

# Chapter 5

## Current State of ICT

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 8.9 percent of all industries, making it the largest industry

The ICT industry's market size in 2012 was 81.8 trillion yen (based on nominal domestic production value), accounting for 8.9 percent of all industries and making it the largest industry in the country (Figure 5-1-1-1). The market's growth leveled off between 2000 and 2005 before declining along with markets in most other industries from 2008. The market suffered a particularly sharp plunge in 2009 due to the financial crisis. In 2012, it continued shrinking.<sup>1</sup> Looking at the transitions in market size (based on real domestic production value) of the main industries in constant 2005 values reveals that the ICT industry grew in 2010 along with most oth-

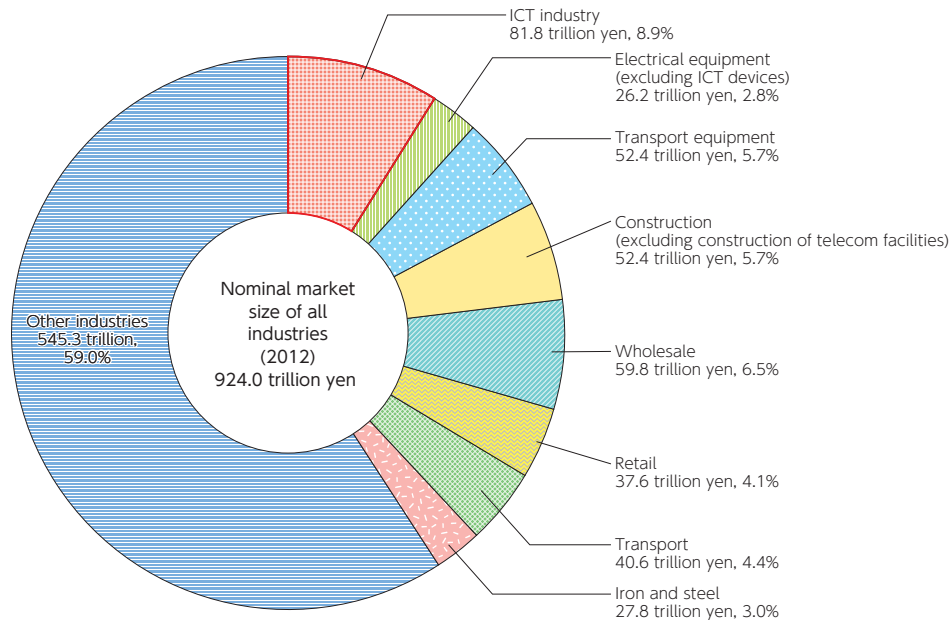
er industries but continued to reduce in 2011 and 2012 (Figure 5-1-1-2). The ICT industry's market size (based on real domestic production value) in 2012 declined slightly by 0.6 percent from the previous year to 96.9 trillion yen. The industry's average annual growth rate from 1995 to 2012 was 2.5 percent.

##### (2) Employment

- ICT industry employment totaled 3.968 million in 2012 accounting for 7.1 percent of total employment in all industries

The ICT industry employed 3.968 million people in 2012 (up 1.8 percent from the previous year), accounting for 7.1 percent of total employment in all industries. Employment declined by 20.0 percent from 2011 in the ICT-related manufacturing sector, by 2.2 percent in the vid-

Figure 5-1-1-1 Market sizes of major industries (based on nominal domestic production) (breakdown) (2012)

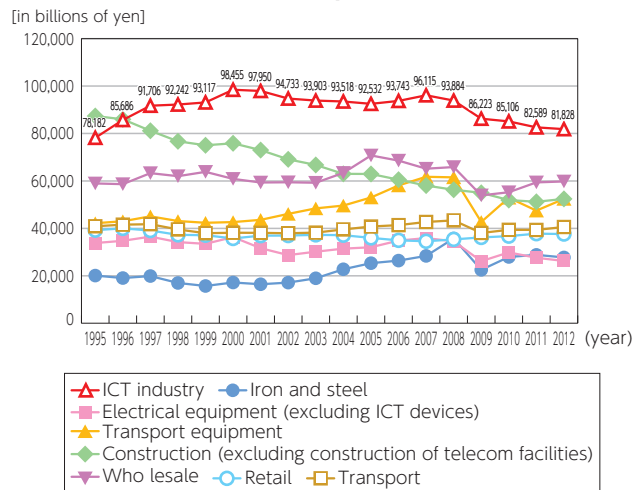


(Source) "Study on Economic Analysis of ICT," MIC (2014)

<sup>1</sup> The ICT industry's domestic production declined by about 761.0 billion yen nominally from 2011 to 2012. The biggest contributors to the decline were fixed-line telecommunications and radio, which dropped by about 763.0 billion yen and 550.0 billion yen respectively. The fixed-line telecommunications sector has consistently fallen since 2008 (when its production was worth approximately 3.8 trillion yen). Assigning a value of 100 to the sector's production value in 2008 results in the values 97.8, 92.5, 87.7, and 76.5 for the years 2009 to 2012. It shows that the downward trend has picked up speed in recent years.

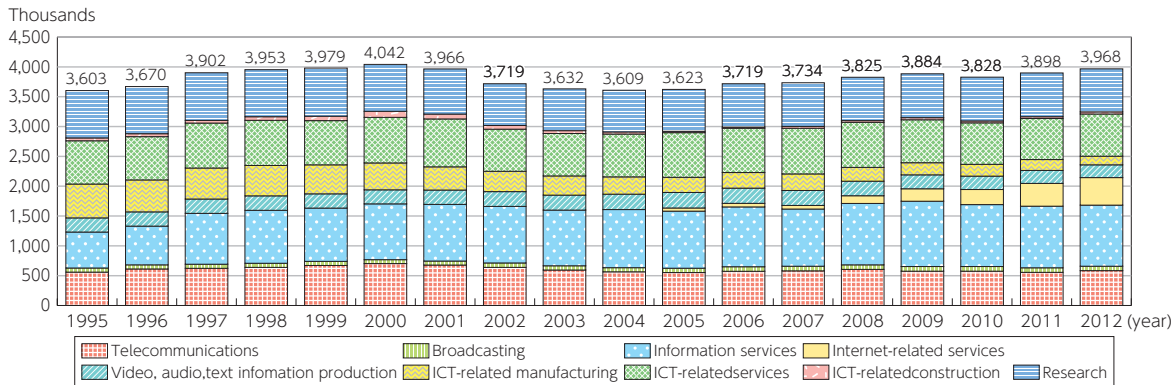
According to monthly industrial production index data, domestic radio production began to decline about one year before the completion of the migration to digital terrestrial television broadcasts (the switchover was completed in July 2011 except for three prefectures that were heavily damaged by the Great East Japan Earthquake). And for over a year after the digital switchover, production went into a freefall. The sharp fall in production is attributable to two major factors: the special circumstances prompted by the digital switchover that led to a drop in replacement demand, and major consumer electronics firms, confronted with fierce price competition with foreign manufacturers and dwindling earnings, that abandoned domestic television production.

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



(Source) "Study on Economic Analysis of ICT," MIC (2014)

**Figure 5-1-3 Transitions in ict industry employment**



(Source) "Study on Economic Analysis of ICT," MIC (2014)

eo, audio, and text information production sector, and by 1.0 percent in the information services sector. But employment in the Internet-related services sector and the

ICT-related construction sector jumped, by 20.9 percent and 14.1 percent respectively (Figure 5-1-3).

## 2. ICT industry's economic spillover effects

- The economic spillover effects from the ICT industry's production operations on Japan's entire industry were the largest of all industries in inducing added value and jobs

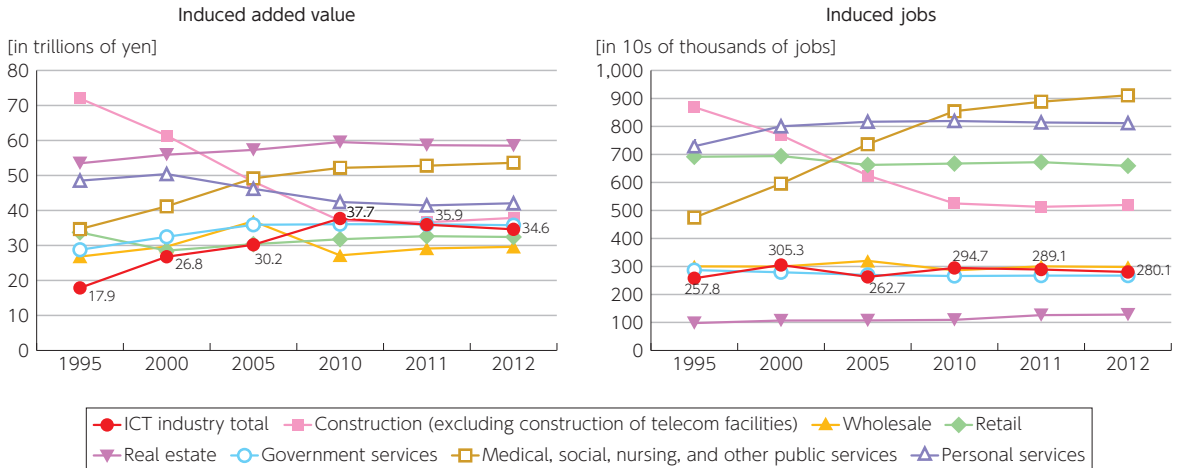
The ICT industry's economic spillover effects on Japan's entire industry in terms of added value and employment inducements were compared with those of other industries. The ICT industry's real final demand of 46.3 trillion yen produced economic spillover effects of 34.6 trillion yen in added value and 2.801 million jobs in

2012. The ICT industry's added value inducement was almost on the same level as that of the government services sector (35.8 trillion yen) (Figure 5-1-2-1).

As for the economic spillover effects of each industry's production operations,<sup>2</sup> the ICT industry induced 87.4 trillion yen in added value and 7.657 million jobs in 2012. The ICT industry thus has the largest economic spillover effects among industries in Japan (Figure 5-1-2-2).

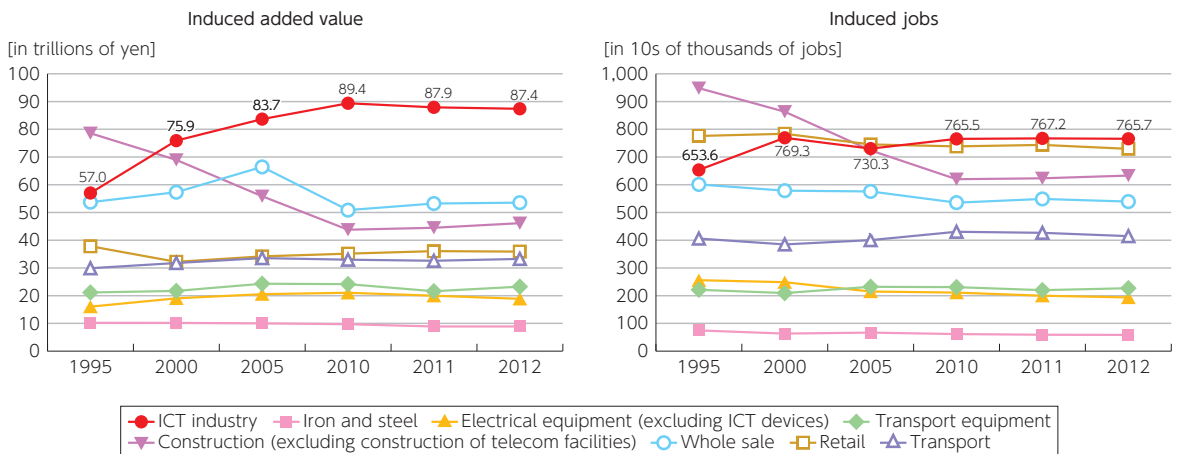
<sup>2</sup> "Economic spillover effects caused by final demand" indicates the economic spillover effects of each sector's final demand on Japan's entire industry, which is analyzed by focusing on the goods and services that constitute the final demand, whereas "economic spillover effects from production operations" focuses on each industry sector and indicates the economic spillover effects of each sector's production operations on Japan's entire industry.

