

“2010 White Paper Information and Communications in Japan”

<Outline>

July, 2010

Ministry of Internal Affairs and Communications, Japan

Realization of Sustainable Growth through the Utilization of ICT (an analytic view)

Issues facing Japan

- Realization of sustainable economic growth amidst a decline in the labor force.
- Dispelling unease about the future of healthcare, social welfare, pensions, education and childcare as birthrates fall and longevity increases and correcting the intergenerational digital divide.
- Ensuring safety and security of daily living and revitalizing family and local community "ties" amidst a decline and disappearance of communities connected geographically and/or through blood relations.

Chapter 1: Revitalizing Local Communities and Regenerating "ties" via ICT

Estimation of Benefits to Citizens from ICT Utilization in the Public Service Sector

- Assess Japan's overall ICT progress compared to other countries.
- Analyze the current state of ICT utilization in each regional bloc.
- Estimate the benefit to residents of having ICT utilization in the public service (healthcare, education and government) sector.
- Estimate the benefit to consumers of having all households covered by BB service.

Assessing and Verifying Example Cases for Use in Regenerating Local Community "Ties"

- Verify the effectiveness of using local SNS or other social media to regenerate Local community "ties".
- Analyze policy issues involved in promoting social participation by the elderly and socially challenged via ICT utilization.

- Full use of ICT is needed in the reduction of CO2 emissions in order to reach the governments 25% reduction target for CO2 emissions by 2020.
- ICT needs to be tied to local revitalization efforts via initiatives by local governments, NPOs, etc., aimed at decreasing environmental impact at the level of the individual resident.

Chapter 2: Environmental Burden Reduction and Local Revitalization via Green ICT

Green ICT Initiatives of Major Countries

- Process the effectiveness at reducing CO2 emissions and revitalizing communities domestically that results from implementing environmental burden reductions in the ICT industry (Green of ICT) and in other areas via the application of ICT (Green by ICT).

Environmental Burden Reduction Effectiveness and Cases of Community Revitalization Resulting from Green ICT

- Assess and verify Green ICT-related government policies and ICT industry advanced initiatives in major countries.

ICT Utilization Effects and Issues Analysis

Chapter 3: Boosting Economic Growth and Competitiveness via ICT

ICT Industry and Economic Growth

- Verify the ICT industry's effects, etc., on Japan's economic growth.

Bolstering the Innovations which Underlie ICT and Competitiveness in Japan's Global Deployment of ICT

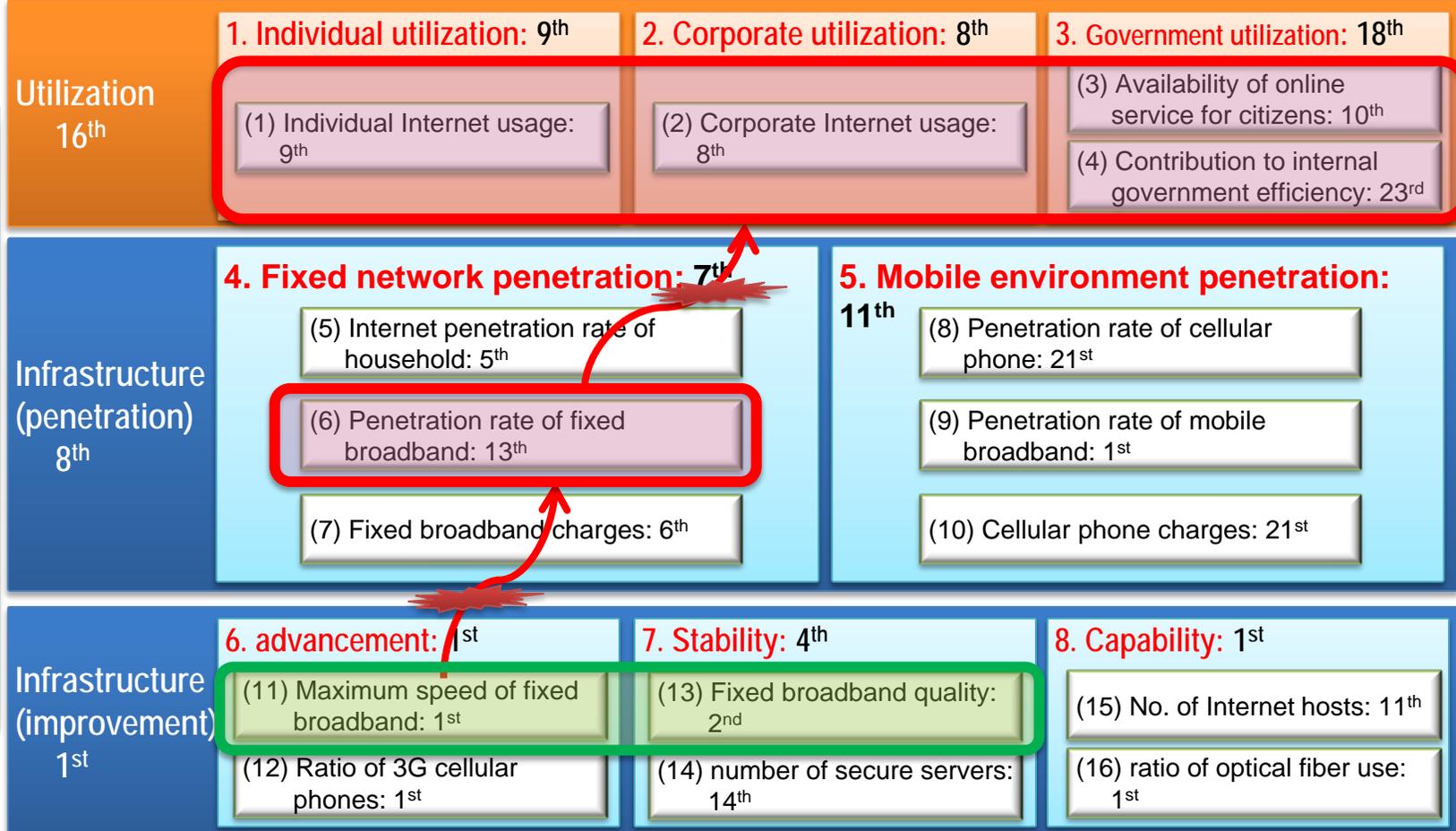
- Verify the environment for innovation and policy issues which exist in Japan.
- Verify that global deployment puts Japan's strengths to use.

Chapter 1: Revitalizing Local Communities and Regenerating “Ties” via ICT

1: Development of Leading Infrastructure and Popularization of Lagging Services

○ Despite Japan's lead in broadband infrastructure development, it lags in broadband service penetration (13th) and utilization (individual utilization: 9th; Corporate utilization: 8th; government usage: 18th). In particular, Japan lags in its e-government initiatives.

- Overall ICT Progress 2nd**
- 1st: Korea
 - 2nd: **Japan**
 - 3rd: Denmark
 - 4th: Sweden
 - 5th: USA
 - 6th: Netherlands
 - 7th: Singapore
 - 8th: Switzerland
 - 9th: Finland
 - 10th: Australia
 - 11th: Austria
 - 12th: UK
 - 13th: Canada
 - 14th: Germany
 - 15th: Portugal
 - 16th: New Zealand
 - 17th: France
 - 18th: Belgium
 - 19th: Spain
 - 20th: Italy
 - 21st: Russia
 - 22nd: Brazil
 - 23rd: China
 - 24th: South Africa
 - 25th: India

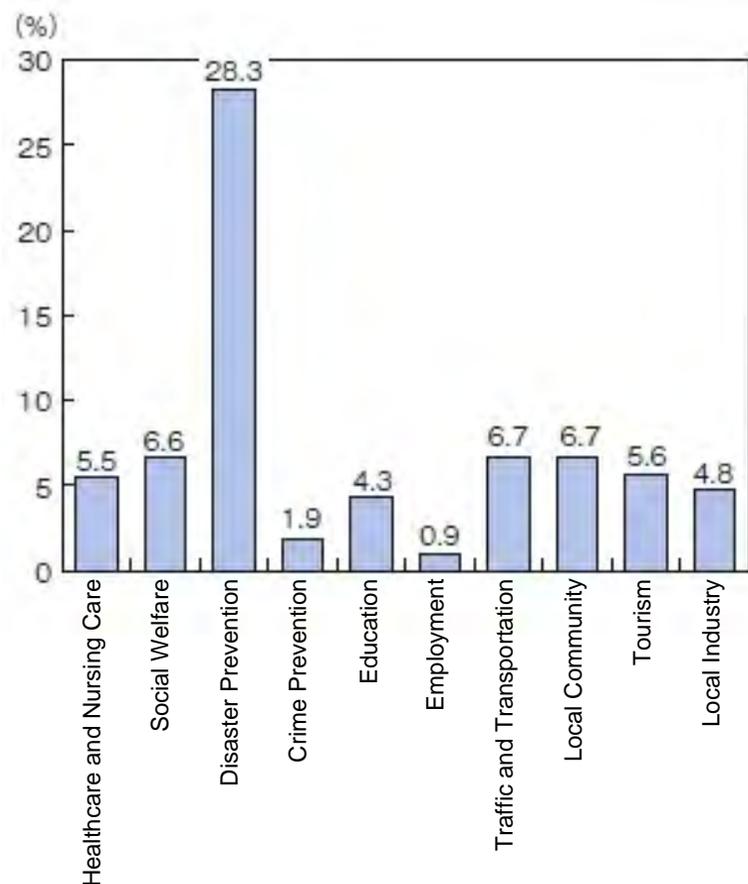


(Source) Ministry of Internal Affairs and Communications "International Comparative Survey on ICT Infrastructure" (2010)

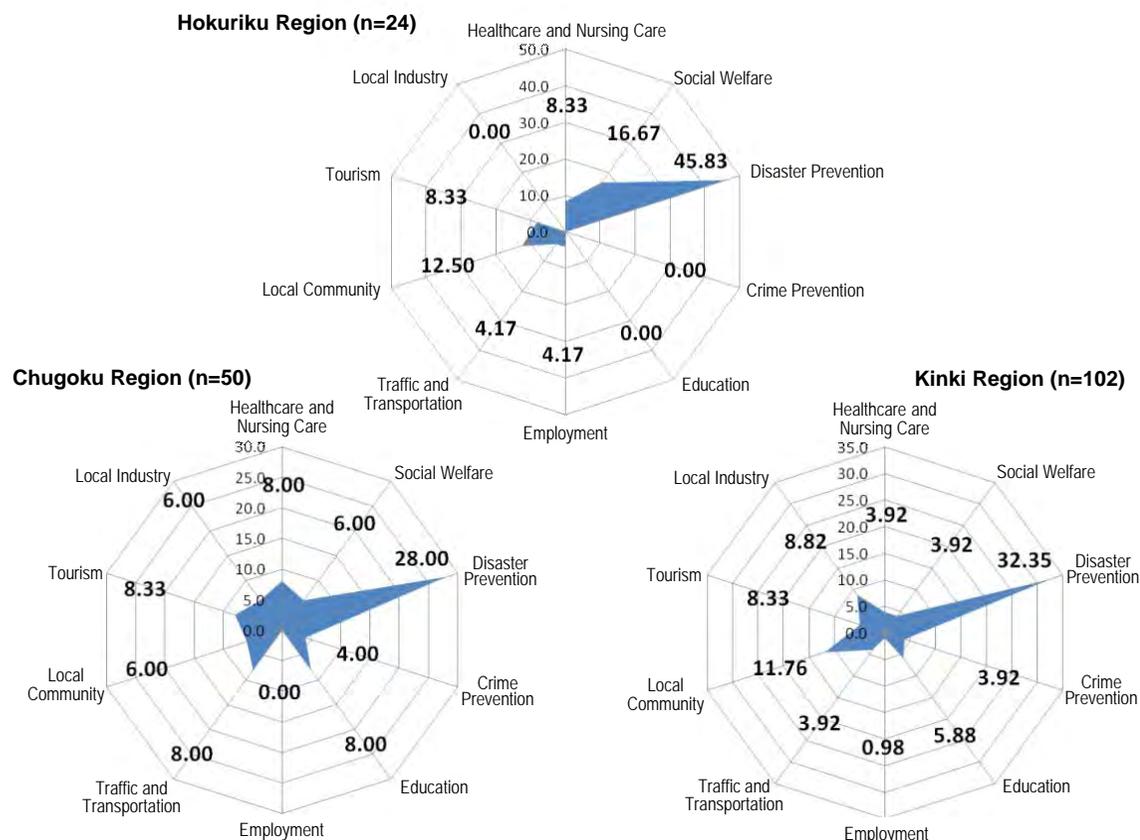
2: Low Regional ICT Utilization

- The highest implementation rate for the ICT System Utilization Initiative in the regional areas of Japan is 28.3% in the area of “Disaster prevention”. For other areas (“Healthcare and nursing care”, “Education”, “Employment”, “Tourism”, “Local Industry”, etc.) the rate is generally low at 10% or less.
- No regional characteristics emerge when individual regional blocs are looked at; they show the same trends as the nation as a whole.

Status of ICT Utilization amongst Local Governments Nationwide (overall)



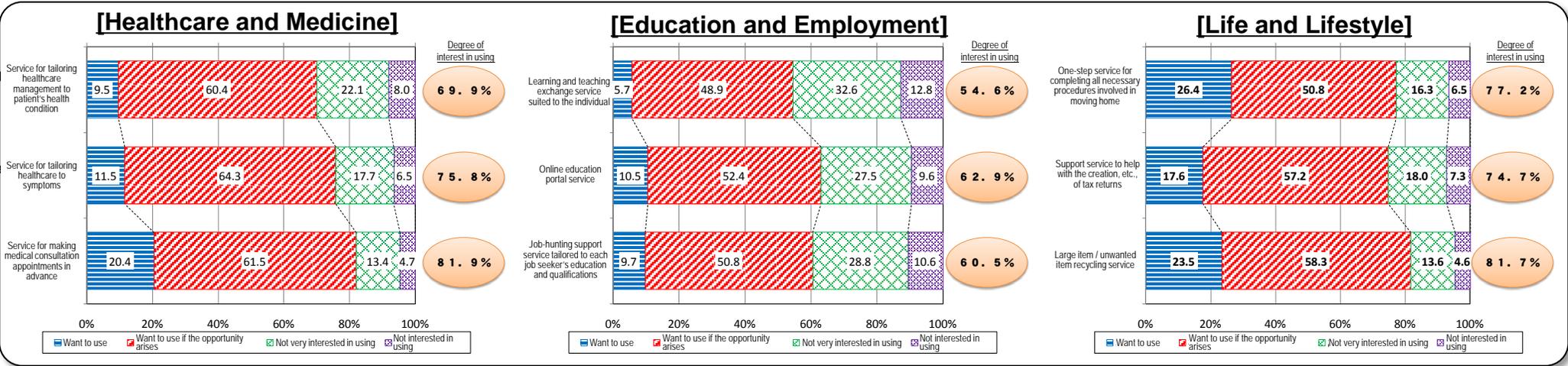
Status of Sector-specific ICT Implementation for Each Regional Bloc (top 3 blocs)



3: Strong Public Interest in Utilizing Public Service Sector ICT Services

- More than 60% of the public expresses interest in using public service sector (“Healthcare and medicine”, “Education and employment”, “Life and lifestyle”) ICT services (for advance medical consultation appointments: 81.9%; for large item / unwanted item recycling services: 81.7%).
- Major issues are protecting personal information, ensuring security, providing transparency regarding the results of service utilization, and lowering cost (burden).

