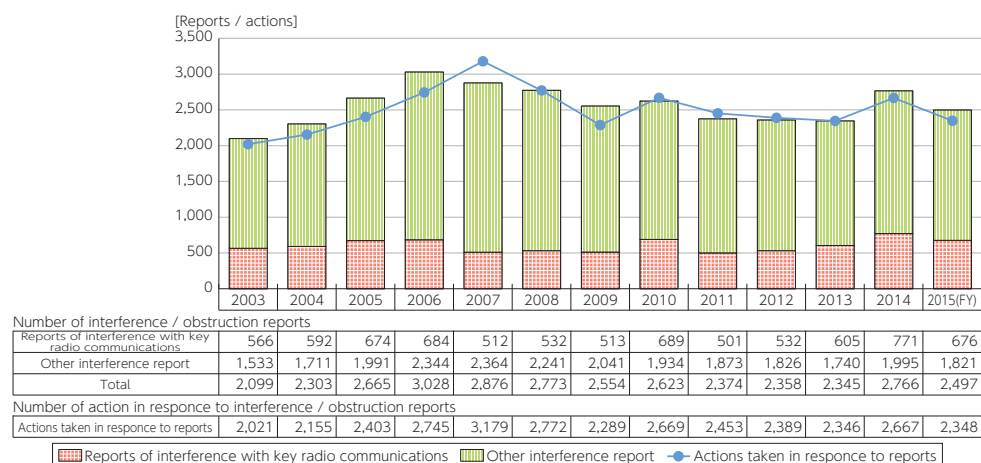
**Figure 5-3-1-1 Transitions in the number of radio stations**



(Note 1) "Land mobile station" refers to a radio station that is operated either while in motion on land or while stationary in an unspecified location (such as mobile phones).

(Note 2) "Convenience station" refers to a radio station used for simple radio communications.

**Figure 5-3-2-1 Transitions in the number of radio station interference / obstruction reports and the number of actions taken in response**



<sup>28</sup> The number of actions includes incomplete actions remaining from the previous fiscal year.