**Figure 5-1-2-1 Transitions in economic spillover effects (induced added value and jobs) of major industries' final demand**



(Source) "Study on Economic Analysis of ICT," MIC (2014)

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



(Source) "Study on Economic Analysis of ICT," MIC (2014)

## Section 2 ICT Industry Operations

### 1. Basic survey on the information and communications industry

The basic survey on the information and communications industry is an ordinary 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 2013 survey.

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

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

###### ● 5,496 enterprises engaging in ICT business operations

The number of enterprises engaging in ICT business operations (irrespective of whether ICT business operations are the enterprise's mainstay operations) stood at 5,496, having 24,011 business establishments and

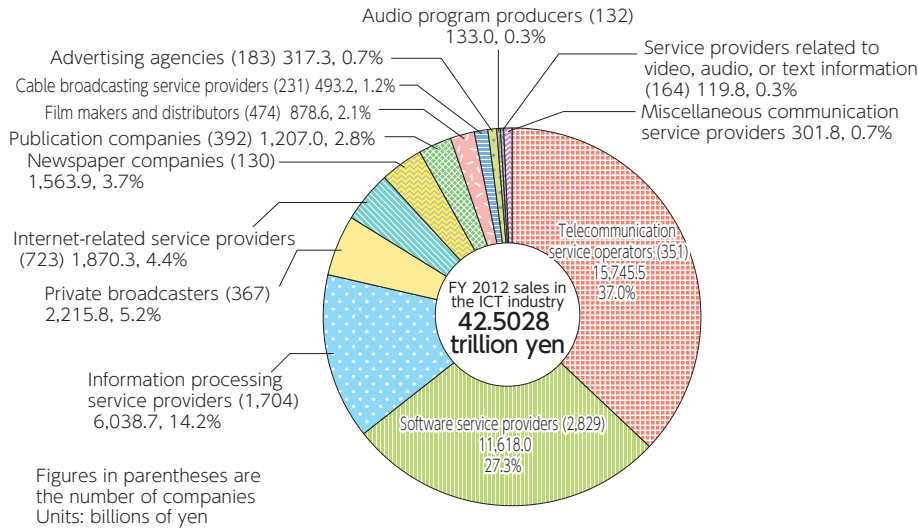
1,502,046 employees. Sales attributed to ICT business operations in FY 2012 totaled 42.5028 trillion yen (total sales by the enterprises were 67.1076 trillion). Operating profits were 4.3575 trillion yen, ordinary income was 4.5593 trillion yen, and the enterprises held 8,425 subsidiaries and associated companies.

##### b. State of sales

###### ● ICT industry sales in FY 2012 were 42.5028 trillion yen

The ICT industry's sales in FY 2012 totaled 42.5028 trillion yen. The telecommunications sector accounted for the largest share of the industry's sales, followed by the software sector and the information processing services sector. These three sectors accounted for 78.6 percent of total ICT industry sales. The telecommunications sector accounted for 37.0 percent of all sales (down 1.0 percentage point from the previous year), the software sector 27.3 percent (up 1.6 points), and the infor-

**Figure 5-2-1-1 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) "2013 Basic Survey on the Information and Communications Industry," MIC/METI"

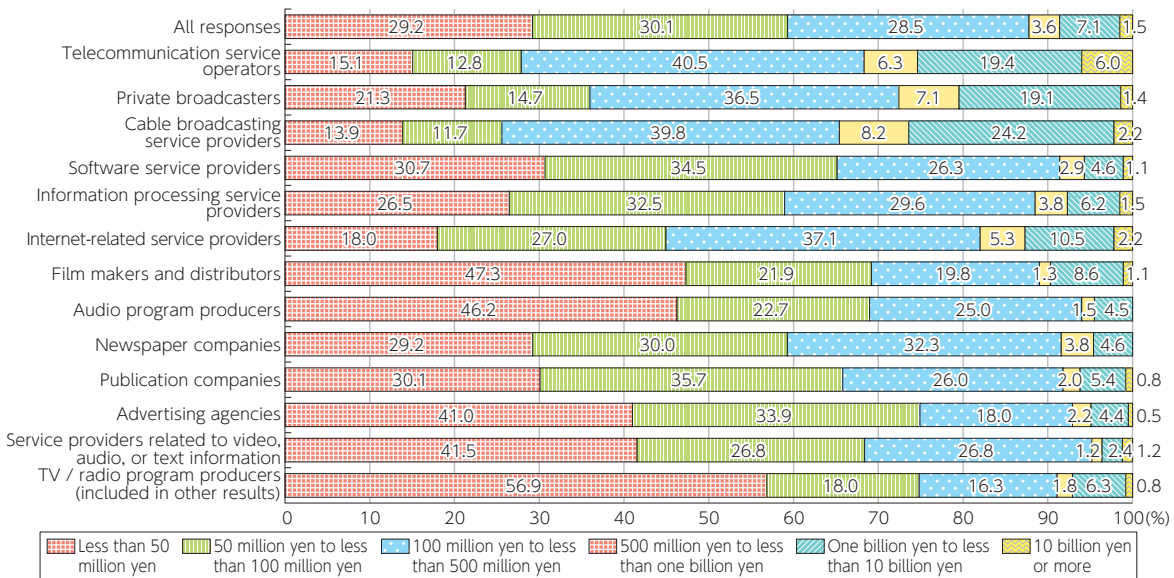
mation processing services sector 14.2 percent (up 0.7 points) (Figure 5-2-1-1).

**c. 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 eight of the 12 ITC industry sectors. Of particular note is the advertising production sector, where enterprises capitalized at less than 100 million yen accounted for more than 70 percent of all enterprises in the sector (Figure 5-2-1-2).

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



(Source) "2013 Basic Survey on the Information and Communications Industry," MIC/METI"

## Section 3 Internet Usage Trends

### 1. State of Internet proliferation

#### (1) State of major ICT device proliferation (households)

- ICT device proliferation has matured overall, but smartphone ownership has increased rapidly, now topping 60 percent

The household penetration rate at the end of 2013 was 94.8 percent for mobile phones and PHS handsets<sup>3</sup> and 81.7 percent for computers. The penetration rate for smartphones,<sup>4</sup> which are included in the mobile phone and PHS handset category, has shot up to 62.6 percent (up 13.1 percentage points from a year earlier) (Figure 5-3-1-1).

#### (2) State of Internet usage

- Both the number of Internet users and the Internet population penetration rate continued to increase from last year

The number of Internet users<sup>5</sup> at the end of 2013 reached 100.44 million, an increase of 3.92 million (4.1 percent) from the end of 2012. The Internet penetration rate as a percent of the general population was 82.8 percent (up 3.3 percentage points from the previous year) (Figure 5-3-1-2). Those using computers at home to access the Internet accounted for 58.4 percent of all Inter-

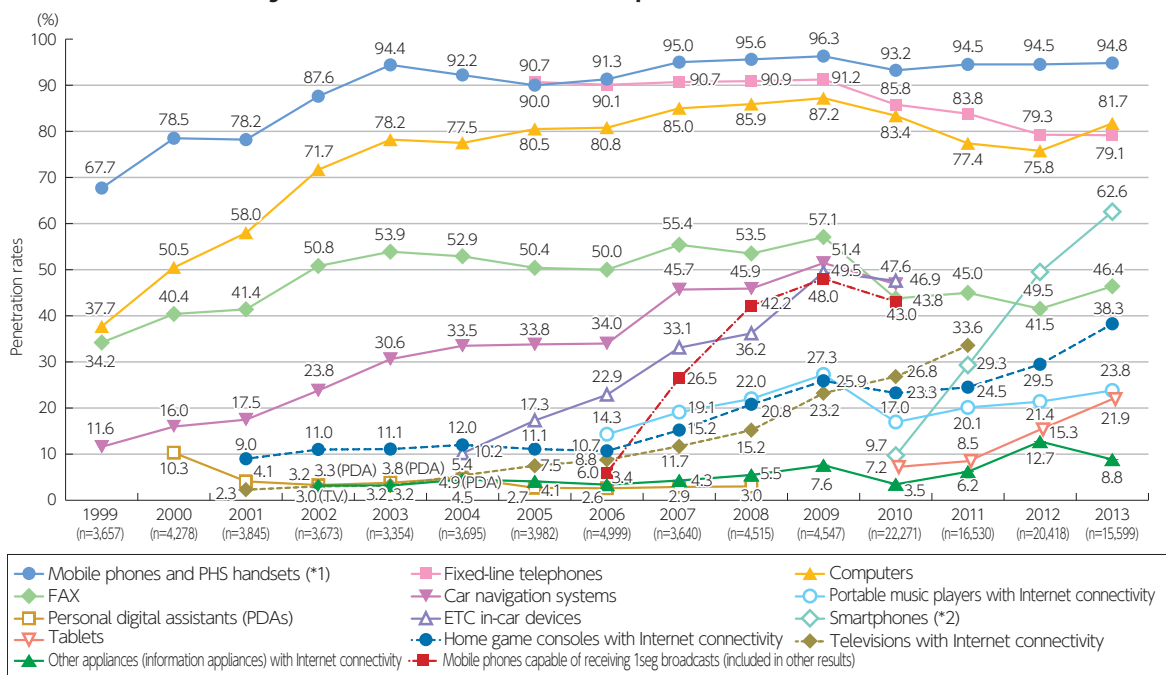
net users, the largest portion, followed by 42.4 percent for smartphones and 27.9 percent for other computers outside of the home (Figure 5-3-1-3).

#### (3) Purposes of using the Internet

- “Sending and receiving emails” was the most common use at home, cited by 69.9 percent of respondents

The most common purpose of using the Internet at home was “sending and receiving emails,” cited by 69.9 percent of respondents. This was followed, in order, by “purchasing or trading goods and services” (57.2 percent) and “using video posting/sharing sites” (48.4 percent) (Figure 5-3-1-4). Viewing the results by age group finds that more than half of users aged 20 to 59 use the Internet for “sending and receiving emails,” “purchasing or trading goods and services,” and “map or transportation information services.”

Figure 5-3-1-1 Transitions in household penetration rates for ICT devices



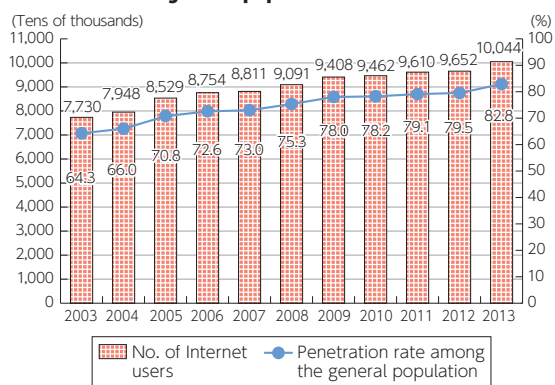
(Source) “2013 Communications Usage Trend Survey,” MIC

<sup>3</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. The penetration rate for mobile phones and PHS handsets excluding smartphones came to 76.5 percent.