Public Interest in Utilizing Public Service Sector ICT Systems and Services

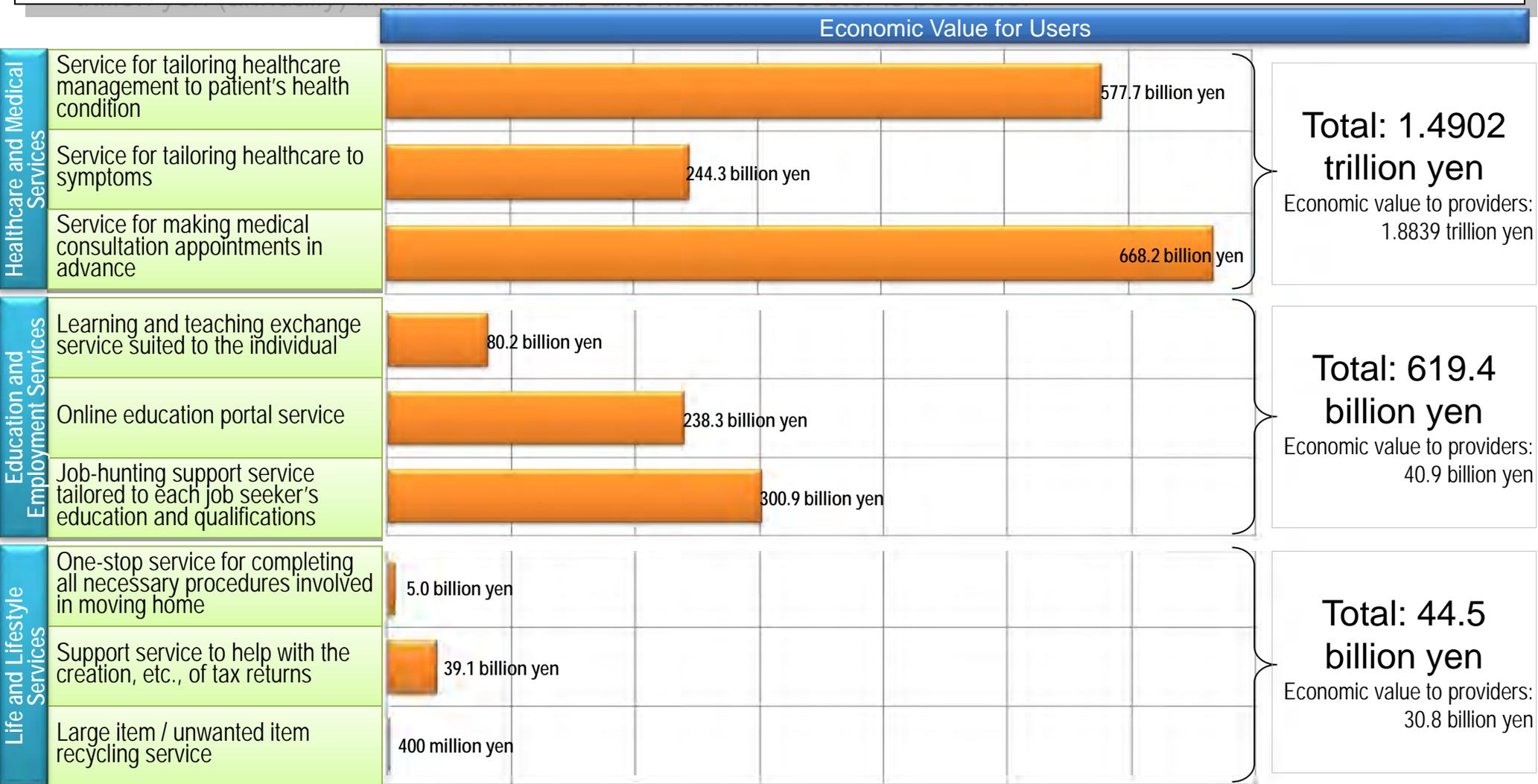


Demand for “Health and Medicine”, “Education and Employment”, “Life and Lifestyle” ICT Systems and Services

	Protecting personal information, ensuring security	Effectiveness and necessity of service	Degree of hassle involved in using the service	Cost involved in using the service	Interpersonal trouble involved in putting the service online
Service for tailoring healthcare management to patient's health condition	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Service for tailoring healthcare to symptoms	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Service for making medical consultation appointments in advance	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Learning and teaching exchange service suited to the individual	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Online education portal service	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Job-hunting support service tailored to each job seeker's education and qualifications	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
One-step service for completing all necessary procedures involved in moving home	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Support service to help with the creation, etc., of tax returns	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern
Large item / unwanted item recycling service	Particularly strong concern	Particularly strong concern	Strong concern	Strong concern	Strong concern

4: Large Economic Value from ICT Utilization in Public Service Sector

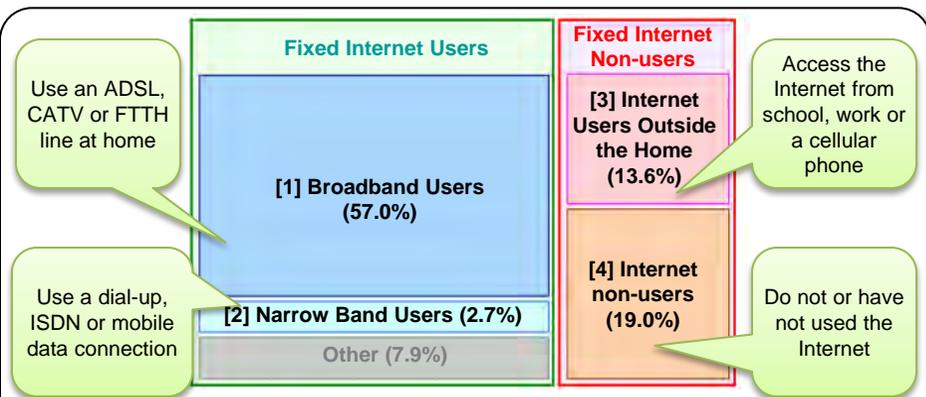
- Around 1.5 trillion yen (annually) in consumer benefit created from the thorough application of ICT to the “Healthcare and medicine” sector.
- Major benefits also seen in the “Education and employment” and “Life and lifestyle” sectors.
- Also provides major cost reductions to providers of public services. For example, a reduction of roughly 1.9 trillion yen (annually) in the “Healthcare and medicine” sector is possible.



5: Public Interest in Utilizing Broadband Services

- In order for every member of the public to receive the benefits of ICT, it is essential that both the quality and quantity of broadband-based applications and services which meet the needs of a majority of the public (i.e., broadband services) be enhanced.
- Based on the results of a survey conducted via the Internet and regular post, interest in broadband services is highest for e-commerce-related services, while [3] Internet users outside the home expressed strong interest in the majority of services.

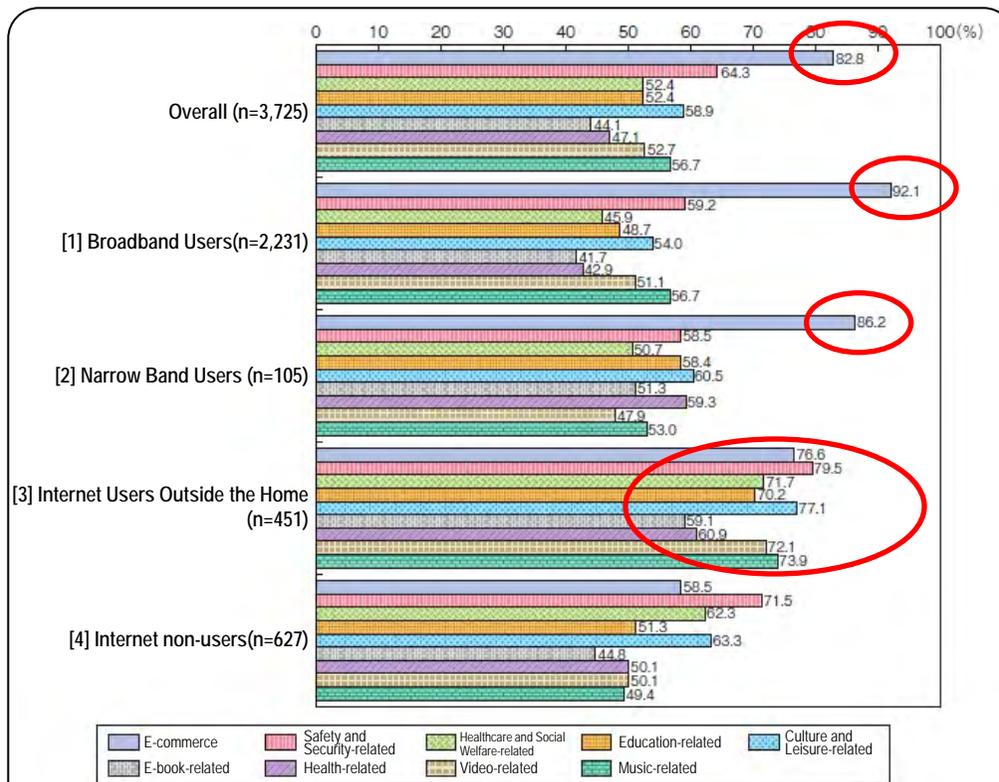
Target Layer for Questionnaire about Broadband Services



Types of Broadband Services for which there is Confirmed Interest

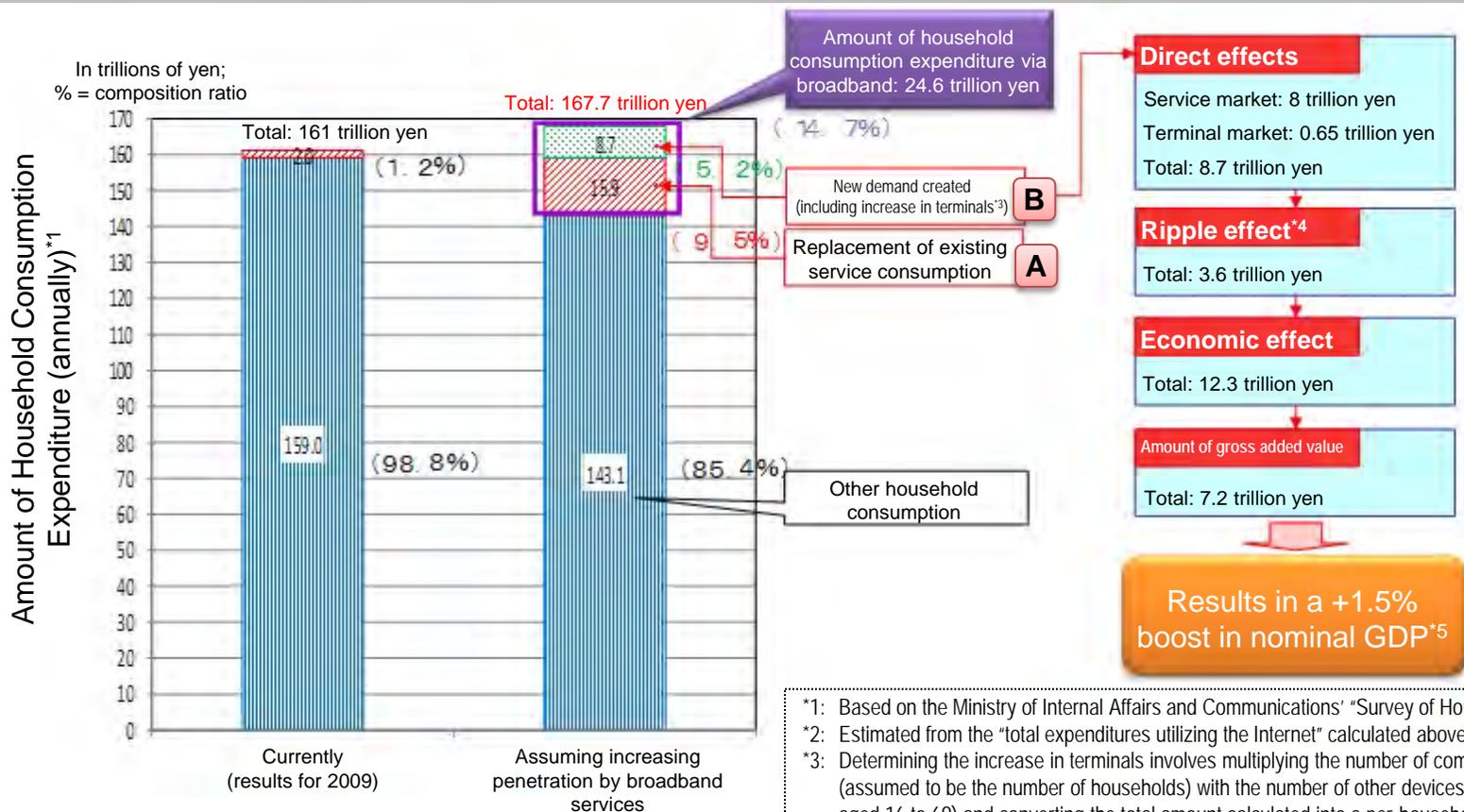
Category	Service Name	Summary
Content Services	Music-related	Allows users to purchase their favorite music and download, save and listen to it on their PC, etc.
	Video-related	Allows users to purchase their favorite films, videos, etc., and download, save and view them on their PC or other terminal. Allows users to view programs they missed (including terrestrial broadcasts and broadcasts including BS or CS channels) whenever they want within a certain timeframe.
	E-book-related	Allows users to purchase their favorite books, magazines, newspapers, etc., as a digital file which they can store and read.
Healthcare and Social Welfare Services	Healthcare and Social Welfare-related	Allows users at home to meet and consult with their physician via television / PC screen / video phone.
	Health-related	Allows users at home to receive services, such as videos and realtime lessons (fitness, yoga, etc.) that maintain and promote health without having to go to a gym or other physical location.
	Safety and Security-related	Allows users to check on the safety of their elderly relatives or children at their home, care facility or outside location by providing information, video, etc., to users' home televisions or computers.
Educational, Cultural and Leisure Services	Education-related	Allows users to receive and actually take part in school or tutoring classes and lessons (including English conversation, technical colleges, enrichment courses, etc.) through their television or other medium without leaving home.
	Culture and Leisure-related	Allows users to enjoy plays, sporting events and video from various cultural facilities via their television or other medium at home.
E-commerce Services		Allows users at home to use their computers or televisions to search for items (or services) of interest, compare them with numerous other items and then purchase and pay for the ones they want.

Interest in Utilizing Broadband Services



6. Using Broadband Service Penetration to Boost Growth Rate by 1.5%

- Assuming broadband penetration into all user layers, consumption via broadband (i.e., purchase of goods and services) would replace (A) some traditional consumption (e.g., face-to-face sales) and (B) create new consumption.
- Increasing penetration by broadband services would create new incremental spending (8.7 trillion yen from amongst all households) and would boost nominal GDP by 1.5% (approx. 7.2 trillion yen with gross value added).

