"2012 White Paper Information and Communications in Japan" <Outline>

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Unofficial translation

OOverview of White Paper on Information and Communications in Japan

Part 1 Special Theme: ICT-induced and accelerated Disaster Recovery and Japan's Re-birth

The Great East Japan Earthquake has exerted a large impact on the society and economy of Japan. Now, while Japan is facing various challenges such as population decline and population ageing, the following activities are required for Japan's re-birth. Taking them into consideration, Part 1 gives a wide view of the methods and scenarios for the ICT to contribute to disaster recovery and Japan's re-birth.

Chapter 1: ICT — Keystone of Economic Growth Strategy, and Its Expansion into the Global Market Chapter 1 analyzes how the ICT as an economic growth engine as well as a GPT (General Purpose Technology) could contribute to the Japan's re-birth.

Chapter 2: Transformation of ICT Industries and Society, Induced and Accelerated by the "Smart Revolution" Chapter 2 presents analysis and a wide view concerning the transformation of ICT industries, service structures, and users' trends induced by the now fully available ubiquitous network environment and the emergence of the smartphone.

Chapter 3: Lessons of the Great Earthquake and the Role of ICT

Chapter 3, through the analysis of information behavior during and after the Great East Japan Earthquake, presents a wide view on the role of ICT for the construction of a disaster-resistant country.

Part 2 Update on ICT and Policy Outlook

Chapter 4: Current State of ICT

Chapter 4 presents the latest data that shows the current state of information and communications in Japan, based on statistics on the approval-issuance activities and the business activities of the Ministry of Internal Affairs and Communications in FY 2011.

Chapter 5: Outlook for Information and Communications Policies

Chapter 5 describes the latest policy trends related to the information and communication field in FY 2011, focusing on the activities of the Ministry of Internal Affairs and Communications.

Chapter 1: ICT — Keystone of Economic Growth Strategy, and Its Expansion into the Global Market

From the view point that ICT is an economic growth engine and as a GPT (General Purpose Technology) occupies the key-stone position in growth strategies and problem solving, Chapter 1 provides analysis of the situations and challenges of Japan's ICT in two different aspect, the industry and the users of ICT.

1. Global Trends suggesting the Relation of ICT with Economic Growth

- Even in the countries where the literacy rate is 50 to 80%, mobile phones or the Internet are widely used; it suggests that ICT is expected as a tool for escaping from poverty. (<a>p.4)
- The world-wide ICT market has expanded at the annual-average growth rate of 5.2% (more than twice Japan's rate), especially 7.2% in Asia-Pacific Region; the potential growth power of ICT is large. (Sp.5)
- <u>Countries or regions</u>, in order to take advantage of the potential growth power of ICT, <u>have been promoting strategic activities focusing on the enhancement of broadband</u> <u>environments or utilization of ICT</u>. (@p.5)

2. Trends in the Countries surrounding Japan

- International ICT indices show a "sluggish Japan", Japan is losing its advantages in telecommunication infrastructures and also falling behind in availability and utilization.
 (\$p.6)
- On the other hand, Japan has advantages of having skilled and sophisticated domestic users and having mobile industries based on the widely-used mobile Internet. (@p.7)

3. Economic Growth Driving Force and International Expansion of ICT Industries

- Japan's ICT industries have steady good performance in the software/service sector, but are sluggish in the hardware sector (particularly in exports); the industries are becoming domestically oriented. (*** p.8)
- Japan's ICT corporations are gradually sliding down in the corporate ranking measured by stock-market capitalization or sales growth rate. (* p.9)
- While the worldwide telecom-service providers or ICT vendors are seeking growth by entering into overseas markets, including those in developing countries, <u>the pace of overseas</u> <u>market cultivation by Japanese corporations is slow</u>. (Sp.9)
- In the current situation where Asia has become the world-workshop, U. S. ICT manufacturers have been successful by adopting business strategies based on international specialization, such as EMS, in their globalization. (Sp.9)

4. Challenges for ICT User Sector Growth

- In countries around the world, ICT has contributed to economic growth: the informatization factor of capital equipment provides positive impacts through the improvement of labor productivity. (<a>[s]p.10)
- The growth in the information capital and TFP (Total Factor Productivity) has contributed to the GDP growth of Japan; ICT also has strongly contributed to TFP growth ([]p.10)
- Readiness index for informatization in Japan shows great variation sector by sector. Compared with other developed countries, the level of variation is similar to the situation in the U.S. in the early 90's. (\$\$\sigma\$p.11)
- The corporations that undertook corporate innovation-activities combined with ICT introduction have enjoyed larger ICT-effects; such combination is the key to realize ICT effects.
 (\$p.11)
- ICT-effects have been proven by the education/medical organizations that have forwarded ICT programs. Particularly in the medical sector, ICT is expected to provide a wide variety of effects, including reducing the burden on the patient / medical organization side, the stable supply of local medical services, the improvement of medical services, and the optimization of medical expenditures. (\$\$\vert\$p. 12)
- As for ICT utilization in the public sector, the largest challenge is the improvement of the residents' recognition of the value and purpose of ICT introduction in almost all the local governments, less than half of the residents recognize the purpose. (@p. 13)
- <u>ICT utilization is highly expected to contribute to local community development more than 70% of the local governments have responded affirmatively</u>; however, they have pointed-out obstacles, such as lack of budget, few numerical data or implementation examples to prove ICT effects, or shortage of personnel resources to promote the introduction. (\$\$\vert\$p\$, 14)