<sup>4</sup> Figures for smartphones are included in the mobile phones and PHS handsets total.

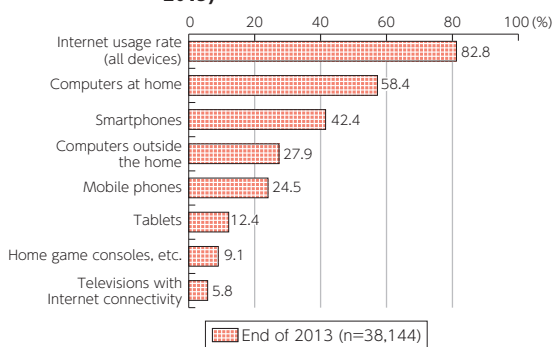
<sup>5</sup> (1) The survey covers an age range of 6 and up. (2) The estimated number of Internet users is based on the results to a question on whether the respondents, aged 6 or older, had used the Internet in the year covered by the survey. Internet access devices include computers, mobile phones/PHS 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) with 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 responses in the calculations (except for Figure 5-3-1-1).

**Figure 5-3-1-2 Transitions in the number of internet users and the penetration rate among the general population**



(Source) "2013 Communications Usage Trend Survey," MIC

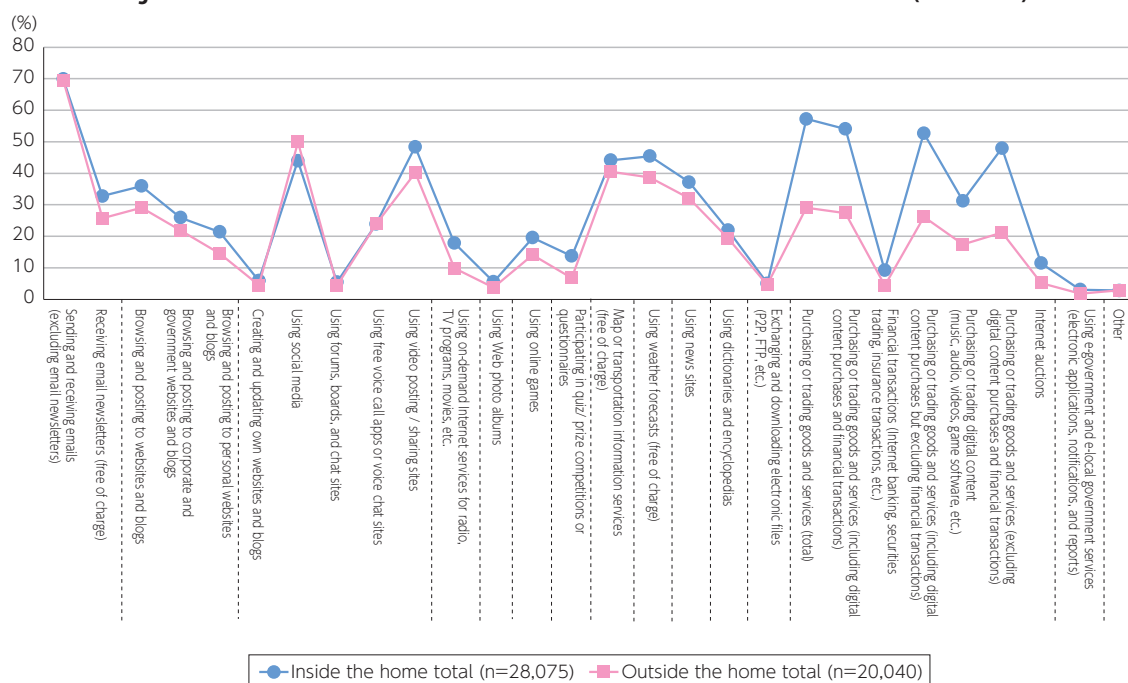
**Figure 5-3-1-3 Internet usage by device (at the end of 2013)**



"Note: Figures indicate the percentage of people who accessed the Internet using the corresponding device during 2013.

(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-3-1-4 Internet functions and services accessed inside and outside the home (individuals)**



(Source) "2013 Communications Usage Trend Survey," MIC

## 2. Challenges for safe, secure Internet usage

### (1) Matters of concern with Internet usage and problems with ICT networks

- Households are concerned about personal information and enterprises are concerned about personnel shortages

Among households where at least one person has used the Internet, 81.4 percent cited "personal information will be disclosed or exposed externally without permission" as a concern felt when using the Internet. This was followed, in order, by "computer virus infections" (76.7 percent) and "trustworthiness of electronic payments" (47.4 percent) (Figure 5-3-2-1).

Among enterprises, 44.7 percent, the highest response rate, mentioned "operational and management personnel shortages" as a problem when using the Internet, internal LANs, or other networks. This was followed, in order, by "concern about virus infections"

(38.7 percent) and "operational and management cost increases" (37.2 percent) (Figure 5-3-2-2).

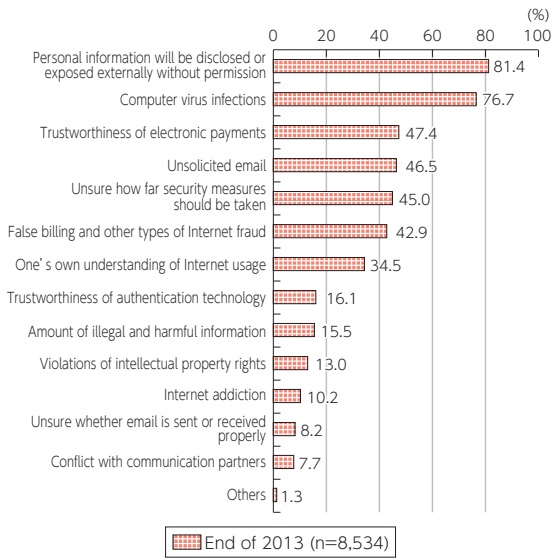
### (2) Information security measures

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

The number of arrests for violations of the Act on the Prohibition of Unauthorized Computer Access (Unauthorized Computer Access Act) in 2013 rose sharply from 437 in the previous year to 980.

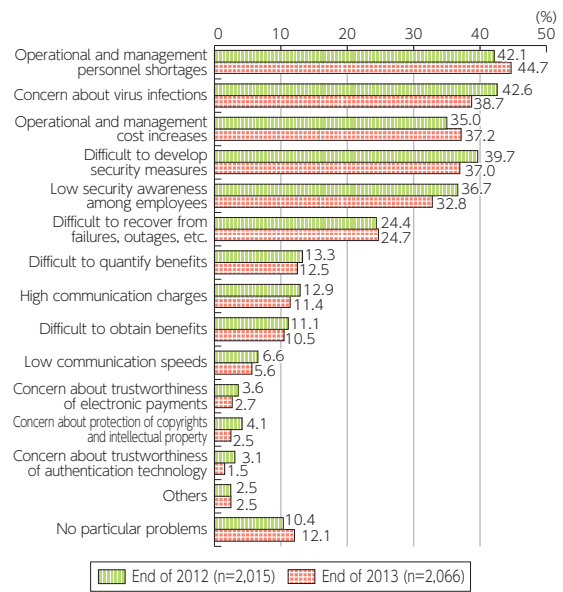
Looking at the state of information security measures taken by households finds that 77.6 percent of households have taken some form of information security measures. The leading security measures were "install

**Figure 5-3-2-1 Matters of concern with internet usage at households (multiple answers permitted)**



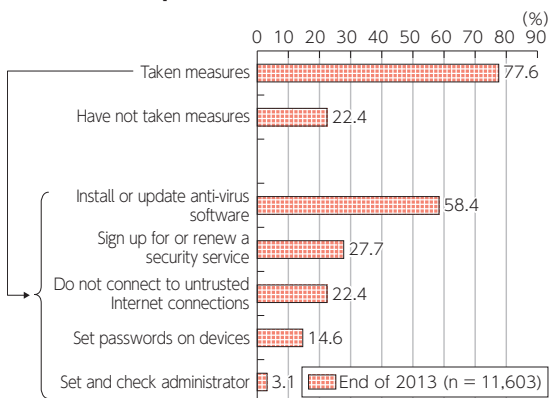
(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-3-2-2 Problems with internet and intranet LAN usage at enterprises (multiple answers permitted)**



(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-3-2-3 Implementation of information security measures at households (multiple answers permitted)**



Source: "2013 Communications Usage Trend Survey," MIC

or update anti-virus software" (58.4 percent) and "sign up for or renew a security service" (27.7 percent) (Figure 5-3-2-3).

Looking at the state of information security measures implemented by enterprises that use ICT networks finds

that 98.5 percent of enterprises have implemented some form of information security measures. The leading security measure was "install anti-virus programs on computers and other devices (operating systems, software, etc.)," which is done by 87.2 percent of enterprises. This was followed, in order, by "install anti-virus programs on servers" (66.0 percent) and "control access with IDs and passwords" (55.3 percent) (Figure 5-3-2-4).

### (3) Personal information protection measures

#### ● Almost 80 percent of enterprises have implemented personal information protection measures

The percentage of enterprises that have implemented some form of personal information protection measures was 77.2 percent, down 0.3 percentage points from the end of 2012. The most cited protection measure, given by 49.2 percent of enterprises, was "enhance internal training," followed, in order, by "appoint a personal information protection and management officer" (31.9 percent) and "establish a privacy policy" (23.6 percent) (Figure 5-3-2-5).

## 3. Promoting ICT applications in government services

### (1) Promoting e-government

#### ● The number of online procedures handled by national administrative bodies fell from the previous fiscal year, but the online usage rate increased

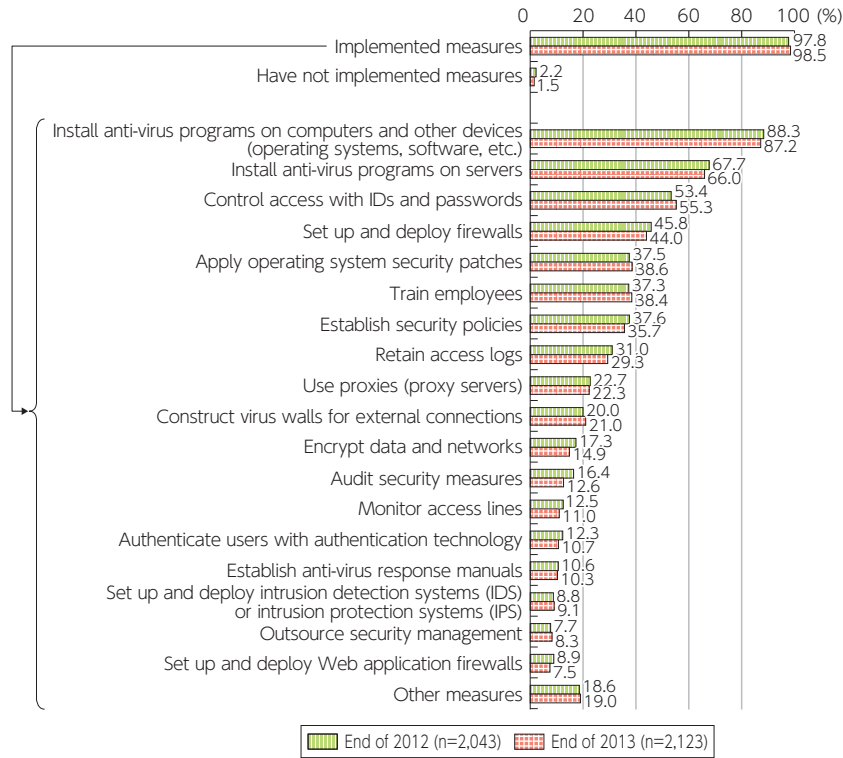
There were 7,188 applications, notifications, and other national administrative procedures available online, a decrease of 328 from the previous fiscal year (when there were 7,516 online procedures) (Figure 5-3-3-1). The decrease was due to ministries and agencies further reviewing and revising the scope of procedures made

available online based on cost effectiveness and other factors, in line with the New Online Usage Plan, approved by the IT Strategic Headquarters on August 3, 2011.