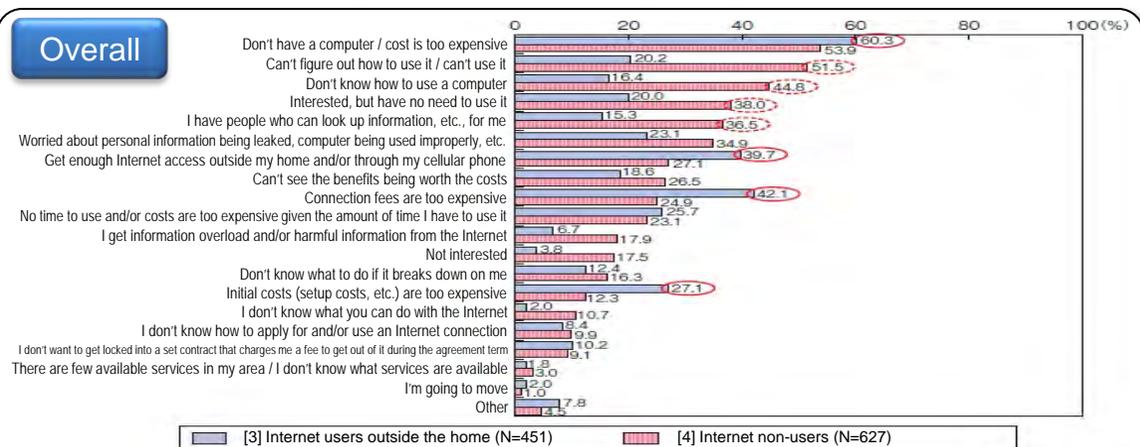


*1: Based on the Ministry of Internal Affairs and Communications' "Survey of Household Consumption"
 *2: Estimated from the "total expenditures utilizing the Internet" calculated above
 *3: Determining the increase in terminals involves multiplying the number of computers and televisions (assumed to be the number of households) with the number of other devices (assumed to be the population aged 16 to 69) and converting the total amount calculated into a per-household amount.
 *4: Based on the Information and Communications Inter-industry Relations Table for 2007.
 *5: Nominal GDP for 2009 (preliminary quarterly GDP figure released by the Cabinet Office: 474 trillion yen)

7: Issues Involved in Enabling Members of the Public to Enjoy the Benefits of ICT

- Amongst reasons for not using the Internet at home, a striking number of [3] Internet users outside the home said that it seemed expensive (the lower the respondent's income, the more common was this response) while [4] Internet non-users felt anxiety due a lack of Internet literacy (the higher the respondent's age, the more common was this response).
- Measures and support aimed at further lowering Internet-related costs and creating a more effortless Internet usage environment will produce greater ICT utilization amongst the public.

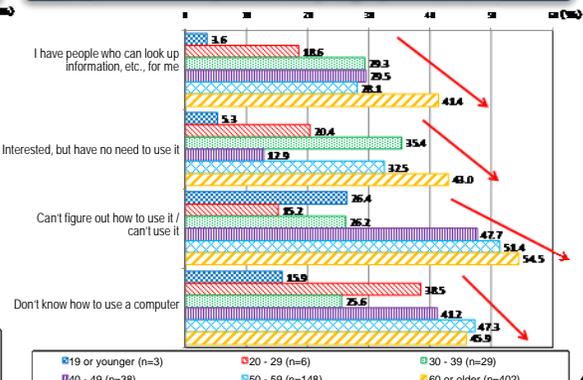
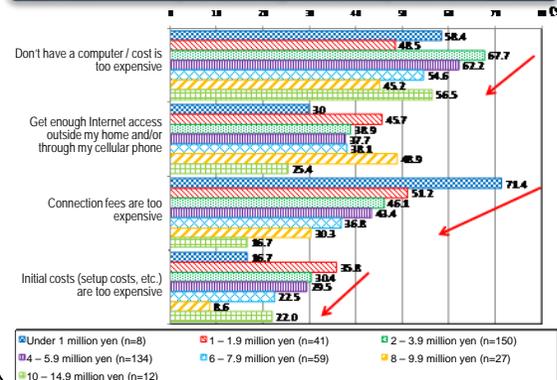
Reasons for not using fixed Internet service given by fixed Internet non-users



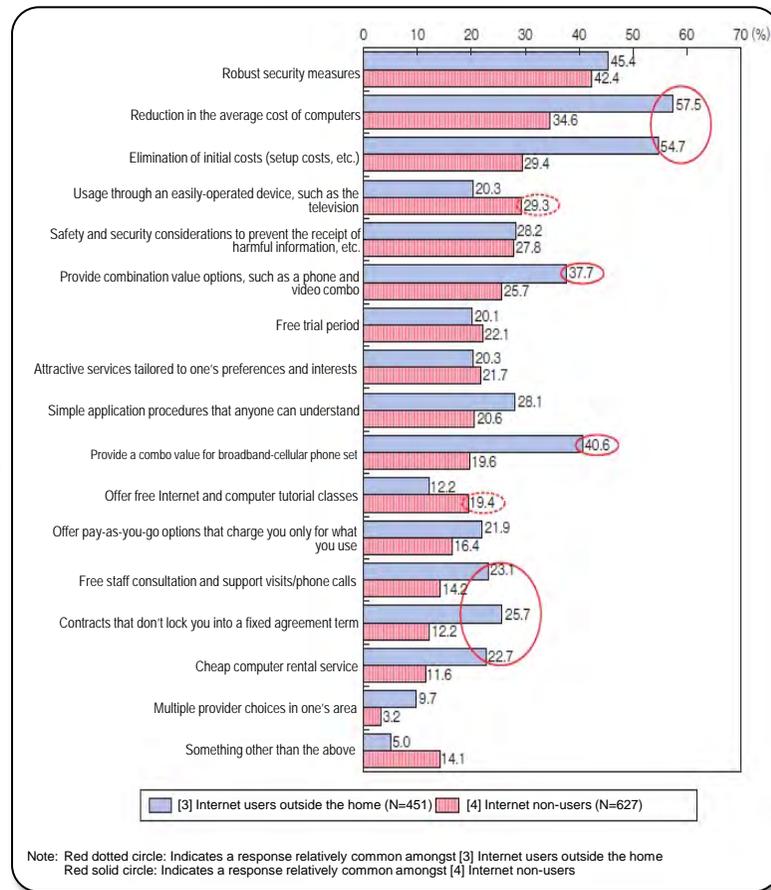
Note: Red dotted circle: Indicates a response relatively common amongst [3] Internet users outside the home
Red solid circle: Indicates a response relatively common amongst [4] Internet non-users

[3] Internet Users Outside the Home (sorted by income)

[4] Internet Non-users (sorted by age)



Measures and support which would promote utilization of broadband services



Note: Red dotted circle: Indicates a response relatively common amongst [3] Internet users outside the home
Red solid circle: Indicates a response relatively common amongst [4] Internet non-users

Chapter 1, Section 1: Local Community Revitalization via the Thorough Application of ICT
8: Leading-edge Examples of Community Revitalization via ICT

Community revitalization involves the five elements of “motivated key figures”, “collaboration and cooperation between disparate groups and sectors”, “coordination with various outside personnel” and “proactive information dissemination and exchange” supported by a “loose ICT network”

ICT-based marine products promotion by local residents targeting the Tokyo area (Ama Town, Shimane Prefecture)

[Local Resource] Local marine products (oysters, squid, etc.)
 [Content] Video of local marine products was shot and edited using the fresh perspective of those newly moved to the region and then delivered to the Tokyo area; contributed to the revitalization of the area's primary industry

Regional promotion using “Ruby” (Matsue City, Shimane Prefecture)

[Local Resource] Ruby and its developers
 [Content] A variety of bodies were established and ICT used to disseminate information as well as share information in order to develop and popularize the universal programming language “Ruby”

Shopping district information dissemination project “Daimyonow” (Fukuoka City, Fukuoka Prefecture)

[Local Resource] Local shopping district
 [Content] Key members comprised of residents outside the region and local residents allocated different duties amongst themselves in order to deliver real-time information about the shopping district so as to increase the number of visitors and promote pedestrian sightseeing around town



City Revitalization Project “Yokotter” (Yokote City, Akita Prefecture)

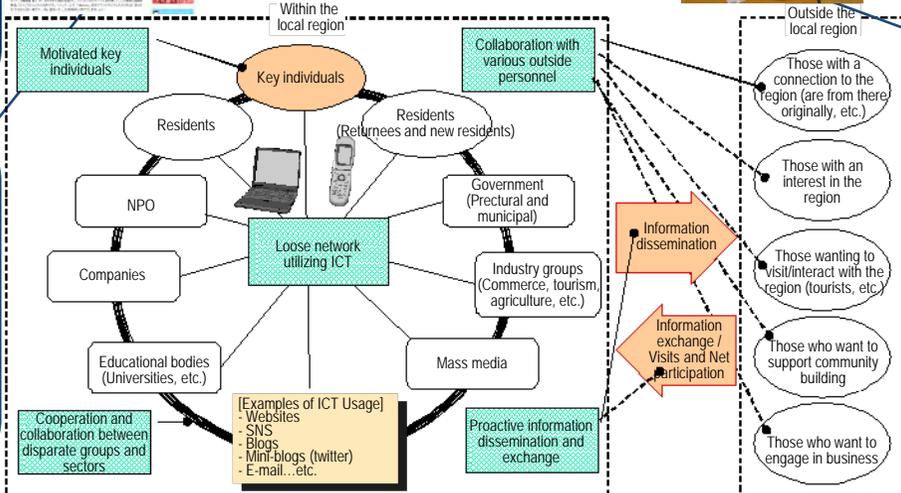
[Local Resource] Hometown love of local and outside residents
 [Content] Starting from an idea by the local youth to revitalize the community, local information was disseminated both within and outside the community via ICT. Developed into a real-time community initiative

Regional promotion through Anime – the “Green Industry” (Suginami Ward, Tokyo)

[Local Resource] Local anime industry
 [Content] Promotion of the anime industry as a “green industry” as well as local revitalization through the stimulation of tourism, shopping, etc., by branding the area the “Anime Town”

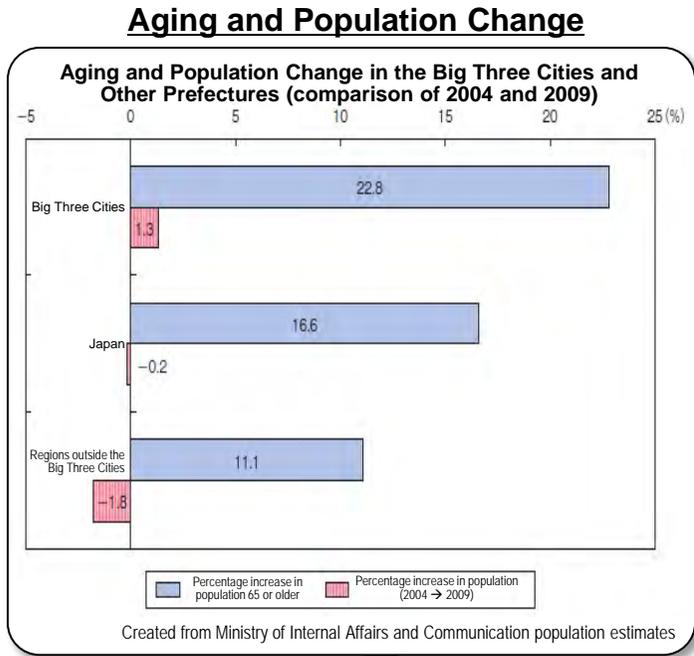
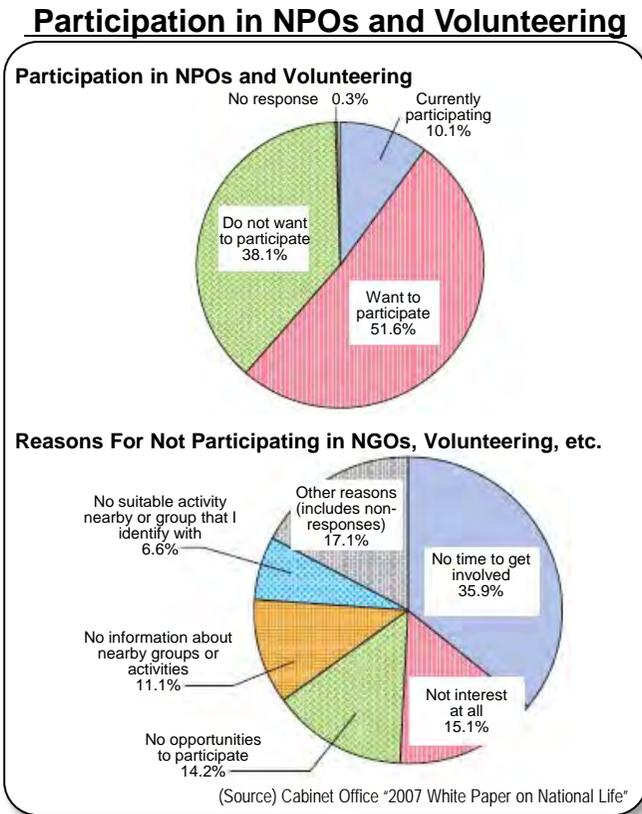
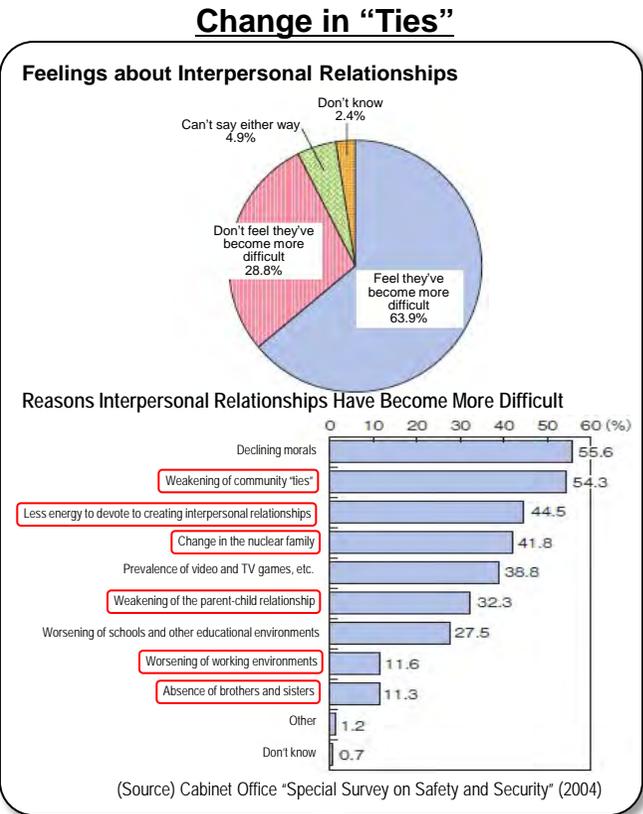
Revitalization of local agriculture through the use of ICT at “Uchiko Fresh Park Karari” (Uchiko Town, Ehime Prefecture)

[Local Resource] Local agricultural products (vegetables, fruit, flowers, etc.)
 [Content] By introducing ICT in an easy-to-operate POS system, farmers' market sales are boosted, raising farmers' awareness as well as profits



1: Changes in and Current Status of Local Community "Ties"

- Changes in and diversification of the nuclear family as well as the life stages people experience have diminished the opportunities people have to interact and connect.
- Just under 90% of people surveyed are not involved in an NPO or other volunteer activity. Over half of those surveyed express a desire to volunteer; however, there are limited opportunities and little information.
- A declining and aging population has meant that rural areas are facing depopulation, leaving only the rapidly graying cities to keep watch over the outlying regions.
- There is a growing promise for regenerating "Ties" through ICT communication tools, such as social media.