The usage rate of applications, notifications, and other national administrative procedures filed online versus all applications, notifications, and procedures<sup>6</sup> filed was 41.2 percent (188,960,305 procedures were filed online, an increase of 2.7 percentage points from the previous fiscal year). The online usage rate of the priority proce-

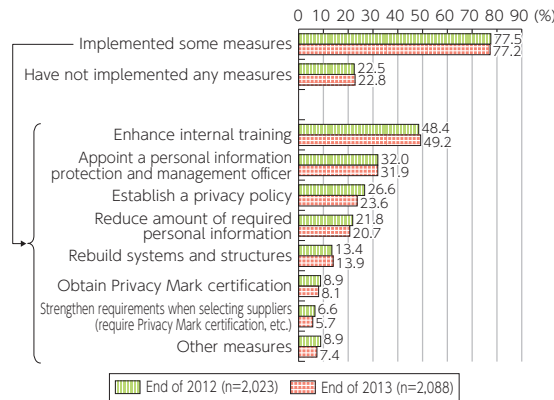
<sup>6</sup> The total number of applications, notifications, and procedures filed is for those procedures placed online.

**Figure 5-3-2-4 Implementation of information security measures at enterprises (multiple answers permitted)**



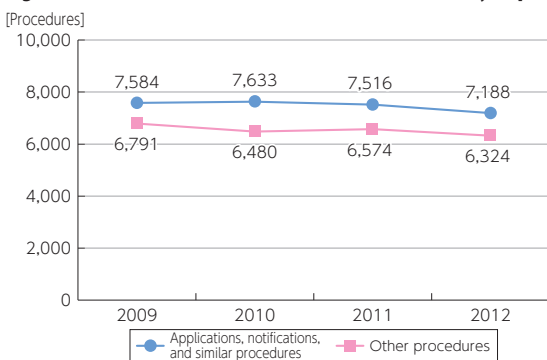
(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-3-2-5 Implementation of personal information protection measures at enterprises (multiple answers permitted)**



(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-3-3-1 Transitions in the online availability of procedures handled by national administrative bodies**



Fiscal year	Procedures available online	
	Applications, notifications, and similar procedures	Other procedures
FY 2012	7,188	6,324
FY 2011	7,516	6,574
FY 2010	7,633	6,480
FY 2009	7,584	6,791



durers<sup>7</sup> most frequently used by citizens and enterprises was 43.1 percent (181,479,301 procedures were filed online, an increase of 2.7 percentage points from the previous fiscal year) (Figure 5-3-3-2).

**(2) Promoting ICT applications in local governments**

**a. State of online usage**

- 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>8</sup> was 42.6 percent in FY 2012 (Figure 5-3-3-3).

**b. Raising the efficiency of operational systems**

- Electronic bidding systems for public works projects were the most common shared online systems

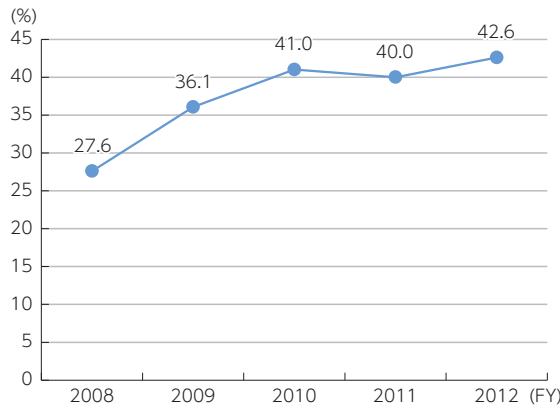
The most common shared online systems were electronic bidding systems for public works projects, which were shared by 22 prefectural governments (46.8 percent) and 434 municipal governments (24.9 percent). Among prefectures, the next most common shared online system was browsing library holdings and reserving books (11 prefectures, 23.4 percent), and among municipalities, reserving public facilities (240 municipalities, 13.8 percent) (Figure 5-3-3-4).

**Figure 5-3-3-2 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 [%]	
		Priority procedures		Priority procedures		Priority procedures
FY 2012	458,496,901	421,297,165	188,960,305	181,479,301	41.2	43.1
FY 2011	442,868,928	405,824,947	170,504,798	163,807,924	38.5	40.4
FY 2010	490,303,745	430,819,006	155,943,915	149,920,227	31.8	37.1
FY 2009	433,878,711	394,880,802	136,805,641	132,314,961	31.5	33.5

Prepared from "State of Online Administrative Procedures in FY 2012," MIC press materials

**Figure 5-3-3-3 Transitions in the usage of local government procedures selected for online-usage promotion**



Fiscal year	Total procedures filed	Filings done online	Online usage rate [%]
2008	336,360,000	92,828,507	27.6
2009	291,010,000	104,953,699	36.1
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

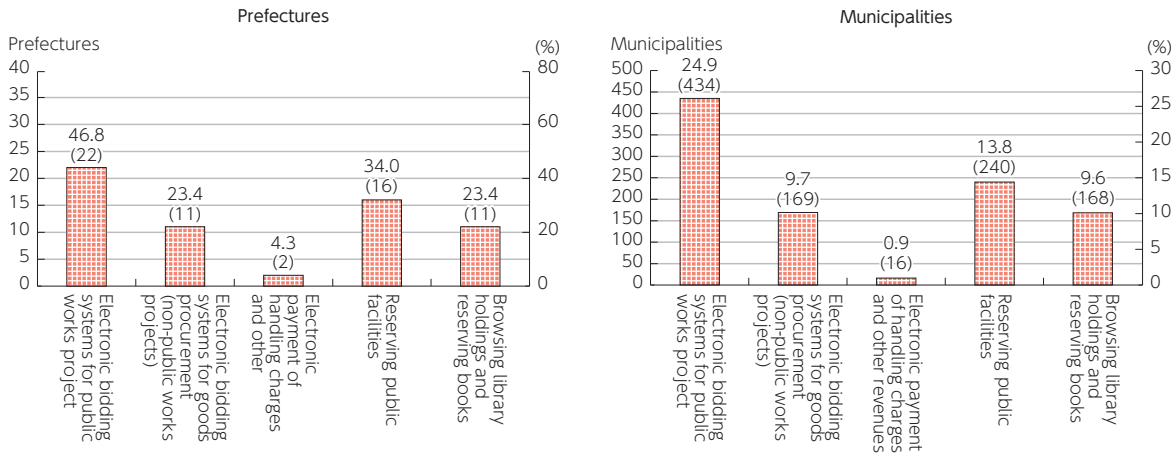
"Note: The total yearly filings are an estimate for the entire country calculated based on the total number of filings and the populations in the jurisdictions of local governments that had already placed the targeted procedures online.

Prepared from "State of Online Administrative Procedures in FY 2012," MIC press materials"

<sup>7</sup> Priority procedures are 71 frequently used procedures selected in the New Online Usage Plan 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 priority procedures accounted for 91.9 percent of all filings made for applications, notifications, and procedures available online.

<sup>8</sup> The targeted procedures were those selected for online-usage promotion under the E-Local Government Online Usage Advancement Policy.

Figure 5-3-3-4 Use of shared online systems



(Source) Prepared from "Overview of Information Management by Local Governments: State of E-Local Government Progress (as of April 1, 2013)," MIC

## Section 4 Cloud Service Usage Trends

### 1. Cloud service usage trends in Japan

#### (1) State of cloud service usage in Japan

- The percentage of enterprises using cloud services rose to 33.1 percent from 28.2 percent at the end of 2012

Of enterprise respondents to the survey, 33.1 percent said they had used cloud services either partially or extensively, up 4.9 percentage points from 28.2 percent at the end of 2012 (Figure 5-4-1-1).

#### (2) Breakdown of cloud service usage

- The most frequently used cloud service is "email"

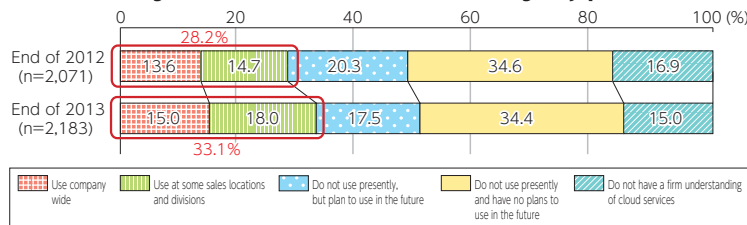
The most frequently used cloud service is "email," cited by 50.0 percent of respondents, followed, in order, by 45.6 percent for "file storage and data sharing" and 41.1 percent for "server usage" (Figure 5-4-1-2).

#### (3) 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 38.8 percent

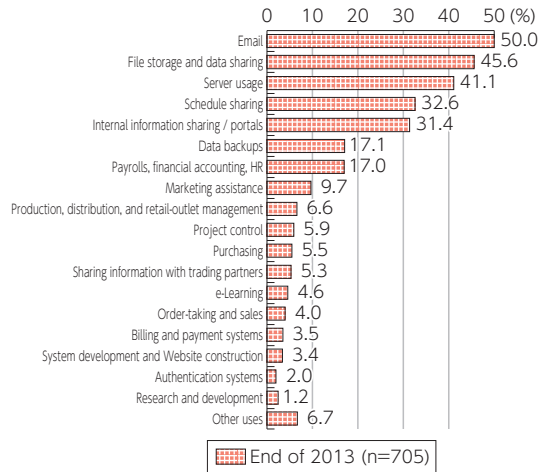
"No need for in-house assets or maintenance arrangements" was the most frequently cited reason for introducing cloud services, chosen by 38.8 percent of respondents, followed, in order, by "cheap initial costs" (36.9 percent) and "services can be accessed anywhere" (35.1 percent). Overall, functional and cost reasons were mentioned most frequently (Figure 5-4-1-3).