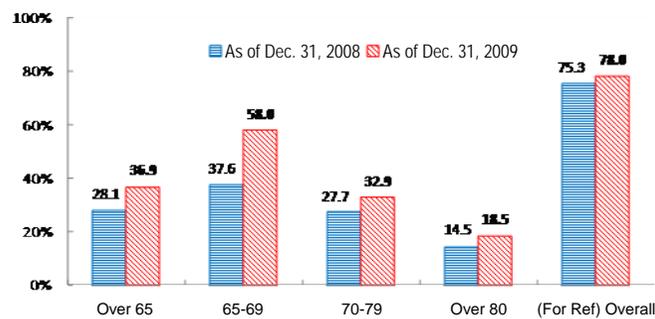


Promise for regenerating "ties" utilizing ICT such as social media (blogs, SNS, micro-blogs) and Local SNS

2: Regenerating "Ties" via the Use of Social Media

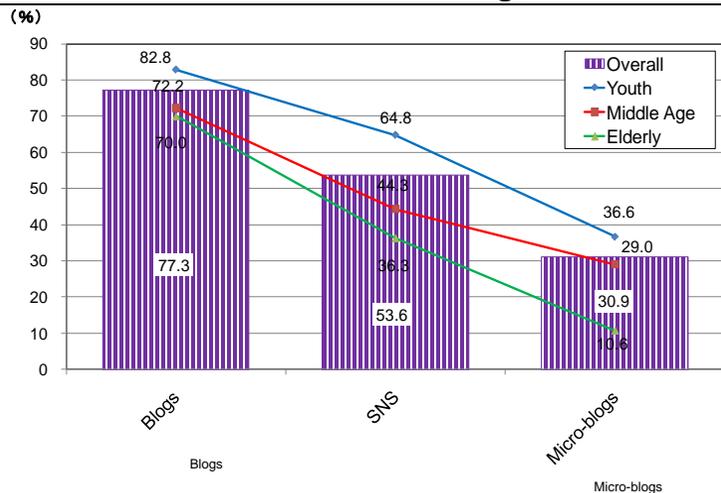
- Internet usage amongst those over 65 is low, standing at 36.9% (overall average is 78%).
- The greater the age of respondent, the less likely they are to use social media (blogs, SNS, micro-blogs, etc.).
- Social media is highly effective at revitalizing "Family and Relatives Ties", "Ties with Friends and Acquaintances", "Intergenerational Ties" and "Workplace Ties". The greater the age of the respondent, the greater the effect on revitalizing ties; thus, promotion of Internet usage amongst the elderly is an important issue.

Internet Usage amongst the Elderly

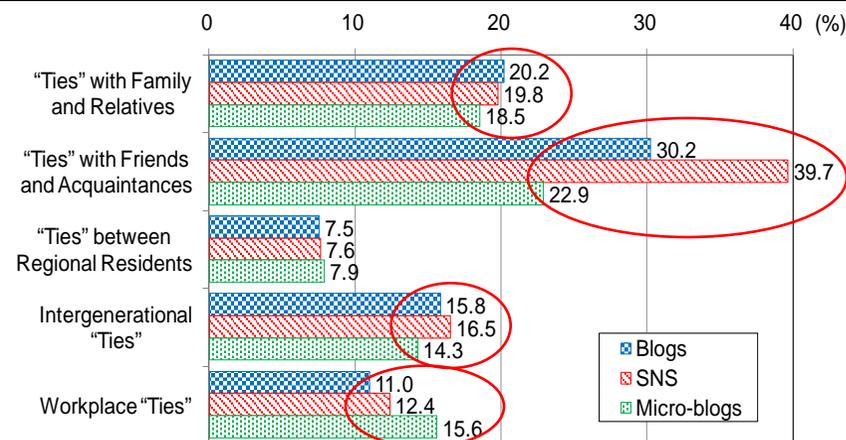


(Source) Ministry of Internal Affairs and Communications "Communications Usage Trend Survey" (2009)

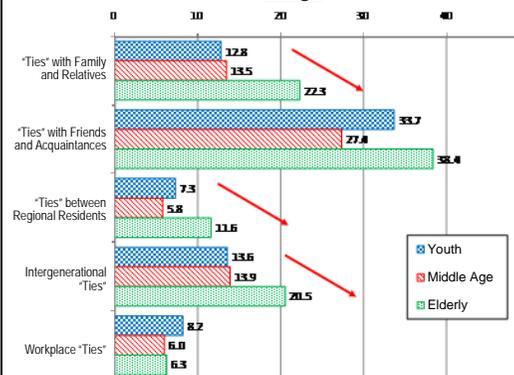
Social Media Usage



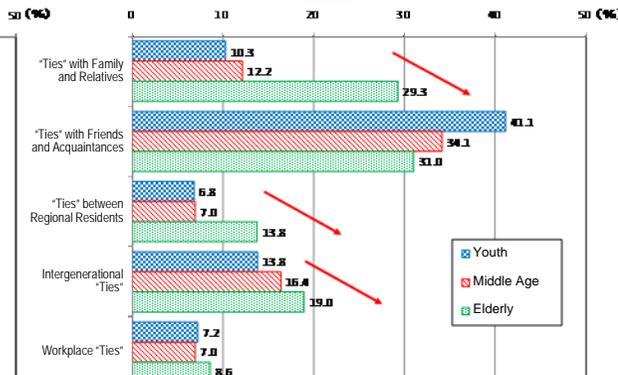
"Ties" Strengthened via the Use of Social Media



Blogs



SNS

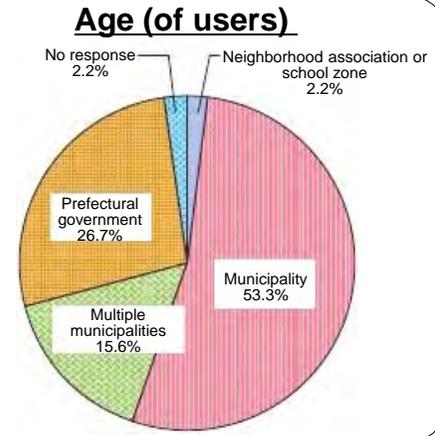
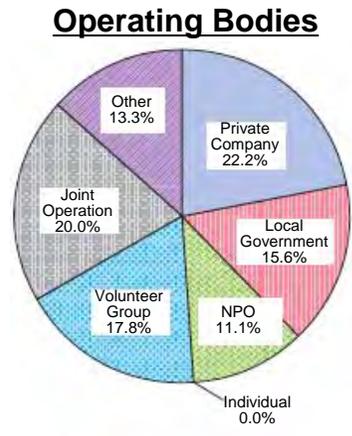
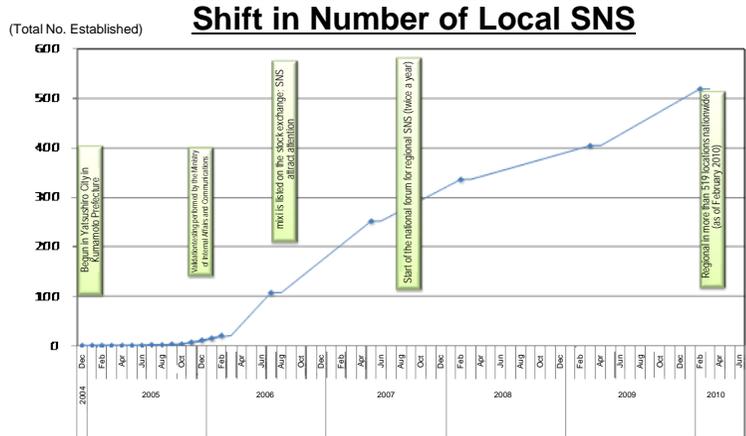


(Source) Ministry of Internal Affairs and Communications "Survey of Social Media Usage" (2010) 12

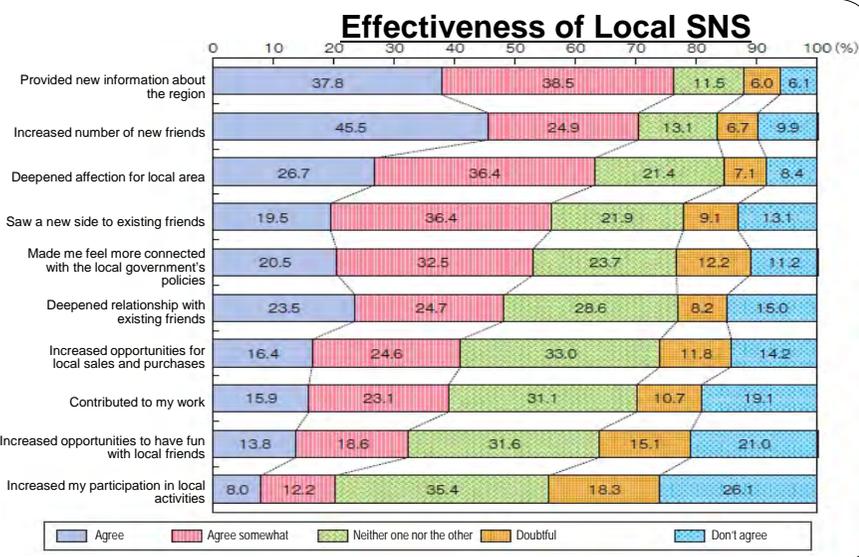
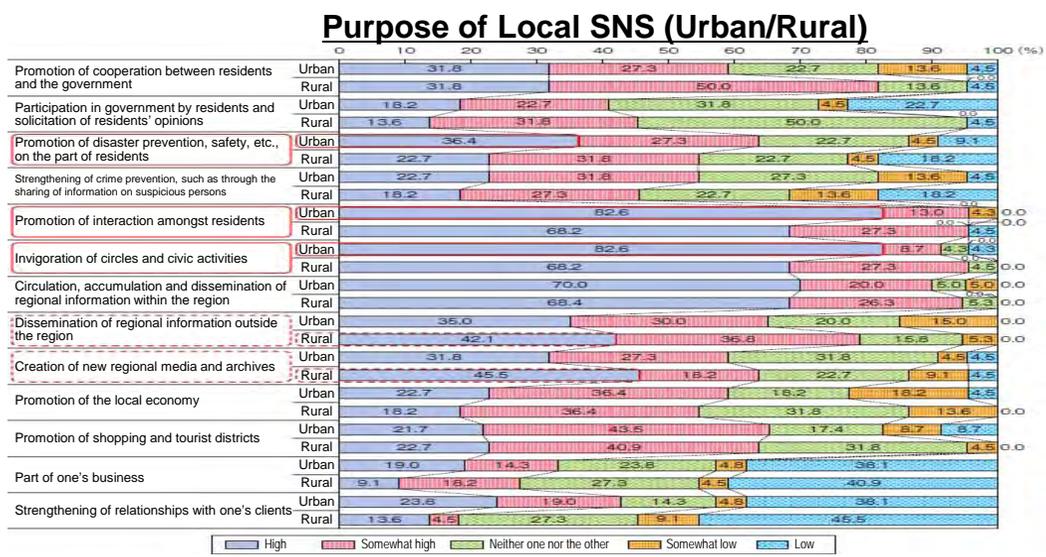
3. Revitalization of Local Community "Ties" via Local SNS

- There are more than 500 local SNS throughout Japan. A variety of bodies, such as companies, governments and NPOs, run them. Most users are over 30.
- SNS in urban regions focus on "Crime Prevention and Safety" and the "Interaction of City Residents"; SNS in rural regions focus on "Disseminating Local Information Outside the Region" and "Developing New Regional Media and Archives".
- 60% of local SNS users feel that these SNS are effective for "Meeting People", "Obtaining Regional Information", "Developing Regional Attachment", etc.

Status of Local SNS



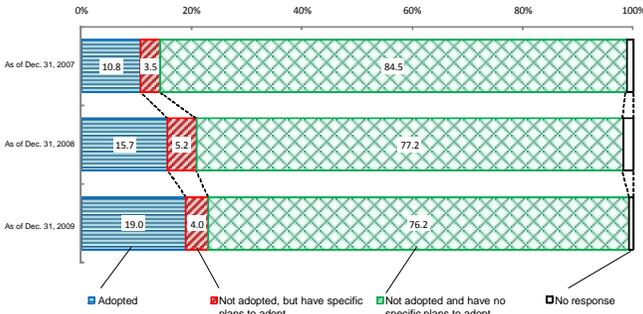
Purpose of Local SNS and Effectiveness for Users



1: Realizing a Sustainable Society via Telework

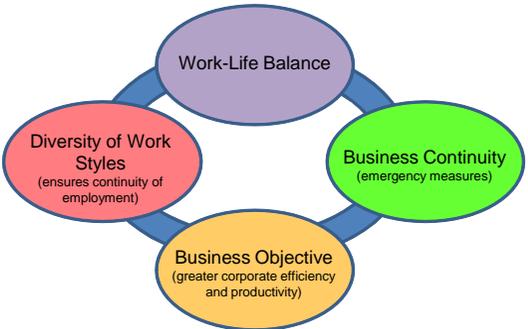
- The corporate rate of adoption for telework is 19.0% (as of December 31, 2009). Achieving increasingly diverse work situations and greater work-life balance is inextricably linked to greater corporate efficiency and productivity and builds a mutually beneficial relationship for companies and employees.
- A workable solution for companies facing Japan's declining labor force is to make greater use of the skills women, the elderly and the socially/mentally challenged have to offer. If telework is used to provide employment opportunities to the latent workforce that has kept from working due to such reasons as a lack of suitable employment in the region or the demands of homemaking and childrearing, the labor force could be increased by roughly 1.5 million people.

Corporate Adoption of Telework

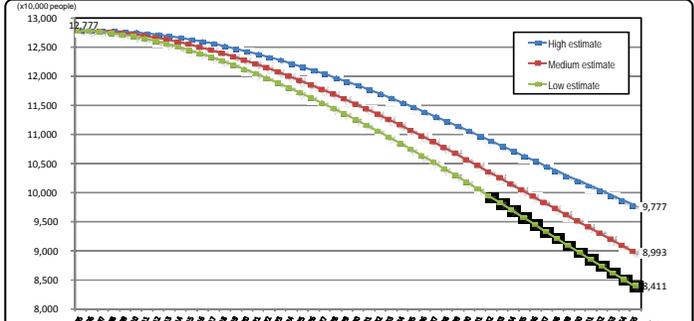


(Source) Ministry of Internal Affairs and Communications "2009 Survey of Trends in Communications Usage"

Aim of Adopting Telework



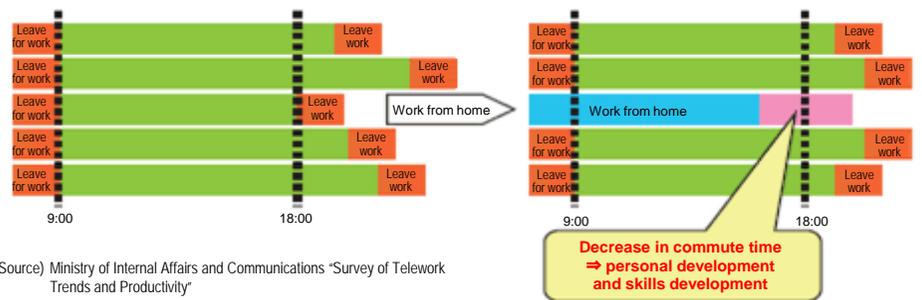
Population Forecast for All of Japan



(Source) National Institute of Population and Social Security Research "Estimate of Future Population for Japan (Estimate from December 2006)"

The whole of Japanese society needs to be reminded of what is required in order to become a sustainable society, and it needs to work towards this.
 "A society where the elderly can continue to work"; "a society where even those in rural areas can find suitable employment"; "a society which places less of a burden on the environment"

Use the time gained from lessening one's commute time to promote work-life balance



(Source) Ministry of Internal Affairs and Communications "Survey of Telework Trends and Productivity"

Telework will enable the workforce to grow by roughly 1.5 million people

	2008		2009	
	Total Persons	Total Persons	Men	Women
Nonlabor Force	4,388	4,422	1,487	2,936
Of those, the number desiring employment	454	471	126	345
No suitable employment apparent	149	163	47	116
No nearby work apparent	30	31	7	24
No work suited to one's knowledge and skills apparent	21	21	8	13
No work suited to one's desired working hours, salary, etc., apparent	56	56	11	45
No work apparent in the current economic climate or season	11	26	10	16
No other suitable work apparent	31	29	11	18
See no way to continue working due to homemaking and childrearing	115	123	1	122
Health reasons	67	62	25	38
Other	107	106	45	61

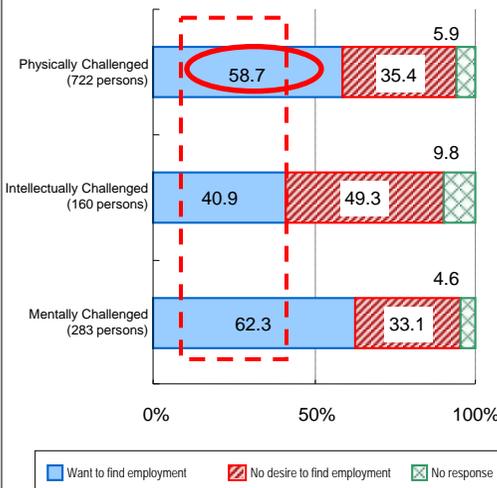
(Source) Ministry of Internal Affairs and Communications "Labor Force Survey"

- 58.7% of the challenged who are not working would like to work. Employment amongst small-scale businesses is low.
- Less than 10% of the challenged get employment information via ICT. 14.7% of those not using computers have an interest in using them.
- It is important to have NPOs and others who help the challenged use ICT to support their lifestyles and to participate in society.

Reality of Employment and Information Access for the Challenged

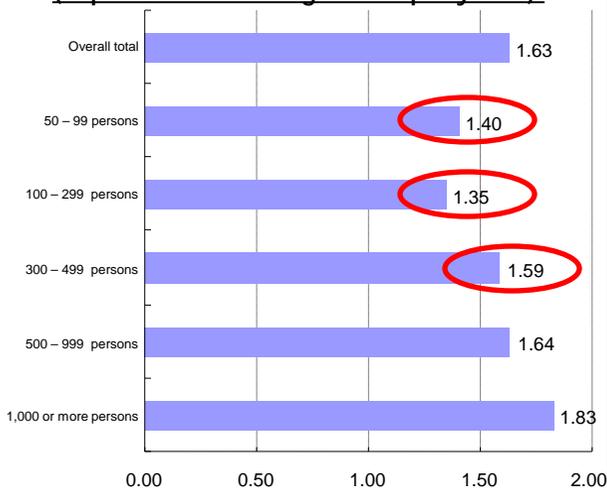
Employment Status

Work Situation of the challenged



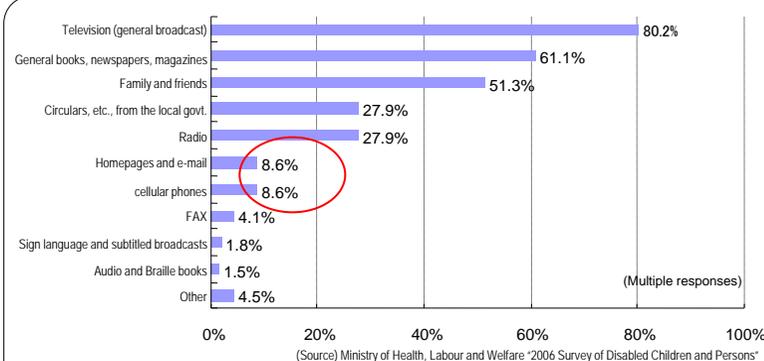
(Source) Created from the Ministry of Health, Labour and Welfare's "Employment Survey Results for the Physically Challenged, Intellectually Challenged and Mentally Challenged" (announced January 18, 2008)

Employment Situation of the challenged (separated according to company size)



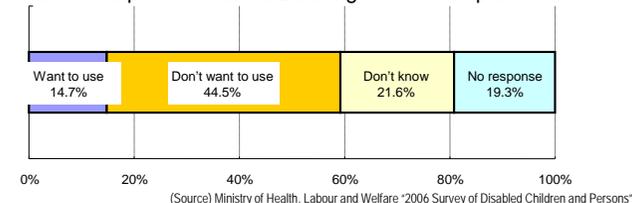
(Source) Ministry of Health, Labour and Welfare "Employment Situation for the Challenged as of June 1, 2009"

Means of Obtaining Information



(Source) Ministry of Health, Labour and Welfare "2006 Survey of Disabled Children and Persons"

Table: Computer Nonusers Desiring to Use Computers



(Source) Ministry of Health, Labour and Welfare "2006 Survey of Disabled Children and Persons"

Creation of a variety of employment opportunities through the introduction of telework and other approaches utilizing ICT

Increased accessibility and usability for ICT devices and services, etc.

Special Subsidiary:
OKI Workwel Co., Ltd.

Develops and utilizes multipoint audio communications through technical support from its parent firm. Employs over 30 seriously disabled persons who work from home

Maruku Co., Ltd.
(Matsuyama City, Ehime Prefecture)

Founded by the disabled. Receives govt. support in its operations. Values face-to-face communications and employs Skype, etc., for telework

Non-Profit Organization: Project UI
(Matsue City, Shimane Prefecture)

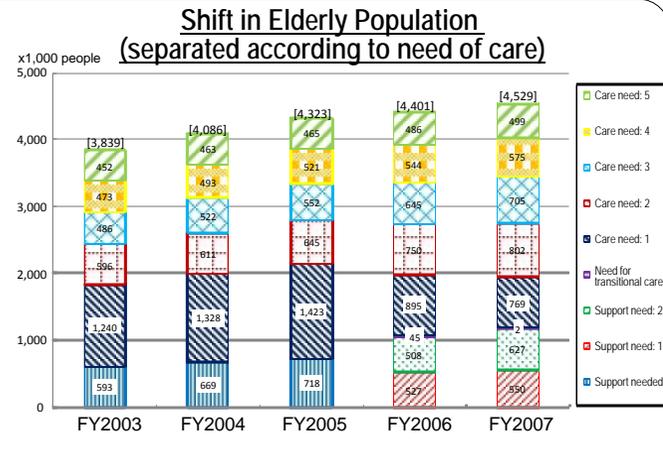
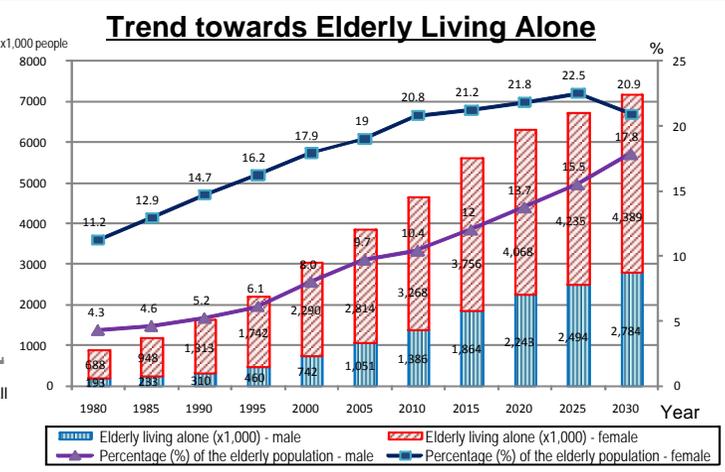
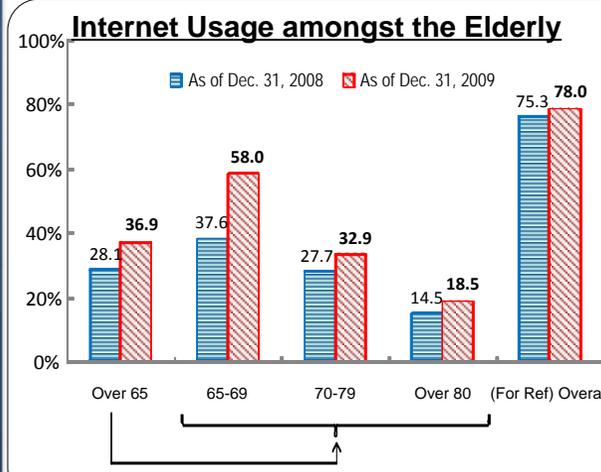
Develops and popularizes ICT-based devices and systems for the disabled through collaboration and cooperation amongst private industry, academia, government and the public. Operates from the standpoint of the disabled.

Chapter 1, Section 3: Using ICT to Support Social Participation by Every Member of Society

3: Providing Diverse Support to the Lives of the Elderly via ICT

- Internet usage amongst elderly over the age of 65 continues to be low (36.9%) compared with the overall average (78%).
- As the population continues to age, there is an increasing annual trend towards the elderly living alone and towards requiring more support and nursing care.
- Technological developments and NPO, etc., activities promoting diverse lifestyle support for the elderly via ICT are important.

Current Situation for the Elderly



Support for active social participation by active seniors

Lifestyle support for the elderly

Supplements the decreased functioning that comes with aging

Ensures a means of communication even when care and support become needed

NPOs and other organizations which promote active social participation by seniors via ICT (SeniorNet)
Provides a venue for seniors to learn from one another about how to use ICT; improves communications amongst participant members through the use of ICT; and widens the scope of social participation for members

R&D into a ubiquitous network robot

Can provide a variety of daily support to the elderly and disabled through the realization of network robotics

"Robot-assisted shopping" validation testing at the Seika branch of APITA

Promotion of a barrier-free life

Promotion of barrier-free usage environments via support for ICT utilization by the elderly and physically disabled, popularization of broadcasts aimed at the hearing challenged, etc.

Support for brain communication technology (brain and ICT)

Exploration by the "Council on the Brain and ICT" of issues and measures involved in the application of "brain ICT" (merging brain science and ICT) to supporting the elderly and disabled

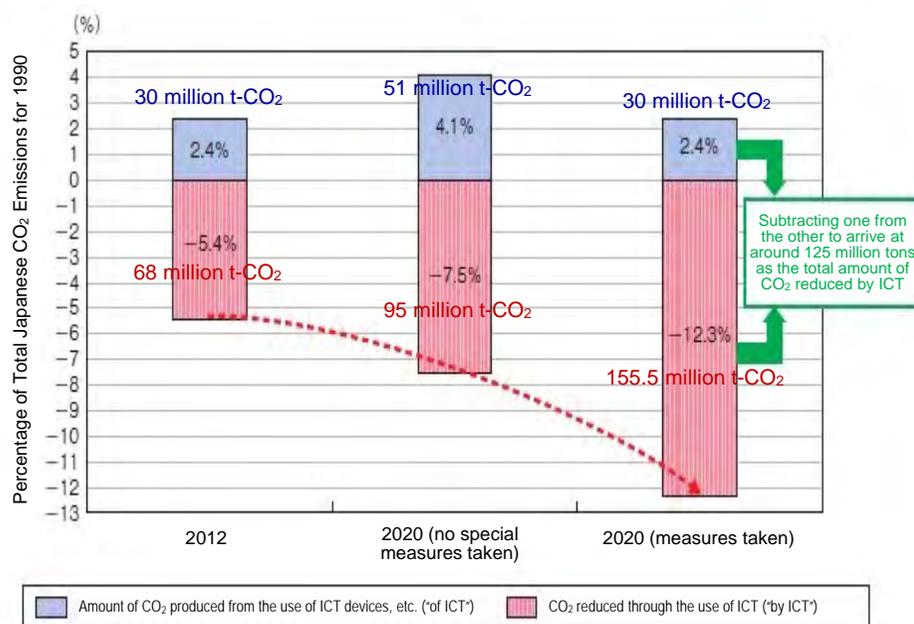
Chapter 2: Environmental Burden Reduction and Local Community Revitalization via Green ICT

CO2 Emissions Reduction through Green ICT and Related Policies on Other Countries

- Green ICT reduces CO2 emissions by roughly 125 million tons, i.e., 10% of total CO2 emissions for 1990.
- As part of their national strategies, other countries are developing green ICT-related policies which provide ongoing support for CO2 reduction efforts by the private sector.

Effect of Green ICT on CO2 Reductions

- Maximum CO2 reductions expected by 2020 from the application of green ICT ("Green by ICT") are around 150 million tons
- By promoting further environmental-friendliness of ICT itself ("Green of ICT"), CO2 emissions by ICT devices, etc., can be suppressed by around 30 million tons – the same level as 2012



Note: Electrical power consumption rate: 0.41kg – CO₂/kWh
 No special measures taken: Current ICT usage ("by ICT") continues and no new measures to suppress the CO₂ produced by ICT devices ("of ICT") are implemented
 Measures taken: ICT usage expanded in areas where it is currently used and the pace of promotion of ICT usage to the fullest extent possible is quickened; new measures felt effective at suppressing CO₂ emissions from ICT devices ("of ICT") are implemented

(Source) Ministry of Internal Affairs and Communications "Effectiveness of ICT at Reducing CO2 for 2020 (Environmental Progress Working Group)"

Green ICT-related Policies in Other Countries

USA

Green New Deal Policy:

- Intended to "create green jobs"
- Aims to invest \$150 billion over 10 years in renewable energy and create 5 million green jobs

Smart Grid Policy:

- Establishes \$11 billion in spending for related projects
- Support for introduction of 18 million smart meters, 200,000 smart transformers, etc., for 100 existing smart grid projects has already been announced

Great Britain

SOGE and Greening Government ICT:

Promotes government CIO-led green ICT adoption within the British government

CRC:

Makes emissions trading mandatory for large private and public enterprises.
 Implementation is scheduled to take place after a three year trial period starting in 2010

Korea

Green IT National Strategy:

Aims to reduce CO2 emissions and create 52,000 jobs through the focused investment of 4.2 trillion won (approx. 336 billion yen) over five years from 2009

Sweden

PFE:

Decrease annual CO2 emissions for 2009 by around 3% compared with 2004 by offering tax breaks tied to energy consumption reductions, providing energy reduction-related consulting, etc.

(Source) Ministry of Internal Affairs and Communications "Research on Community Revitalization and International Competitiveness through the Application of ICT" (2010)

Various Examples of ICT Usage in Connection with Local Community Revitalization

- Within Japan's agriculture, forestry and fisheries industries, the use of green ICT not only reduces CO2 emissions but is also connected with the promotion and revitalization of industries and communities.
- Some overseas information and communications-related companies are focusing on not only the environmental but also positive economic core characteristics of green ICT and are working with local companies on leading-edge initiatives.

Green ICT in Japan's Agriculture, Forestry and Fisheries Industries

Agriculture

CO2 reductions, reduced work loads and a revived sense of community are all simultaneously achieved through the optimization of agricultural tasks via satellite image analysis

Prior to implementation

- Condition of each crop growth area is checked visually
- Each area is harvested individually
- Usage of drying apparatus is inefficient

After implementation

Example of the degree of growth for wheat:
Red: locations where growth is progressing
Blue: locations where growth is lagging

- Satellite images are used to analyze growth conditions; makes results visible
- Optimizes harvesting plan
- Drying apparatus can be used efficiently

Comparison of CO2 Emissions (absolute values)

Period	CO2 Emissions (kg/year)
Prior to optimization	34,000
After optimization	23,900

29% reduction (=10,090kg) in annual CO2 emissions

Forestry

Forestry made more 'visible' and environmentally-friendly and productivity increased due to ICT

The diagram shows a traceability system from tree planting to general consumers. It includes a tree management system with electronic tagging, raw materials producers, a lumber mill, wood processing, and builders. Information is shared throughout the chain, leading to a wood product distribution monitoring DB and a general consumers system.