Figure 5-4-1-1 State of cloud service usage in Japan



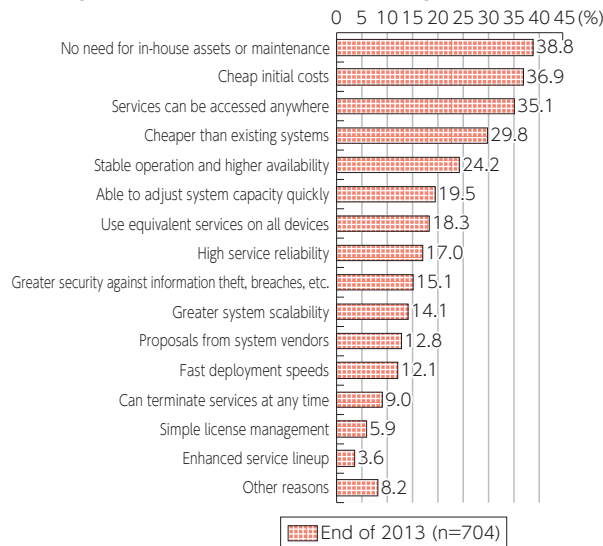
(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-4-1-2 Breakdown of cloud service usage**



(Source) "2013 Communications Usage Trend Survey," MIC

**Figure 5-4-1-3 Reasons for introducing cloud services**



(Source) "2013 Communications Usage Trend Survey," MIC

## Section 5 Telecommunications Sector

### 1. Telecommunications market

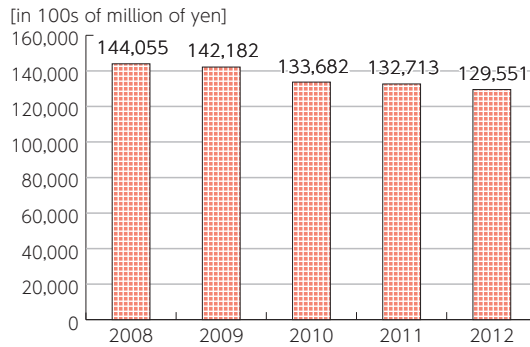
**(1) Market size**

- 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 2012 were 12.9551 trillion yen (a decrease of 2.4 percent from the previous year) (Figure 5-5-1-1). Fixed-line communi-

cations accounted for 32.1 percent of all sales, and mobile communications (mobile phones and PHS handsets) for 52.3 percent (Figure 5-5-1-2). Looking at sales by service category finds voice transmission services accounted for 37.6 percent and data transmission services for 46.8 percent (Figure 5-5-1-3). The average revenue per user (ARPU) for mobile phones in FY 2012 was 4,513 yen.

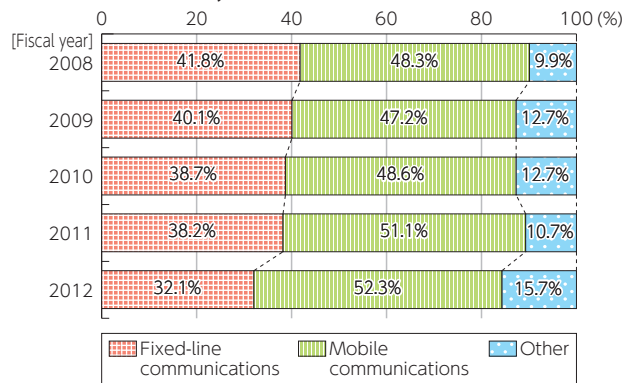
**Figure 5-5-1-1 Transitions in telecommunications sector sales**



"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.

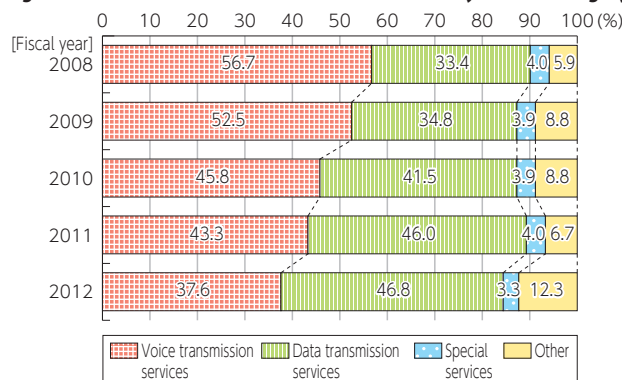
Prepared from "2013 Basic Survey on the Information and Communications Industry," MIC/METI"

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



(Source) "2013 Basic Survey on the Information and Communications Industry," MIC/METI

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



Prepared from "2013 Basic Survey on the Information and Communications Industry," MIC/METI

## 2. State of telecommunication services provision

### (1) Overview

#### a. Subscriptions to telecommunication services

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

Subscriptions to fixed-line communication services (including NTT East and West services (including

ISDN), non-NTT services,<sup>9</sup> and CATV-based telephone services) have been declining, while those to mobile communication services (mobile phone and PHS services) and OABJ-IP phone services have been growing steadily. Subscriptions to 050-IP phone services, which had been on the decline, increased in FY 2012.

At the end of FY 2013, there were about 5.0 times more

<sup>9</sup> Non-NTT services are 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.

mobile communication subscriptions than fixed-line communication subscriptions (Figure 5-5-2-1).

**b. State of broadband development and usage**

- Ultra-high-speed broadband services<sup>10</sup> were available at 99.4 percent of Japanese households at the end of March 2013

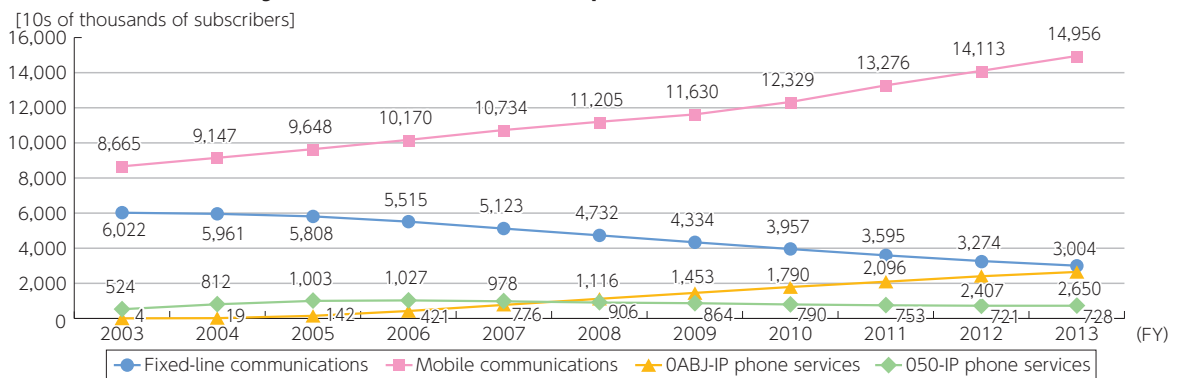
At the end of March 2013, ultra-high-speed broadband services were available at 53.81 million households, or 99.4 percent of all Japanese households. Broadband services<sup>11</sup> were available at 100 percent of Japan's 54.16 million households (Figure 5-5-2-2).

- Broadband service subscriptions have risen year by year, with a large jump in subscriptions to 3.9G (LTE) mobile phone services in FY 2013

The number of subscriptions<sup>12</sup> to broadband services

at the end of FY 2013 increased by 47.1 percent from a year earlier to 89.73 million (Figure 5-5-2-3). The number of DSL service subscriptions fell by 17.5 percent from the previous year to 4.47 million, continuing a downward trend. FTTH subscriptions, on the other hand, climbed 6.3 percent to 25.35 million, and 3.9G (LTE) mobile phone service subscriptions shot up by almost 2.3 times to 46.41 million. FTTH subscriptions account for 28.3 percent of all broadband subscriptions, whereas 3.9G (LTE) mobile phone service subscriptions now make up more than half, 51.7 percent. DSL continues to experience a net reduction in subscriptions, while FTTH has consistently seen a net increase in subscriptions. The number of subscriptions to BWA services has also increased in recent years.

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



\*Note: Subscriptions to fixed-line communication services cover NTT East and West services (including ISDN), non-NTT services, and CATV-based telephone services.

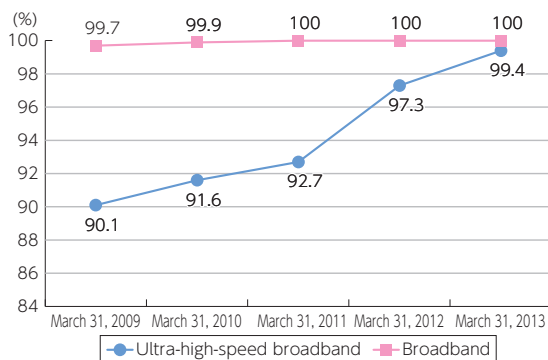
Note: Subscriptions to mobile communication services cover mobile phone and PHS services.

Note: The FY 2003 Figures for OABJ-IP and O50-IP phone services are based on poll responses from telecom carriers, while Figures for FY 2004 and subsequent years are based on carrier reports submitted in accordance with the Regulations on Telecommunication Carriers' Report Submissions.

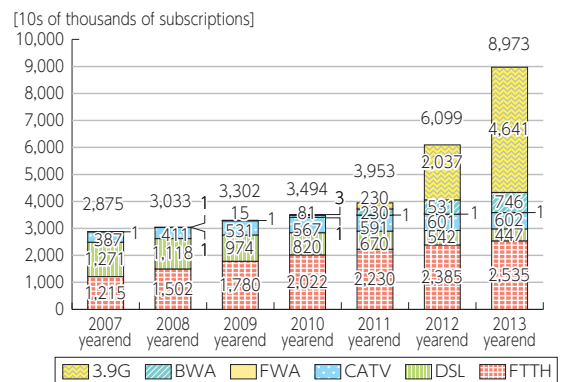
Note: Past Figures have been revised based on detailed data analyses.

Prepared from "Status of Telecommunications Service Subscriptions (March 31, 2013)," MIC

**Figure 5-5-2-2 Transitions in broadband infrastructure**



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



Prepared from "Announcement of Quarterly Data on Telecommunications Service Subscriptions and Shares (4th quarter of FY 2013 (March 31))," MIC

<sup>10</sup> Ultra-high-speed broadband services cover FTTH, CATV Internet, FWA, BWA, and LTE services. (Besides FTTH and LTE services, this definition includes only those services with download speeds of 30 Mbps or more).

<sup>11</sup> Broadband services cover FTTH, DSL, CATV Internet, FWA, satellite, BWA, LTE, and 3.5G mobile phone services.

<sup>12</sup> Figures for subscriptions to broadband services cover FTTH, DSL, CATV, FWA, BWA, and 3.9G (LTE) mobile phone services.

## Section 6 Broadcasting Sector

### 1. Broadcasting market

#### (1) Market size

##### a. Broadcaster sales

- Broadcaster sales totaled 3.8915 trillion yen in FY 2012; in recent years, satellite-based broadcasters' share of sales has expanded

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, in FY 2012 fell slightly (by 0.5 percent) from the previous year to 3.8915 trillion yen. By category, terrestrial-based private broadcasters' sales were 2.2870 trillion yen (up 1.6 percent from the previous year), satellite-based private broadcasters' sales were 451.0 billion yen (up 0.4 percent), cable TV broadcasters' sales were 493.1 billion yen (down 4.8 percent), and NHK's ordinary operating income was 660.4 billion yen (down 4.9 percent) (Figure 5-6-1-1).

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



\*Note 1: Figures for satellite-based broadcasters represent operating revenues from satellite-based broadcasting services.

\*Note 2: Cable TV broadcasters are business corporations engaging mainly in cable TV broadcasting services and registered only as general broadcasters providing independent broadcasting services (general cable broadcasters) (excluding business operators who serve as general broadcasters solely by using cable TV broadcasting facilities based on Article 9 of the former Act on Cable Television Broadcasting).

\*Note 3: Figures for NHK represent ordinary operating income.

\*Note 4: Breakdowns for terrestrial-based broadcasters from 1997 to 1999 are not available.

\*Note 5: Community broadcasting operators that also provide cable TV broadcasting services are excluded.

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

### 2. State of broadcasting service use

#### (1) Subscriptions

- Subscriptions to NHK terrestrial, NHK-BS, WOWOW, 110° East CS, and cable TV services increased from the previous year

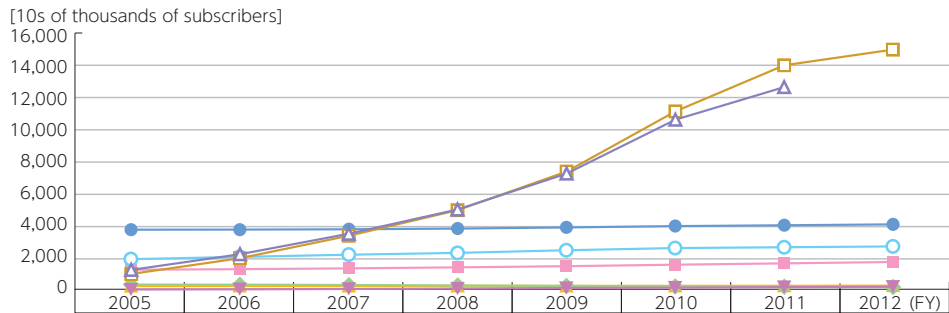
Subscriptions to all broadcasting services, except 124/128° East CS (communications satellite) broadcasts, increased in FY 2012 (Figure 5-6-2-1).

#### (2) TV viewing hours

- TV viewing hours per day have leveled off; the prime viewing hours are from 8 p.m. to 9 p.m.

According to the Nationwide Individual TV Viewer-ship Rate Survey (June 2013) by the NHK Broadcasting Culture Research Institute, TV viewing hours per day in Japan stood at 3 hours and 46 minutes, almost unchanged from the previous year. Of this average, NHK viewing accounted for 61 minutes (54 minutes for terrestrial-based broadcasting and 7 minutes for satellite-

Figure 5-6-2-1 Subscribers to broadcasting services



Reference: No. of broadcast receivers shipped	(10s of thousands)							
For terrestrial digital broadcasts	991.4	1,971.5	3,370.1	4,969.0	7,374.1	11,130.9	13,992.8	14,975.2
For BS digital broadcasts	1,242.5	2,221.1	3,492.5	5,010.0	7,254.0	10,609.0	12,637.7	—

\*Note: NHK terrestrial subscribers are the number of all NHK subscription contracts.

Note: NHK BS subscribers are the number of NHK satellite contracts.

Note: WOWOW subscribers are the number of WOWOW contracts.

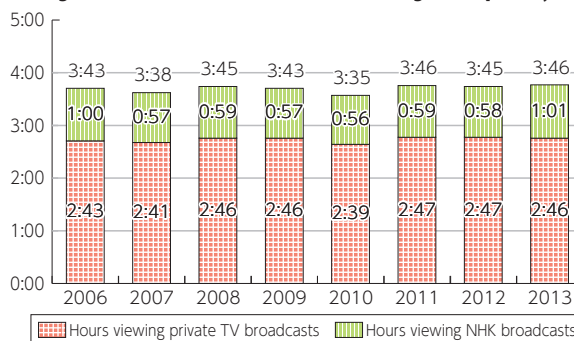
Note: 124/128° East CS subscribers are the number of Sky PerfecTV premium service contracts. 110° East CS subscribers are the number of Sky PerfecTV contracts.

Note: The number of terrestrial digital broadcast receivers shipped in FY 2003 is a reference value only.

Note: The number of BS digital broadcast receivers is for December 31, 2011.

Prepared from data from JEITA, Japan Cable Laboratories, NHK, and "State of Satellite Broadcasting" and "State of Cable Television," MIC

Figure 5-6-2-2 Transitions in TV viewing hours per day



Prepared from the "Nationwide Individual TV Viewership Rate Survey (June 2013)," NHK Broadcasting Culture Research Institute

based broadcasting) and viewing of private television broadcasts for 2 hours and 46 minutes (2 hours and 35 minutes for terrestrial-based broadcasting and 11 minutes for satellite-based broadcasting) (Figure 5-6-2-2).

The prime viewing time slot was the 8 p.m. to 9 p.m. time slot, when about 41.2 percent of individuals were watching either NHK or private television broadcasts.

## Section 7 Radio Spectrum Usage

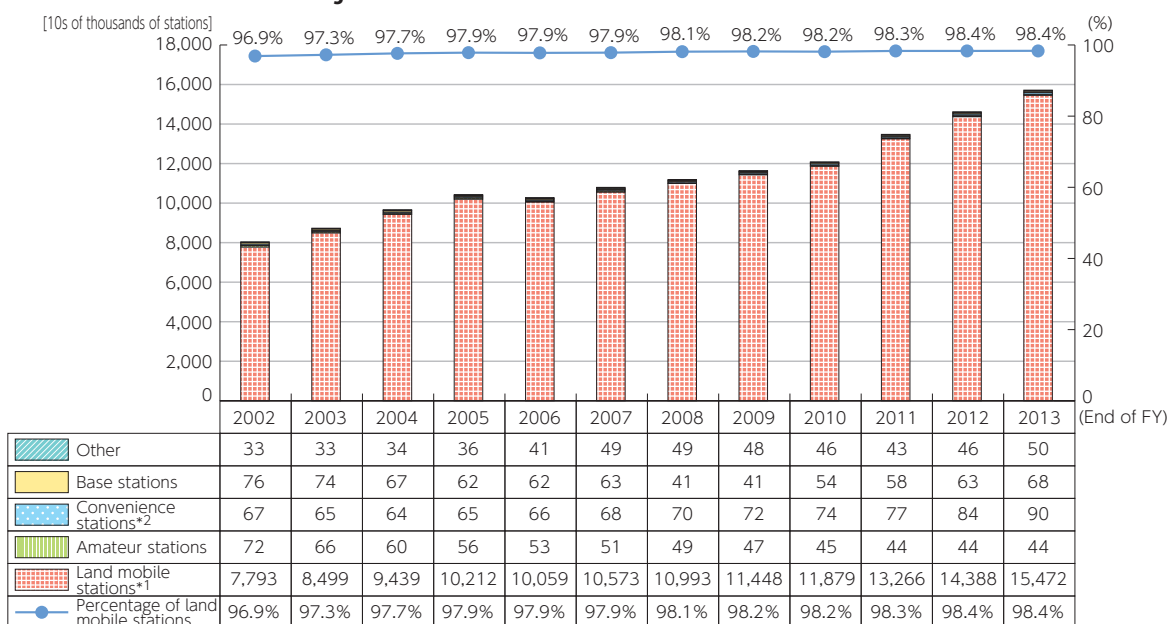
### 1. State of radio spectrum usage and number of radio stations

- 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 2013 increased by 7.5 percent from a year earlier to 157.24 mil-

lion, including 154.72 million land mobile stations (such as mobile phones), which rose by 7.5 percent. Mobile phones and other mobile land stations accounted for a huge 98.4 percent of all radio stations. The number of convenience stations increased by 7.9 percent to 900,000 (Figure 5-7-1-1).

**Figure 5-7-1-1 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).

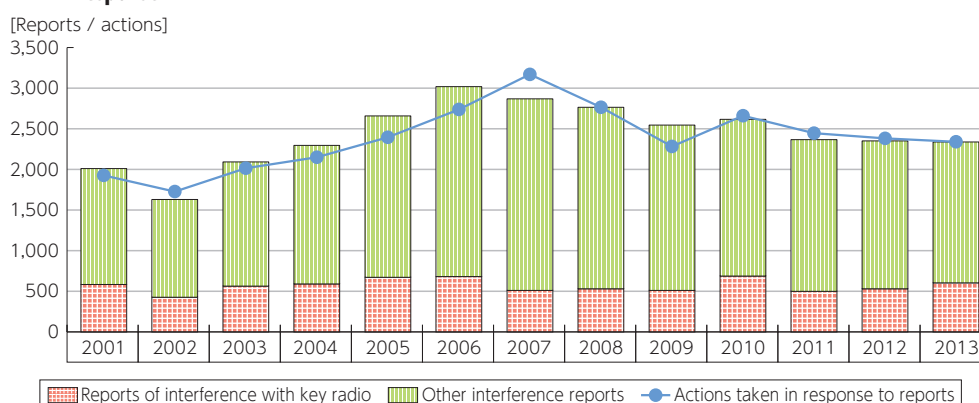
Note 2: "Convenience station" refers to a radio station used for simple radio communications."

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

● There were 605 reports of interference with key radio communications in FY 2013, and 1,992 actions were taken against illegal radio stations. In FY 2013, there were 2,345 reports of radio interference or obstructions of all kinds, 13 less (0.6 percent)

than the previous year. Among these, however, there were 605 reports of interference with key radio communications, 73 more (13.7 percent) than the previous year. In response to these reports, 2,346 actions<sup>13</sup> were taken

**Figure 5-7-2-1 Transitions in the number of radio station interference/obstruction reports and the number of actions taken in response**



### Number of interference/obstruction reports

Fiscal year		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Reports	Reports of interference with key radio communications	585	429	566	592	674	684	512	532	513	689	501	532	605
	Other interference reports	1,432	1,205	1,533	1,711	1,991	2,344	2,364	2,241	2,041	1,934	1,873	1,826	1,740
	Total	2,017	1,634	2,099	2,303	2,665	3,028	2,876	2,773	2,554	2,623	2,374	2,358	2,345

### Number of actions in response to interference/obstruction reports

Fiscal year		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Actions taken in response to interference reports		1,931	1,732	2,021	2,155	2,403	2,745	3,179	2,772	2,289	1,986	2,453	2,389	2,346

<sup>13</sup> The number of actions includes incomplete actions remaining from the previous fiscal year.



in FY 2013 (Figure 5-7-2-1).

In FY 2013, 7,101 illegal radio stations were detected, 1,480 less (17.2 percent) than the previous year. In response, 1,992 actions were taken in FY 2013, a decrease

of 1,277 actions (39.1 percent) from the previous year. These actions included 228 indictments (11.4 percent of all actions) and 1,764 directives (88.6 percent of all actions).

## Section 8 Content Market Trends

### 1. State of Japan's content market

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

- The Japanese content market was valued at 11.2401 trillion yen, about 50 percent of which was attributable to video content, over 40 percent to text-based content, and less than 10 percent to audio-based content

The Japanese content market was valued at 11.2401 trillion yen in 2012. By content segment, video content accounted for about 50 percent of the market, text-based content, over 40 percent, and audio-based content, under 10 percent.<sup>14</sup>

The primary components of the video content segment, worth 5.5147 trillion yen (49.1 percent of the entire market), were terrestrial TV programs, worth 2.7589 trillion yen, satellite and cable TV broadcast programs, 888.4 billion yen, game software, 751.5 billion yen, movies, 622.9 billion yen, videos, 354.0 billion yen, and original Internet videos, 139.1 billion yen. The primary components of the audio-based content segment, worth 821.1 billion yen (7.3 percent of the entire market), were music, worth 623.7 billion yen, and radio programs, 193.9 billion yen. And the primary components of the text-based content segment, worth 4.9044 trillion yen (43.6 percent of the entire market), were newspaper articles, worth 1.7288 trillion yen, magazines,<sup>15</sup> 1.1651 trillion yen, books, 736.4 billion yen, comics, 497.5 billion

yen, original Internet text-based content,<sup>16</sup> 512.2 billion yen, and database information, 264.3 billion yen (Figure 5-8-1-1).