Fisheries

Uses cellular phones to optimize transport efficiency for marine products

<Today's haul (ex.)>

- Ofunato Ohama/Shikone salmon - 30
- Miyako Sancho salmon - 300
- Yamada Osawa Matsushima salmon - 40
- Kokabe jack mackerel - 3.5t
- Kobezaki anchovy, jack mackerel, black scapper, cuttlefish - 2t

Market players and brokers can monitor what is happening via the Internet. Efficiency is increased because the number of vehicles used can be optimized to only the number needed for that day. Service delivers catch information in real-time. Catch information received from captain.

Green ICT by Overseas Information and Communications-related Companies

CISCO (U.S. telecom device maker)

- Promotes company-wide green ICT under a strategic organization
- Thoroughly utilizes telework and teleconferencing to involve customers
- Ranked the #1 company contributing to reduced environmental impact in 2010 by cutting greenhouse gas emissions by 40% compared with 2007
- At the same time, revenue per employee doubled over five years
- CISCO's green ICT mechanisms have been adopted by local governments, have attracted companies and have contributed to local revitalization

British Telecommunications (U.K. telecom company)

- 60% reduction in power consumption at data center
- Supports eco-car commuting by employees
- Provides green ICT consulting
- Adoption of sensor technology (critical to ICT) by the medical sector and local communities

Ericsson (Swedish cellular phone terminal maker)

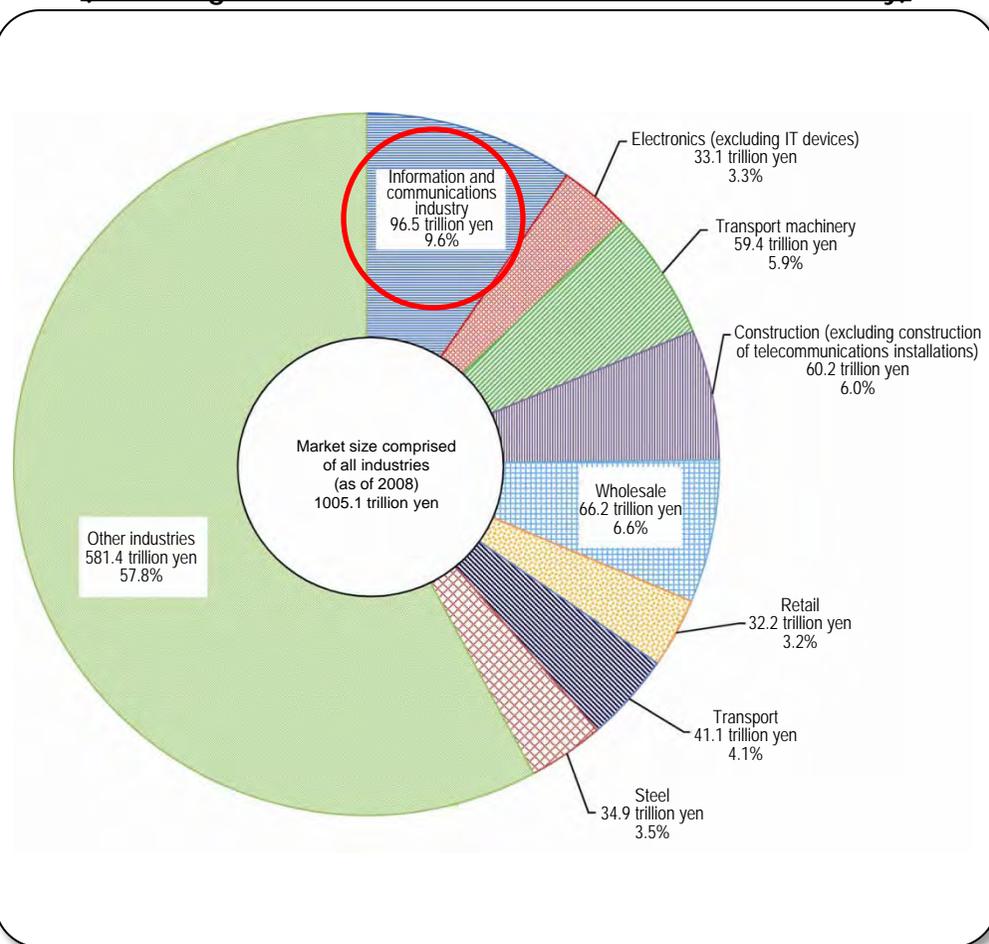
- Begun initiative to extend product life beyond anything seen with other manufacturers
- Adoption of Ericsson's leading-edge technology by other countries' communications carriers

Chapter 3: Boosting Economic Growth and Competitiveness via ICT

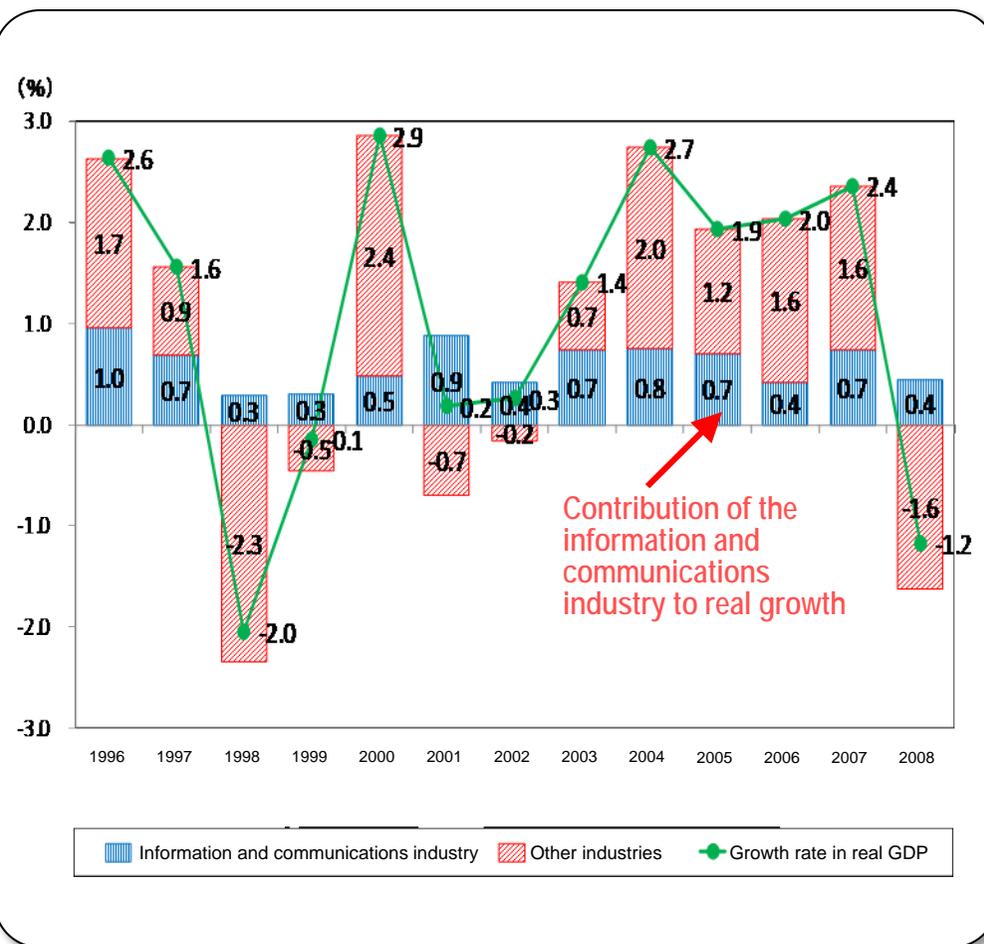
1: The Information and Communications Industry as a Driver of Economic Growth

- The size of the information and communication industry's market accounts for around 10% of the total marketplace (96.5 trillion yen).
- The information and communications industry accounts for around 1/3rd of real Japanese economic growth (even during recessions it consistently makes a positive contribution).

Market Size of Major Industries
(including the information and communications industry)



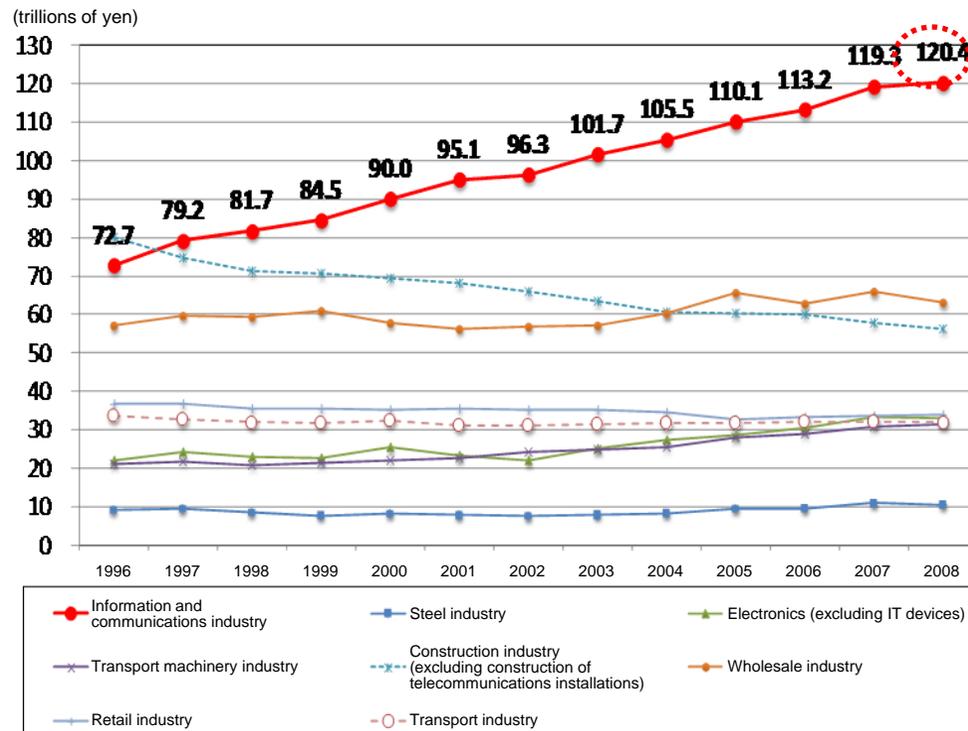
Contribution to Real Growth for the Economy Overall



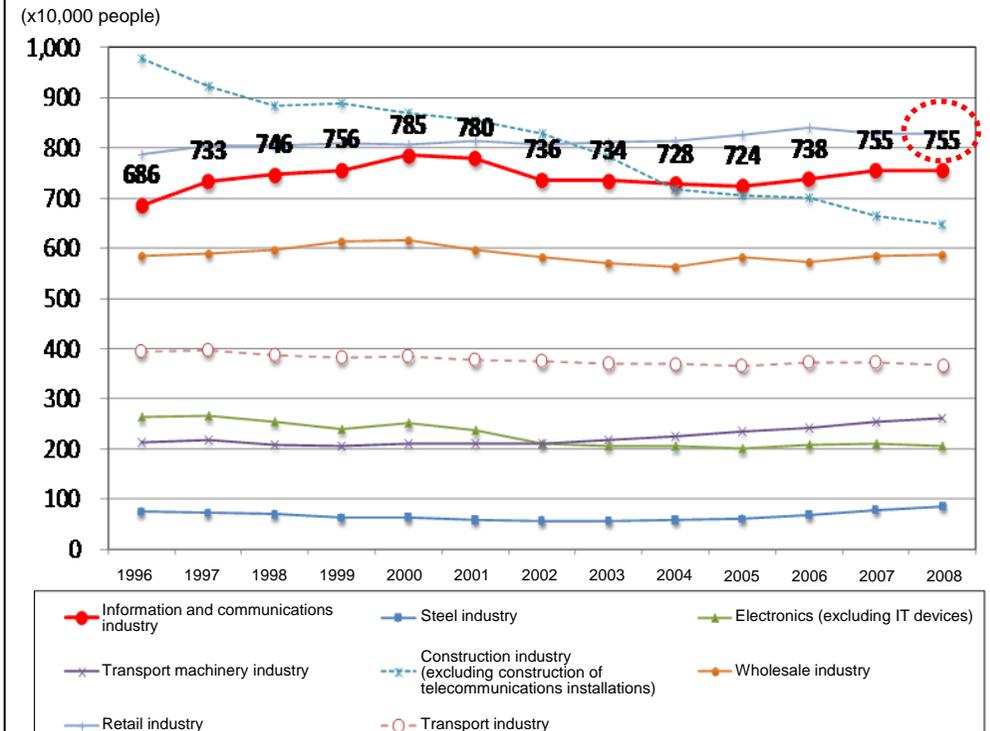
2: Significant Ripple Effect of the Information and Communications Industry on All Industries

- The amount of added value stimulated for the information and communications industry as a whole has shown a consistent increase. It is the largest amongst all industry sectors at 120.4 trillion yen (as of 2008).
- The number of jobs stimulated by the information and communications industry is 7.55 million (as of 2008). This is on par with the retail and construction industries.

Shift in Amount of Added Value Stimulated



Shift in Number of Jobs Stimulated

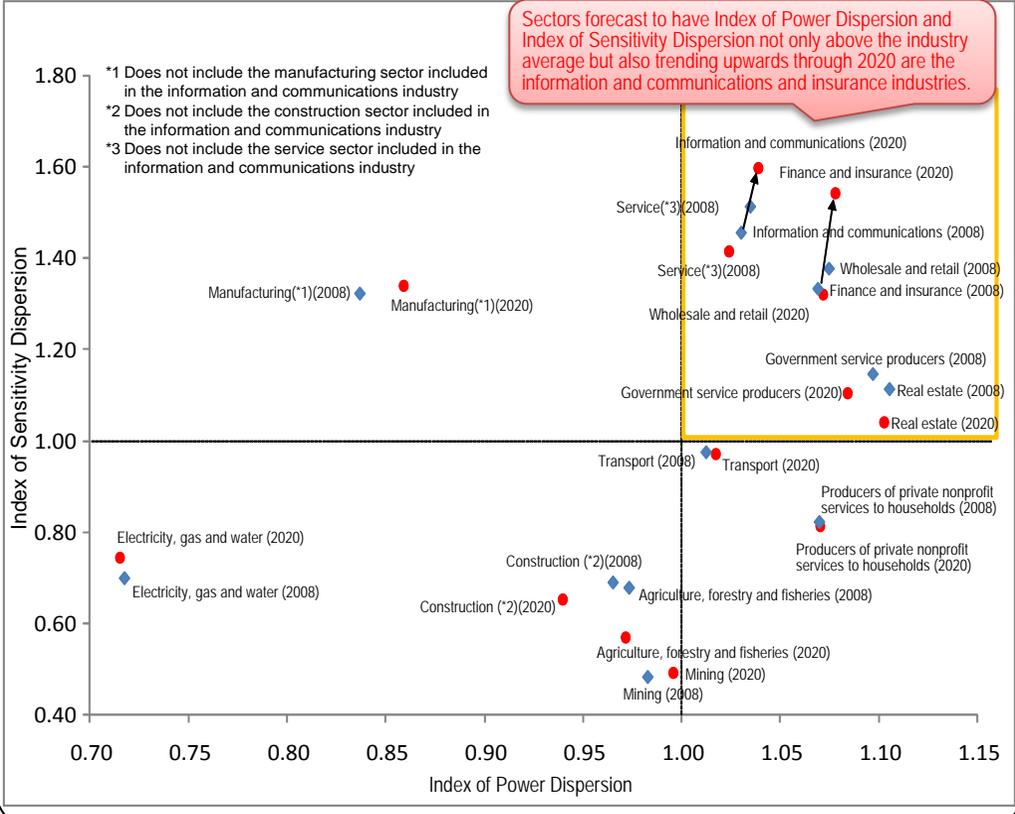


3: Essential Nature of the Information and Communications Industry to Sustainable Growth