Japan's content market in 2012 totaled about 11.2 trillion yen, which was almost unchanged from 2009 levels. The respective video, audio, and text segments, too, were almost the same (Figure 5-8-1-2).

#### (2) Trends in the digital content market

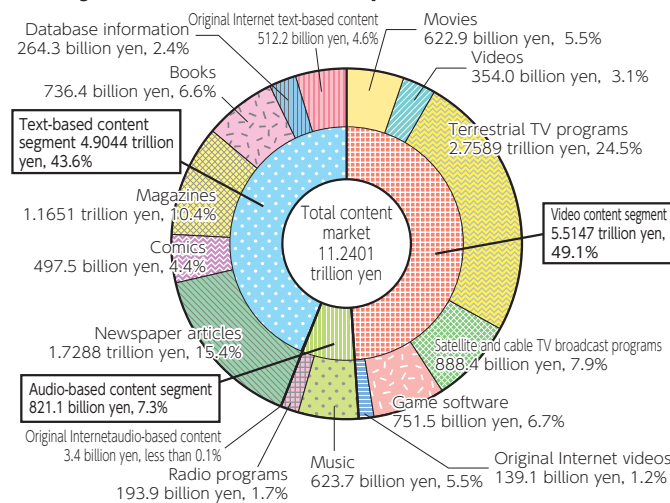
- The market for digital content, which is downloaded or streamed via the Internet to computers or mobile phones, grew to 2.120 trillion yen, accounting for 18.9 percent of the entire content market

As part of the overall content market, the market for digital content, which is downloaded or streamed via the Internet to computers or mobile phones, reached 2.120 trillion yen.

The digital content market breaks down into 46.5 percent for text-based content, 37.5 percent for video content, and 16.0 percent for audio-based content.

The video content segment of the 2012 digital content market was worth 795.5 billion yen, which consisted of 378.8 billion yen for game software, 139.1 billion yen for original Internet videos, 117.4 billion yen for videos, 86.6 billion yen for movies, 38.0 billion yen for terrestrial TV programs, and 35.5 billion yen for satellite and cable TV

Figure 5-8-1-1 Breakdown Of Japan's Content Market (2012)



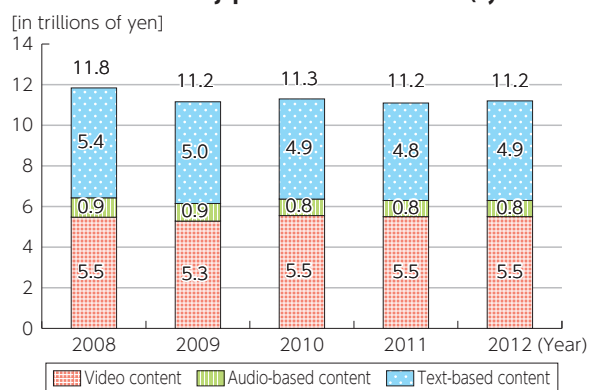
(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

<sup>14</sup> The market size was measured and analyzed by assessing the primary nature of the content works and calculating the value by distribution level, such as primary distribution or multiuse. The value of content was not calculated by media channel.

<sup>15</sup> The magazine category includes free newspapers.

<sup>16</sup> Original Internet text-based content includes regular Websites, blogs, social media, email newsletters, and similar text-based content.

**Figure 5-8-1-2 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

broadcast programs. Music accounted for 333.4 billion yen of the 340.2 billion yen audio-based digital content market. The 985.3 billion yen text-based digital content market consisted of 512.2 billion yen for original Internet text-based content, 187.6 billion yen for database information, 120.4 billion yen for newspaper articles, and 78.4 billion yen for comics (Figure 5-8-1-3).

The digital content market has been growing steadily. Looking at the market by content segment shows that the video content segment—which doubled from 2008 to 2012, reaching about 800.0 billion yen—has been driving the digital content's market expansion. The text-based digital content segment also appears to be on an upward trajectory (Figure 5-8-1-4).

● **The 2012 mobile content industry's market jumped 23.3 percent from the previous year to 2.3507 trillion yen**

The Japanese mobile content industry's market,<sup>17</sup> which is made up of the mobile content market<sup>18</sup> and the mobile commerce market, continued to expand in 2012, reaching 2.3507 trillion yen (a 23.3 percent increase year-on-year), due to the growth and proliferation of smartphones and tablets (Figure 5-8-1-5). By individual segments, the mobile content market reached 851.0 billion yen (up 15.9 percent) and the mobile commerce market reached 1.4997 trillion yen (up 28.0 percent).

**(3) Broadcast content market trends**

● **Information programs (including publicity programs) account for 67.9 percent of all broadcast programs produced, commanding the largest share among program categories**

Information programs (including publicity programs) account for 67.9 percent (down 2.3 percentage points from the previous year) of all broadcast programs produced, the largest share among program categories, followed, in order, by 58.9 percent (up 0.9 points) for commercial advertisements and 40.1 percent (down 0.2 points) for variety shows (Figure 5-8-1-6).

● **Export value of Japanese broadcast content topped 10 billion yen in FY 2012**

The export value of Japanese broadcast content topped 10 billion yen in FY 2012 (Figure 5-8-1-7). The export value of program broadcast rights accounted for about 60 percent of this total, which was virtually unchanged from the previous year. Note that from FY 2012 onward, merchandising rights, video and DVD rights, format and restaging rights, Internet distribution rights, and similar rights will be included in the export value of broadcast content. A study is being made of whether to include satellite broadcast content in addition to terrestrial broadcast content in the calculations.

The traditional method of exporting broadcast content was to sell the program broadcast rights. But today, selling format or restaging rights, which have been the subject of cutting-edge and experimental efforts, is gaining widespread acceptance as a means of advancing overseas. In addition, merchandising rights to sell characters from programs and video and DVD rights to sell packages have driven the increase in the export value of broadcast content. NHK and key private stations account for nearly 70 percent of the export value from program broadcast rights, the traditional method of expanding overseas. Leading examples of programs exported overseas in FY 2012 are as listed below.

● **Cartoons and animations account for the largest share of export value by program category, and largest export market is Asia**

Cartoons and animations account for the largest share of exported broadcast content. Although cartoons and animations, the largest exported program category, account for about 40 percent of program broadcast rights, they account for just under 60 percent of the export value of broadcast content, which also includes merchandising rights and video and DVD rights (Figure 5-8-1-8).

Drama and variety shows were the next two largest categories. The largest export market for broadcast content was Asia. Note that although Europe accounted for less than 20 percent of export value from program

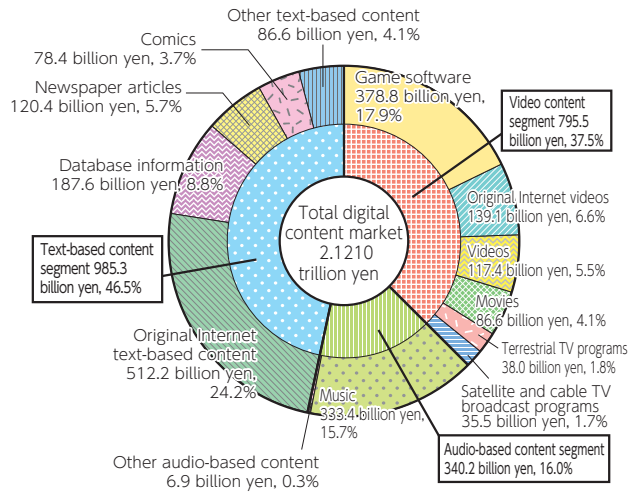
<sup>17</sup> The mobile content market refers to digital content provided over the mobile Internet (including ringtones, music, videos, games, and fortune-telling). The mobile commerce market refers to the sales of physical goods (mail-order sales, etc.), sales of services (ticket sales), and transaction fees (including stock brokerage commissions, auction fees, and other payments) conducted over the mobile Internet.

<sup>18</sup> In 2011, the scope of the mobile content market was expanded to encompass the open platform market (such as smartphones).

broadcast rights, it accounted for over 20 percent of the export value of broadcast content, which also includes format and restaging rights and merchandising rights,

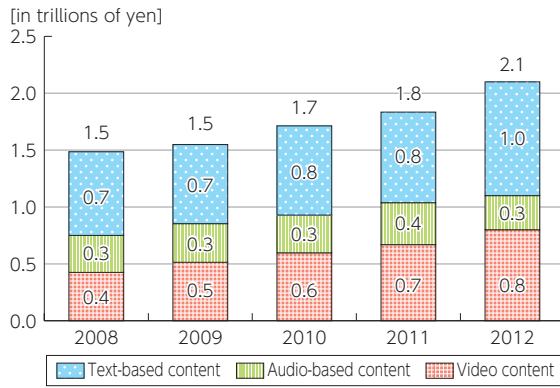
which brought Europe's share up in line with North America's.

**Figure 5-8-1-3 Breakdown of the digital content market (2012)**



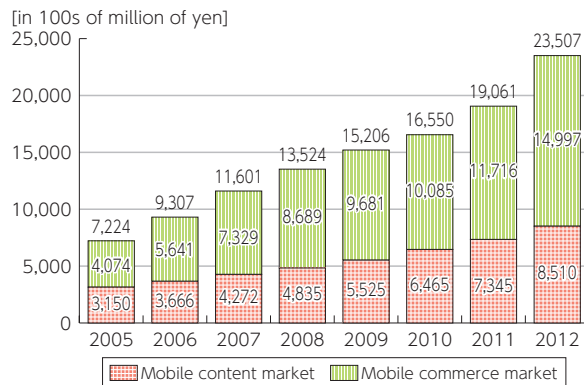
(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

**Figure 5-8-1-4 Transitions in the digital content market size (by content segment)**



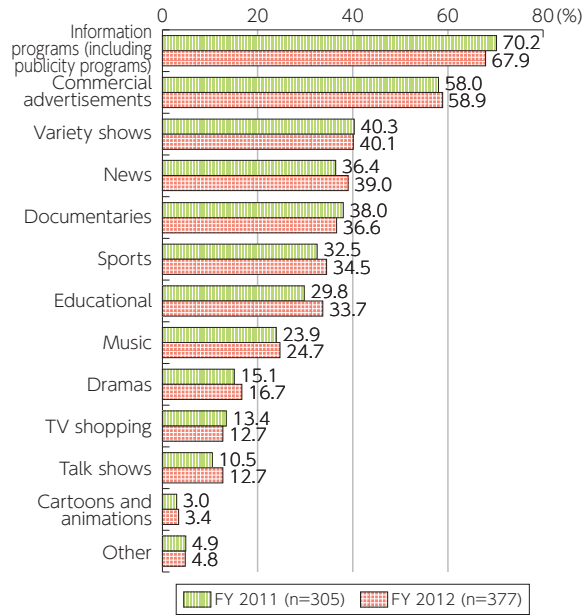
(Source) "Survey on the Production and Distribution of Media Content," Institute for Information and Communications Policy, MIC

**Figure 5-8-1-5 Mobile content industry market size**



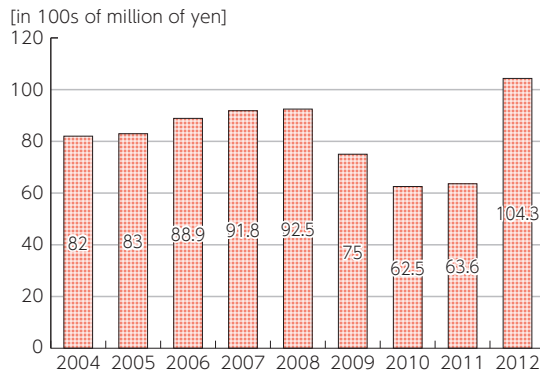
(Source) "Survey Research on Mobile Content Business Structure Changes Including Smartphone Market Expansion, Copyright Treatment Changes, and Mobile Content Market Size Calculation," MIC

**Figure 5-8-1-6 Percentage of broadcast programs under production (multiple answers permitted)**



(Source) "2013 Basic Survey on the Information and Communications Industry," MIC/METI

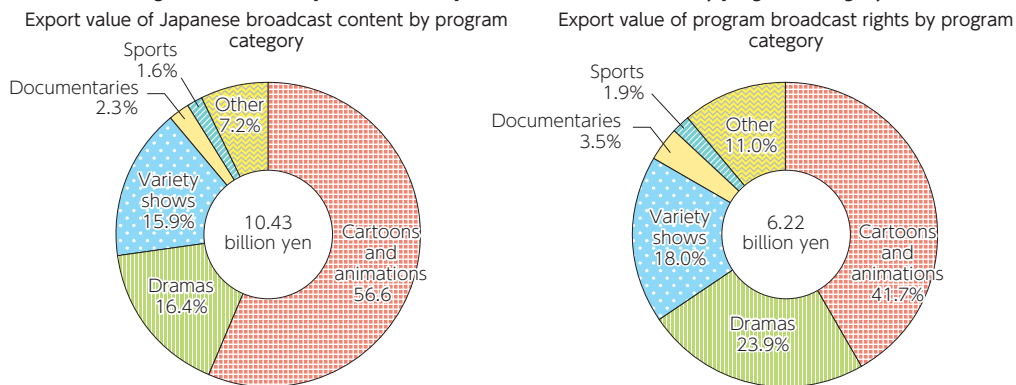
**Figure 5-8-1-7 Export value of Japanese broadcast content**



"Note: From FY 2012 onward, merchandising rights, video and DVD rights, format and restaging rights, Internet distribution rights, and similar rights will be included along with program broadcast rights in the export value of broadcast content. Figures prior to FY 2012 are the export value for program broadcast rights only."

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

**Figure 5-8-1-8 Export value of Japanese broadcast content by program category**



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

## Section 9 Research and Development

### 1. ICT industry research

#### (1) Research and development spending

- The ICT industry spent 3.8835 trillion yen on research in FY 2012, accounting for 31.9 percent of all corporate research spending

According to MIC's 2013 Research Investigation Report on Science and Technology, Japan's total scientific and technological research spending (i.e., research spending) in FY 2012 stood at 17.3246 trillion yen (the combined research spending by corporations, nonprofit organizations, public agencies, universities, etc.).

Corporate research spending, which accounts for about 70 percent of all research spending, was 12.1705 trillion yen. Of this amount, 3.8835 trillion yen (31.9 percent) was spent on research by the ICT industry.<sup>19</sup> The ICT equipment and appliance manufacturing segment was largest research spender in the ICT industry (Figure 5-9-1-1).

Looking at research spending in the four priority promotion fields (ICT, life sciences, environmental sciences, and nanotechnology/materials) in the Third Science and Technology Basic Plan (approved by the Cabinet in March 2006), the ICT field, with spending of 2.4502 trillion yen, is the second biggest spender after the life sci-

ences field.

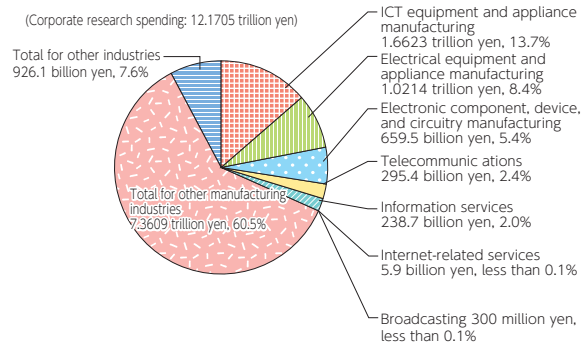
#### (2) Industry and university R&D partnerships in the ICT field

- Joint research projects increased in number in FY 2012 over the previous year

Private corporations conducted 1,825 joint research projects<sup>20</sup> in the ICT field with national/private universities or other academic institutions in FY 2012, an increase of 89 projects from FY 2011's 1,736 projects. There were 1,453 commissioned research projects<sup>21</sup> in FY 2012, a decrease of 10 projects from FY 2011's 1,463 projects (Figure 5-9-1-2).

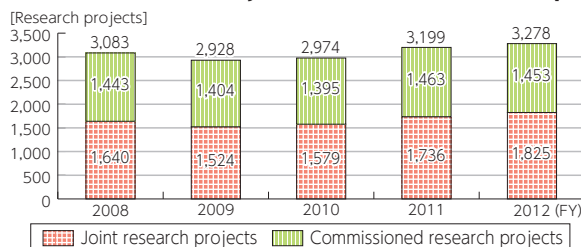
In FY 2012, the ICT field had the fewest combined joint research projects and commissioned research projects of the four priority promotion fields (Figure 5-9-1-3).

Figure 5-9-1-1 Corporate research spending by industry (FY 2012)



(Source) Prepared from the "2013 Research Investigation Report on Science and Technology," MIC

Figure 5-9-1-2 Transitions in the number of joint and commissioned research projects in the ICT field



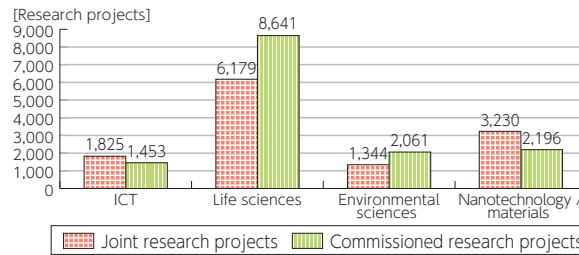
Prepared from "State of Industry-Academic Cooperation at Universities, FY 2012," Ministry of Education, Culture, Sports, Science and Technology

<sup>19</sup> ICT industry research spending refers to the total research spending by 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, and Internet-related services sectors).

<sup>20</sup> "Joint research project" refers to a project in which a university or other academic institution and a private corporation jointly conduct R&D and the private corporation covers the R&D expenses incurred by the university or other academic institution.

<sup>21</sup> "Commissioned research project" refers to a project in which a private corporation commissions a university or other academic institution to conduct R&D primarily on its own and the private corporation pays for the R&D expenses.

**Figure 5-9-1-3 State of joint and commissioned research projects in the four priority promotion fields (FY 2012)**



Prepared from "State of Industry-Academic Cooperation at Universities, FY 2012," Ministry of Education, Culture, Sports, Science and Technology

## 2. Technology trading

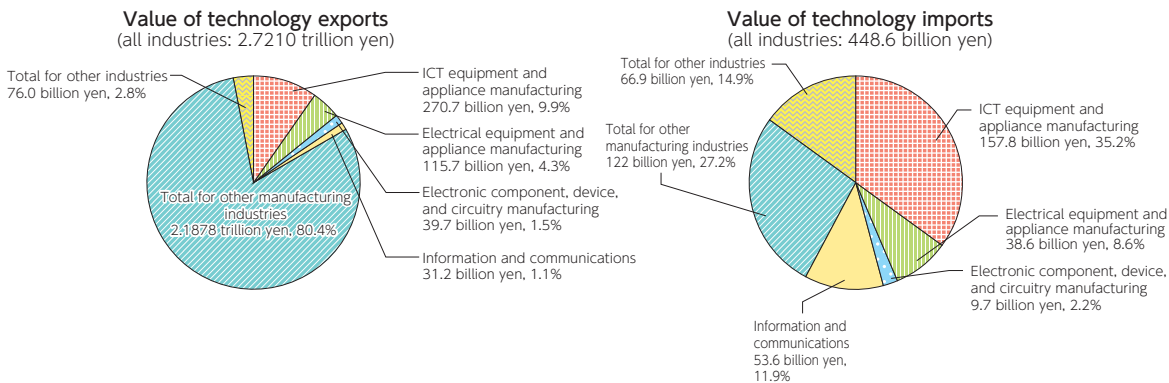
● **The ICT industry posted a surplus in technology exports in FY 2012**

The value received from Japan's technology exports<sup>22</sup> in FY 2012 totaled 2.7210 trillion yen, to which the ICT industry<sup>23</sup> contributed 457.2 billion yen, or 16.8 percent. On the other side of technology trades, the costs of technology imports was 448.6 billion yen, of which the ICT

industry paid out 259.8 billion yen, or 57.9 percent. Both Japan and the ICT industry posted export surpluses in technology.

The ICT equipment and appliance manufacturing industry accounted for the largest share of the ICT industry's technology imports and exports (Figure 5-9-2-1).

**Figure 5-9-2-1 Technology trade by industry (FY2012)**



Prepared from the "2013 Research Investigation Report on Science and Technology," MIC

## 3. Number of researchers

● **The ICT industry employed 182,037 researchers, or 37.8 percent of all corporate researchers in Japan**

There were 835,701 researchers in Japan on March 31, 2013 (the total of all researchers at corporations, non-profit organizations, public agencies, universities, etc.). Corporations employed 481,425 researchers, or about

60 percent of the total. The ICT industry employed 182,037 researchers,<sup>24</sup> or 37.8 percent of all corporate researchers in Japan. The ICT equipment and appliance manufacturing industry had the most researchers of any ICT industry segment (Figure 5-9-3-1).

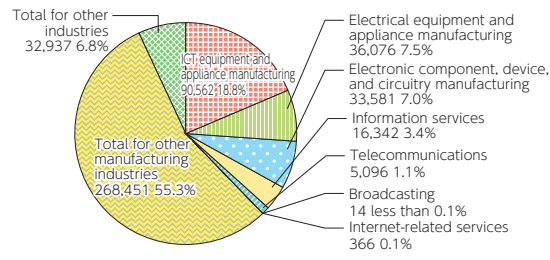
<sup>22</sup> The value of technology trade is the equivalent value received from the provision (export) of patents, knowledge, technical direction, and other forms of technology transfers to other countries or the equivalent value paid to receive (import) the same forms of technology transfers from other countries.

<sup>23</sup> In this case, the ICT industry 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, and Internet-related services sectors).

<sup>24</sup> Researchers employed by the ICT industry refers to all researchers working in 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, and Internet-related services sectors).

**Figure 5-9-3-1 Corporate researchers by industry (as of March 31, 2013)**

Corporate researchers in all industries: 481,425



Prepared from the "2013 Research Investigation Report on Science and Technology," MIC