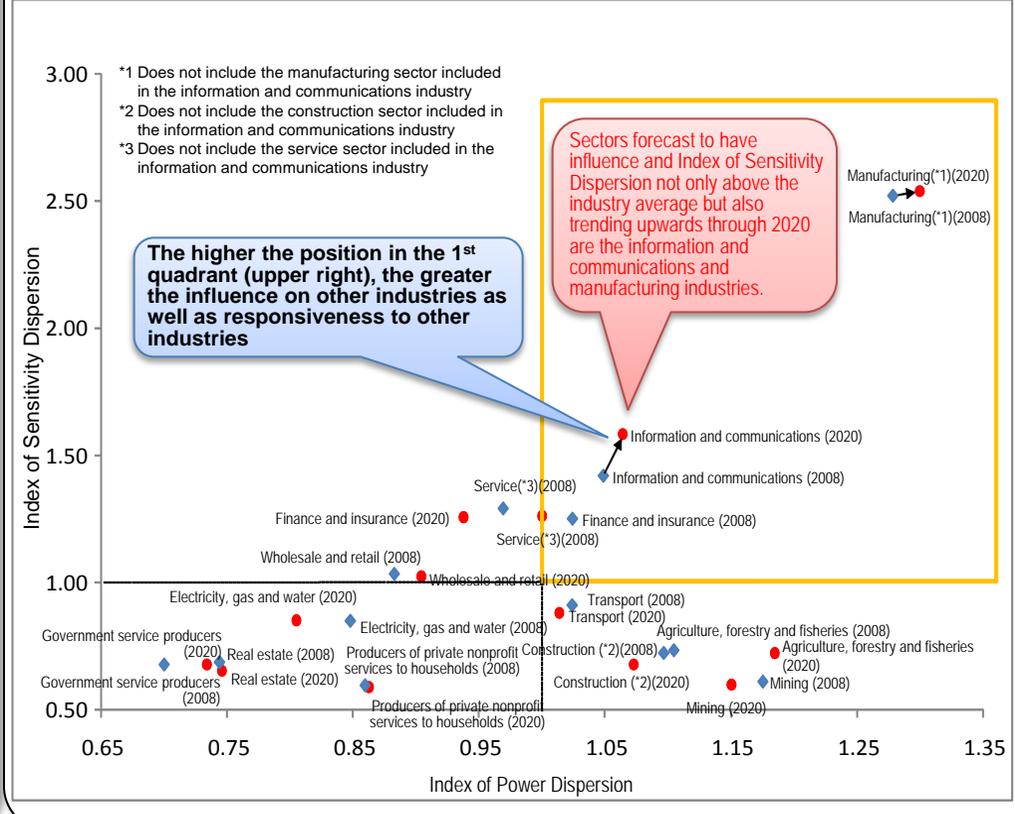
○ Inter-industry changes between 2008 and 2020 (projected) are here compared. Looking at the changes in “Index of Power Dispersion*1” and “Index of sensitivity Dispersion*2 between 2008 and 2020 shows an increasing trend at or above the average only for the information and communications industry in terms of added value (figure on the left) and production (figure on the right). In addition to driving other industry sectors, the information and communications industry enjoys the benefits of feedback from growth in these other industry sectors and is an essential element of sustainable economic growth in Japan.

*1 Index of Power Dispersion: Relative expression of amount of added value stimulated in all other sectors for each unit of demand produced in the sector under consideration (industry average is 1)
 *2 Index of Sensitivity Dispersion :Relative expression of amount of added value stimulated in the sector under consideration for each unit of demand produced in all other sectors (industry average is 1)

Change in Index of Power Dispersion and Index of Sensitivity Dispersion (Gross Product Originating)



Change in Index of Power Dispersion and Index of Sensitivity Dispersion (production-based)



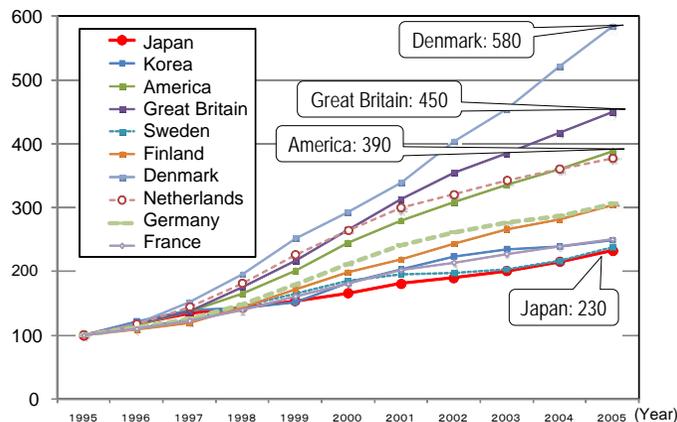
4: Japan's Low Level of IT Capital Growth

○ In an international comparison of ten major countries, Japan has had the lowest level of capital growth over the past decade. Japan's growth has been half of the United States (which has grown roughly four times in amount) and Great Britain (grown roughly 4.5 times in amount). Japan is particularly stagnant in ICT utilization sectors, such as "Retail", "Individual services", "Agriculture, forestry and fisheries", "Healthcare and social welfare" and "Education".

Shift in Industry-specific ICT Investment (Capital Growth)

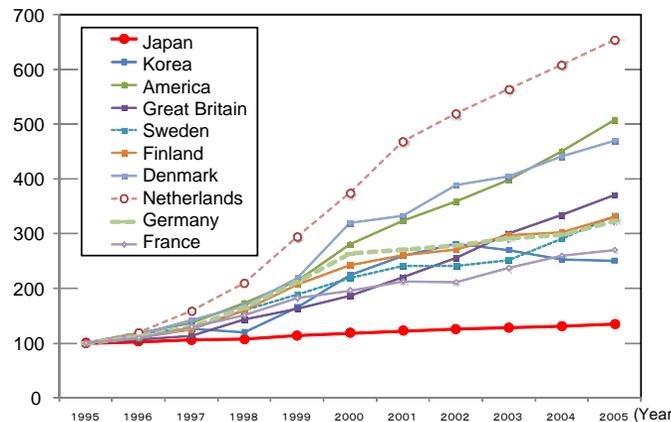
Overall

(1995 is treated as an index of 100)



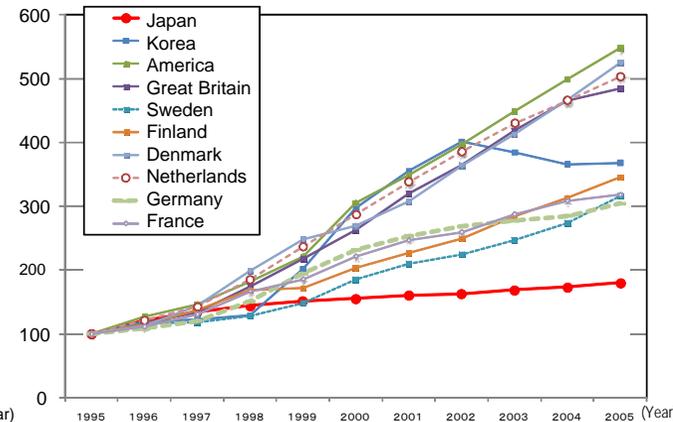
Retail

(1995 is treated as an index of 100)



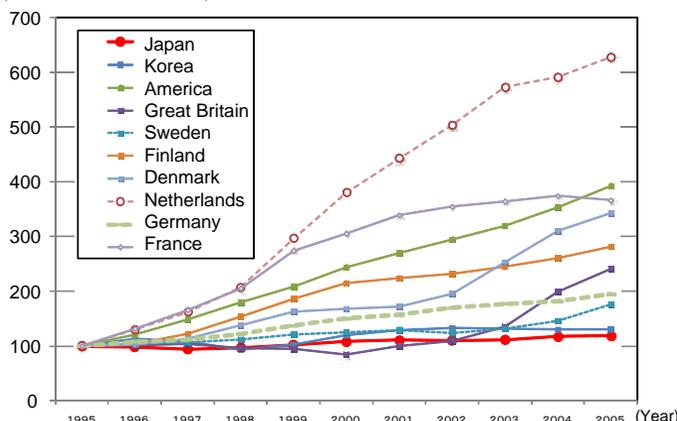
Individual Services (food and drink, accommodations, self-owned business, etc.)

(1995 is treated as an index of 100)



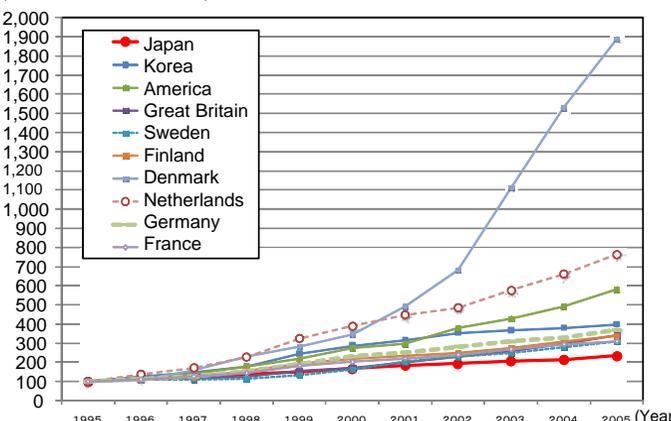
Agriculture, Forestry and Fisheries

(1995 is treated as an index of 100)



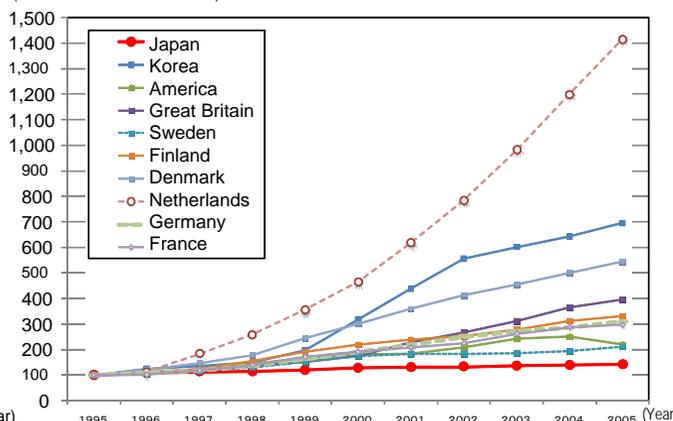
Healthcare and Social Welfare

(1995 is treated as an index of 100)



Education

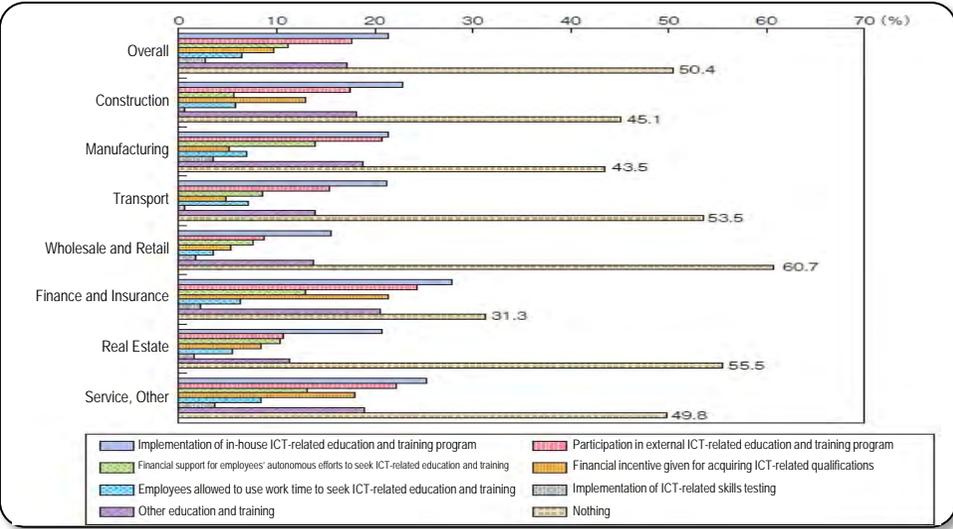
(1995 is treated as an index of 100)



5: Economic Growth via ICT Utilization Promotion and Accelerated Investment in Digitalization

- Outside of the finance and insurance sectors, between 40 – 60% of companies engage in no ICT education. “ICT education implementation” and “CIO establishment” have positive effects on labor productivity.
- Assuming accelerated investment in digitization and the promotion of ICT utilization, real GDP growth can be raised by about 0.8% in 2020.

Implementation Status of ICT Education



Industry-specific Economic Growth due to ICT Utilization Promotion and Accelerated Investment in Digitalization Simulation (Real GDP Growth Rate and Annualized Rate)

Industry	Growth rate from 2010 to 2020	
	Baseline	Acceleration and promotion scenario
Agriculture, forestry and fisheries	-1.1%	-0.7%
Mining	0.4%	0.8%
Manufacturing	2.5%	4.1%
Construction	-3.0%	-2.7%
Electricity, gas and water	2.9%	3.4%
Wholesale and retail	0.1%	0.6%
Finance and insurance	1.2%	2.2%
Real estate	1.2%	1.5%
Transport and communications	2.2%	2.6%
Service	2.9%	3.2%
Government service producers	1.0%	1.5%
Producers of private nonprofit services to households	3.0%	3.4%
Total	1.7%	2.5%

Effect of ICT Education on Labor Productivity (estimated results via regression analysis)

Dependent variable: labor productivity = (operating income + labor costs + depreciation) / number of employees

Explained variable: expected sign	Factor	[Standard Error]	P Value	
Capital (small = 1 to large = 8) +	2.0807	[0.2143]	0.0000	***
Percentage of terminal deployment -	-0.8885	[0.2491]	0.0000	***
ASP, SaaS utilization (yes = 1, no = 2) -	-1.1194	[0.9738]	0.2510	
Electronic tag introduction (yes = 1, no = 3) -	1.0733	[1.3173]	0.4150	
Non-touch IC card introduction (yes = 1, no = 3) -	-1.3218	[0.6265]	0.0350	**
Introduction of devices with new network functions (yes = 1, no = 3) -	0.2362	[0.7523]	0.7540	
Introduction of GPS, etc. (yes = 1, no = 3) -	0.2811	[0.9450]	0.7660	
Net procurement (yes = 0, no = 1) -	-1.4876	[0.7982]	0.0630	*
BtoB Net sales (yes = 0, no = 1) -	-1.6930	[1.6076]	0.2920	
BtoC Net sales (yes = 0, no = 1) -	-0.4046	[1.0689]	0.7050	
Telework (yes = 1, no = 2) -	1.7470	[1.3346]	0.1910	
ICT education implementation (points for principal components) +	0.7015	[0.2943]	0.0170	**
CIO establishment (yes = 1 to no = 4) -	-0.9247	[0.5587]	0.0980	*
Constant terms	3.3236	[6.1350]	0.5880	

Freely adjusted coefficient of determination = 0.1387
Sample size = 1,414

***: 1% significance ** : 5% significance * : 10% significance

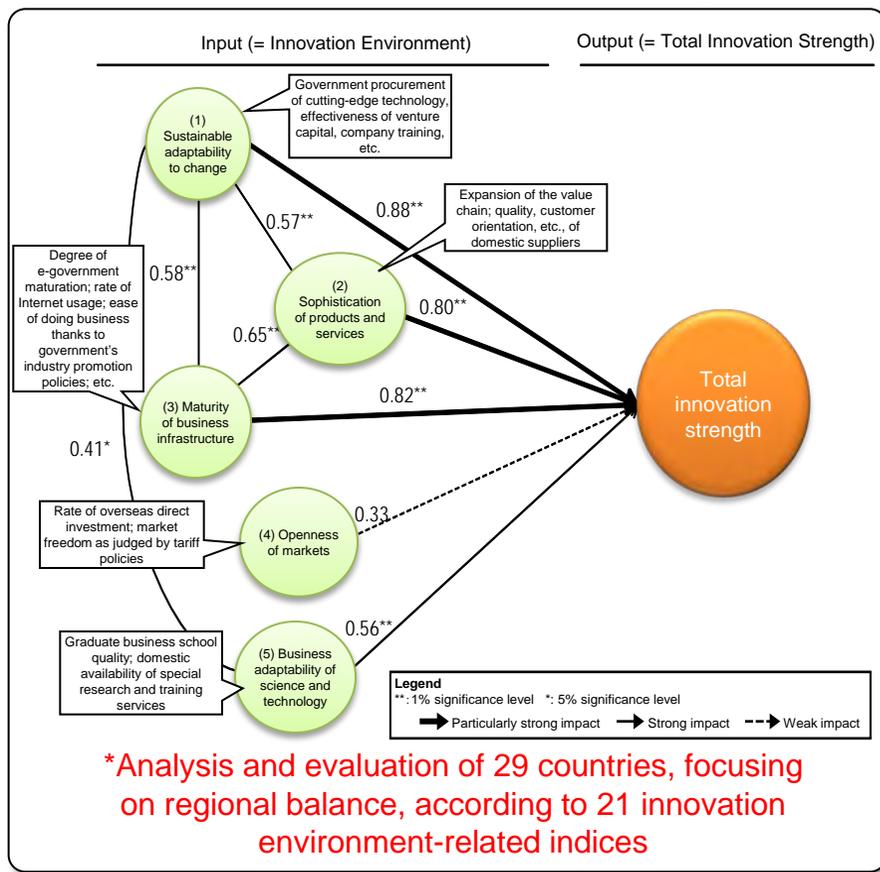
[1] A baseline scenario which applies the growth rate between 1995 and 2005 for each element to the decade ending in 2020 and [2] a scenario which includes a doubling of investment in digitalization and promotion of ICT utilization through the promotion of ICT education, etc. (the growth rate for information and communications capital investment in the baseline scenario is doubled and labor quality improvement is promoted via ICT education, etc.)

Chapter 3, Section 2: Bolstering the Innovations which Underlie ICT and Competitiveness in Japan's Global Deployment of ICT

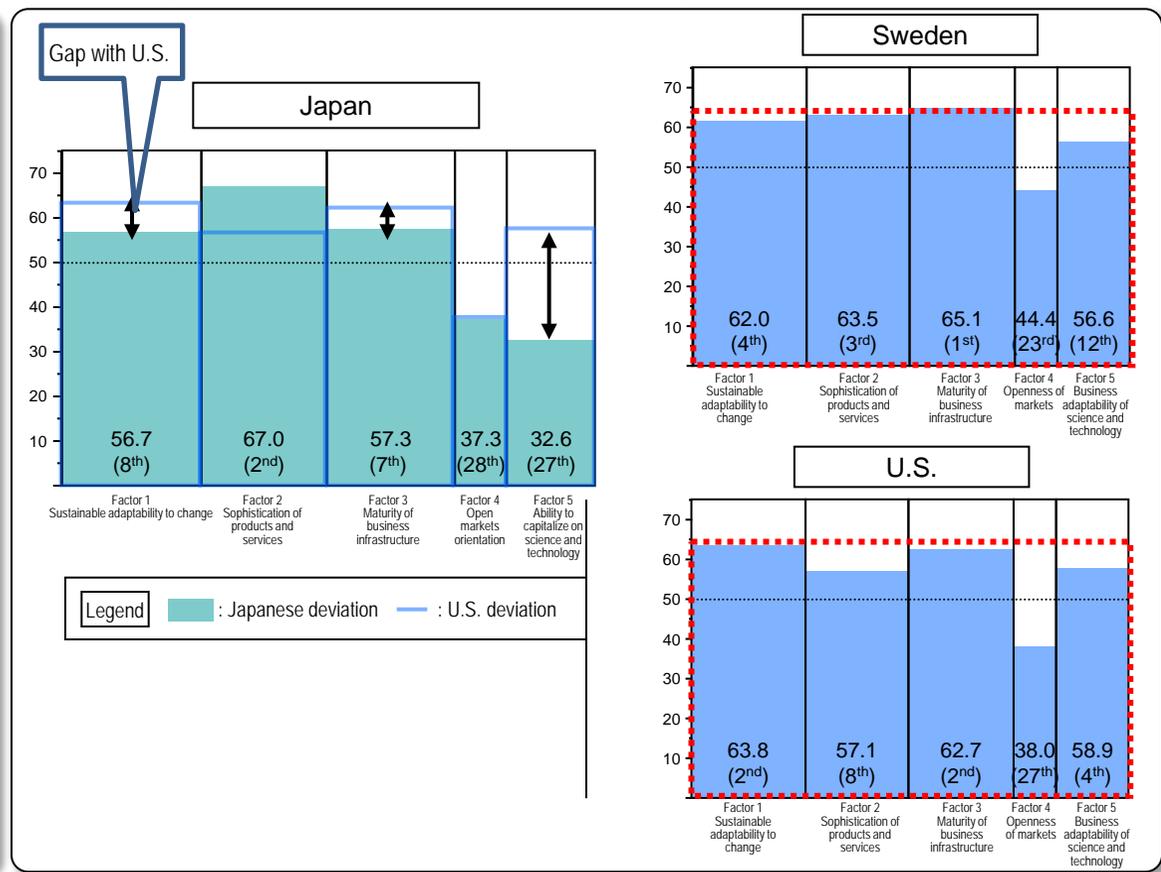
1: Issues for Japanese Innovation are "Service Development Capability", "Utilizability", and "Human Resources Cultivatability"

- Japan's innovation environment ranks highly in "(2) Sophistication of products and services".
- However, compared with the U.S. and others, Japan ranks low in new service-producing "(1) Sustainable adaptability to change", ICT utilization-promoting "(3) Maturity of business infrastructure" and highly talented human resources-cultivating "(5) Business adaptability of science and technology". As a result, this lowers Japan's innovation capability. Strengthening this is an issue to be undertaken for the future.
- Sweden and the U.S. maintain well-balanced, high levels in all innovation environment factors.

Innovation Environment and Total Innovation Strength (*)



Comparison of Innovation Environments in Japan and Other Advanced Nations



Chapter 3, Section 2: Bolstering the Innovations which Underlie ICT and Competitiveness in Japan's Global Deployment of ICT

2: Start-up Ventures by Young Entrepreneurs

- Young entrepreneurs, from those in their late teens to those in their 30s, are familiar with computers, the Internet, etc., and are naturally incorporating Japan's broadband and mobile communications environment into their businesses to create a new business model from the perspective of ICT users which goes beyond the existing business framework
- Characteristics of this model include active use of ICT by the entrepreneurs themselves to get the word out about their business and the use of low-cost external ICT services so as to allow entrepreneurs to make more focused investments in their business as well as using ICT to stimulate employee communication and initiative

Analysis Frame of Young Entrepreneur Start-up Venture Business Cases

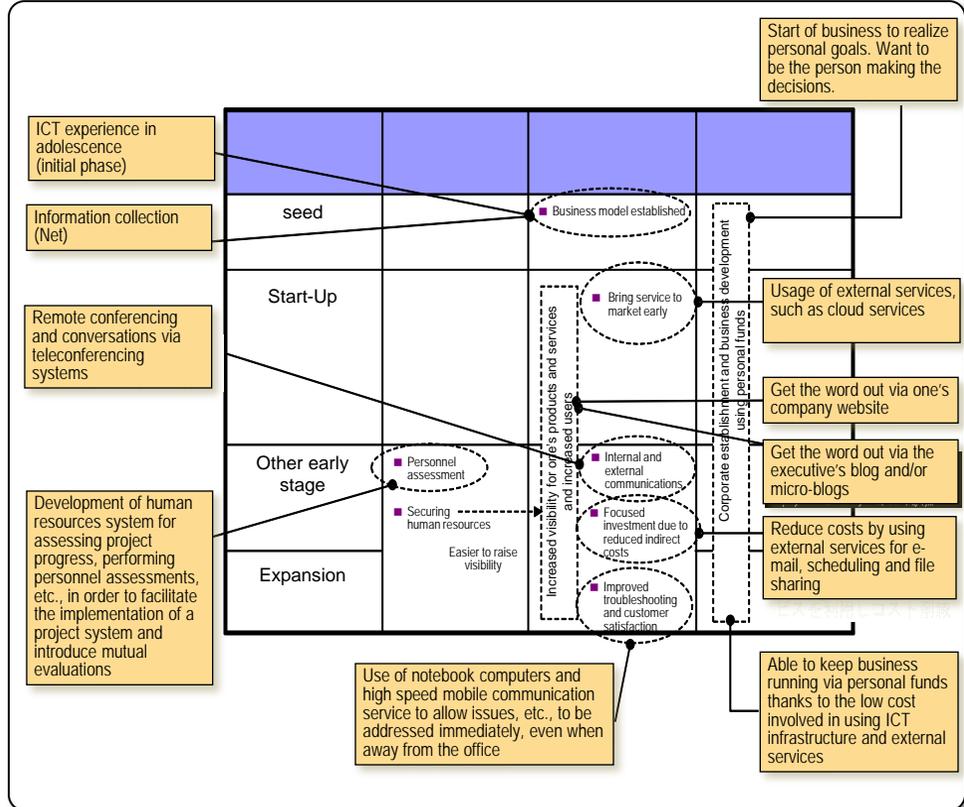
An analysis was made of how ICT was utilized in the three areas of "personnel and organization", "strategy" and "finance and capital markets" during each phase of the start-up stage

Venture Business Growth Phases		Personnel and Organization	Strategy	Finance and Capital Markets
	seed	Phase involving the creation of a business plan, business concept and/or prototype		
Start-Up	Phase involving the development of products and the initial procurement of marketing funds; however, products are not yet being sold			
Other early stage	Phase involving the completion of product development and the start of commercial manufacturing and sales. In many cases, however, the business is not yet turning a profit.			
Expansion	Phase involving the growth and expansion of the company, including the expansion of production capacity, product development, marketing funding procurement, etc.			

Compared with the U.S. where start-up business is booming, Japan faces unique challenges in these three areas.

How is ICT being effectively utilized in each area and at each phase?

Results of Case Analysis for ICT Utilization in Young Entrepreneur Start-up Venture Business



3: Product and Service Development in Cooperation with Users

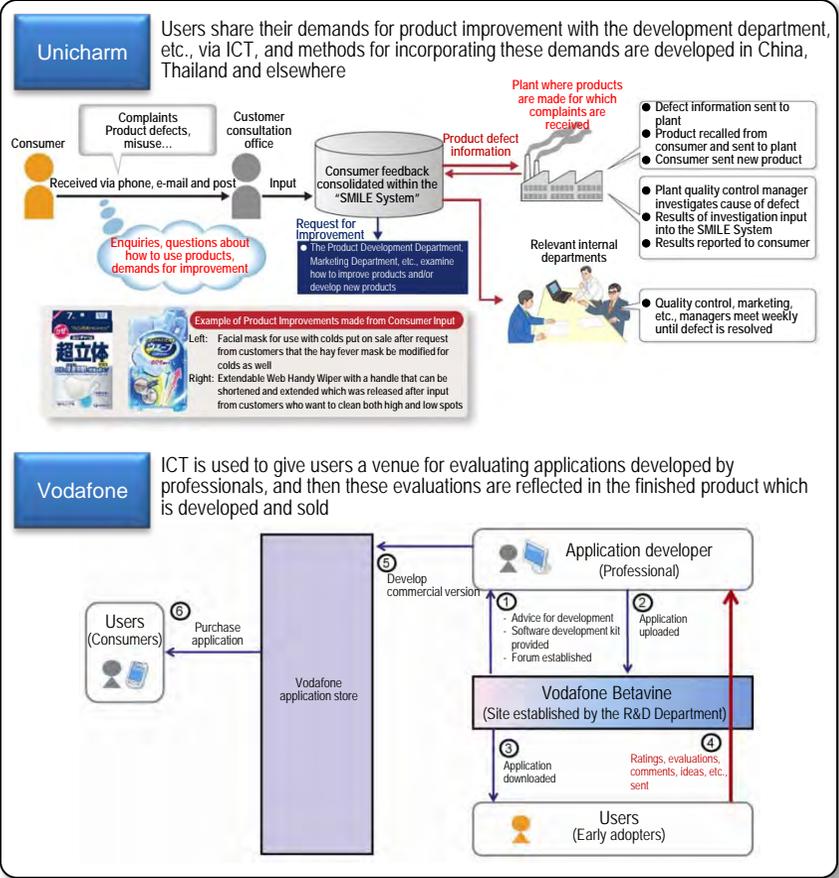
- Japanese consumers are rated as being highly refined according to the international "ICT Competitiveness Ranking" (#2 in 2009 and #1 in 2010) put out by the World Economic Forum (WEF). Some large overseas corporations also assess Japanese consumers highly.
- In terms of global development, however, it is important that products and services reflect local needs and not just focus on pushing Japanese quality, and towards this end, User Generated Devices (UGD) made in cooperation with users through the use of ICT are effective.

Assessment of Japanese Consumers by Overseas Companies

Company	Assessment of Japanese Consumer Refinement
LG	"The demand level of Japanese consumers is the highest in the world. Refining one's product or service in the Japanese market will lead to greater competitiveness in the world market." With this thinking in mind, LG uses Japan as a testbed for developing, selling, etc., its cellular phones
P&G	"Japanese consumers are amongst the most discerning in the world, and any product which meets the demands of Japanese consumers will likely deploy well to other advanced nations."

While continuing to take advantage of the refinement of Japanese products and services, ICT can be a useful tool in global deployment by assisting in discovering local market and consumer needs as well as in producing, developing, selling, managing, etc., products in a timely manner

Usage Examples for UGD



4: Global Expansion Utilizing Japan's Strengths

- In addition to the global expansion of the ICT sector in terms of terrestrial digital broadcasts and other areas, Japan at “the frontier of emerging issue” can use its accumulated experiences dealing with natural disasters, the environment, energy conservation and other issues to provide other regions with social systems which incorporate ICT and contribute to meeting those regions' needs.
- Japan needs to be reminded of the advantage of its geographical position in Asia, including countries like China and India – with their growing global presence, and it should make effective use of ICT to share Japanese technology and experience with these countries and work together towards resolving regional challenges.

Examples of Social System Expansion Incorporating ICT

High Speed Railway System Incorporating ICT

- In 2000, a Japanese consortium of seven companies received an order for the construction of a Taiwanese bullet train based on Japan's bullet train

<Factors Contributing to Success>

- Possess distinctive functions suited to the needs of earthquake-prone Taiwan
- Possess technological superiority in terms of scheduling, operational know-how (e.g., signaling systems, operational control systems and operational simulators), etc., which has led to zero passenger fatalities since the bullet train began operation

Standardization of 1.1MV Ultra High Voltage Technology Usable in Smart Grids

- In May 2009, standardization was performed by the International Electrotechnical Commission (IEC)
- Expected to be employed in smart grids and deployed in China, India, etc., where there is a massive demand for power

<Factors Contributing to Success>

- Technical cooperation carried out with China, where energy demand is exploding and energy conservation is crucial, and during the standardization process, overtures made through the “major market” of China helped win support from European opposition
- Possession of superior technology (reduced costs and energy conservation possible due to bulk power transmission of three to four times what current transmission lines carry)

By globally deploying Japanese technology and experience, Japan can contribute to resolving the challenges faced by local areas as well as grow alongside them