Chapter 2: Transformation of ICT Industries and Society, induced and accelerated by the "Smart Revolution"

Chapter 2, from the standpoint that the combination of the now fully available ubiquitous networks environment with the utilization of a vast amount of information through the proliferation of smartphones should be considered as a "Smart Revolution," analyzes, from the side of the industry and the users, its potential power driving the economic growth

1. The ubiquitous network environment is now fully available and the smarter is leading to the "Smart Revolution", but various problems being exposed

- <u>The ubiquitous network environments</u>, now available through the Internet that has become part of the social infrastructure, <u>combined with</u> the capability of distributing and utilizing a vast amount of data <u>Big Data, is leading to the "Smart Revolution."</u> (\$\$\sigma\$p.16)
- Threats from cyber attacks, of which the targeted attack is most serious, have been realized as actual threats; while <u>97% of corporations have prepared security measures</u>, the more powerful measures are being prepared through the tight collaborative actions, including the government and the private sector. (\$\$\vert\$p.17\$)
- Recently, the international discussions on what cyber space should be or how it should be regulated has expanded, and <u>Japan has actively participated</u>, provided useful information, and sent messages. As a result, the Japan-U. S. joint statement mentions that the collaboration of both countries will be strengthened. (\$\$\mathbb{P}\$p.17)
- The utilization of Big Data will greatly improve the potential power of ICT; while the U. S. has already started strategic activities, Japan is focusing on it as a national strategic resource. (\$\$\mathcal{F}p.16\$)

2. "Smartphone Economy": the structural transformation of ICT industries and users led by the proliferation of smartphones

- The smartphone market grew from 2009 to 2011 by 270% world-wide, 420% in Asia-Pacific; the majority of that growth has been captured by Apple and the companies of China, Taiwan, and Korea (they belong to the Android Group). Japanese telecommunication carriers are accelerating the shift of their business into smartphone services and the fields where added-value will be expected by cross-industrial collaboration. (Sp.18)
- Japanese ICT industries (Internet-related industries) are distinctive because more than 50% of their revenue is network-related, especially mobile networks. In the U. S, on the contrary, revenues from the upper layer or terminal layer are significant. (\$\$\sigma\$p.19)
- <u>The debut of smartphones has led the industries into "competitions among eco-systems"</u>; the strategy is, first acquiring the platform (terminal OS or application-store), adding application vendors, and finally guiding users into their own eco-system. As users shift to smartphones, the ratio of usage of services available on their phones, such as search and music distribution will increase. As a result, <u>especially for movie distribution, Google or Apple are more likely to be used.</u>
- The proliferation of smartphones or other information terminals has stimulated the use of services available on the Internet, such as electronic commerce. The annual economic ripple effect of the money consumed in the service, advertising, and terminal markets is about 7.2 trillion yen, and 338 thousand jobs are created annually. (Sp. 21)

3. The switchover to digital terrestrial broadcasting and acceleration of smart TV and broadcasting-social-media collaboration

- <u>Smart TV</u>, especially through broadcasting-social-media collaboration, will potentially <u>contribute to the expansion of broadcasting media through, for example, communicating</u> <u>directly with the individual members of the audience or increasing advertising value</u>. In June, 2012, MIC drew up the basic strategies for international-standardization, technical development, and expansion of the user-base of smart TVs.
- The Japanese people, especially those in their 20's, highly recognize the Internet as media (*sp. 24*); at the same time, for document-oriented media, social media leads over newspapers/magazines for evaluation as "entertainment" and "gossip source." (*sp. 25*)

4. Toward the steps to accomplish new growth (summary of Chapter 1 and 2)

- Japan has maintained its lead in mobile industries, while it proceeds slowly in the ICT field; the first thing we have to do is to get rid of the illusion that Japan has a lead in the field, and then invest there to have more power for growth.
- Japan's ICT industries are becoming domestically-oriented; powerful management strategies with a view toward the global market are required to proceed into the global market taking advantage of systematic strengths, such as the combination of hardware with software, and the collaboration of corporations on the user-side and ICT vendor-side.
- The economic impacts of ICT introduction have been proven; in the public sector, the significance of ICT proliferation and promotion should be positively recognized and accepted as indispensable.
- The proliferation of smartphones and other information terminals should be used as a trigger for the economic growth of Japan as a whole; in addition, because the international standardization of the common platforms, such as HTML5 is becoming more important, Japan should proactively participate in the standardization activities, taking into account the expected expansion of smart TV, which is expected to emerge as a growth area.

Chapter 3: Lessons of the Great Earthquake and the Role of ICT

Chapter 3, focusing on the role of ICT, presents an analysis of people's information behavior during and after the Great East Japan Earthquake in the disaster and the neighboring areas, and also discusses the business continuity of the local governments and private sector at and after the earthquake.

1. Information behaviors and usage of ICT in the disaster areas

- Evaluating the media: during the time of the occurrence of the earthquake, radio broadcasting was highly evaluated for its capability of instantaneous information-delivery; for the period just after the occurrence of the earthquake, mobile phones and e-mail were positively evaluated for their bi-directional features, and also terrestrial TV broadcasting for its image-delivery features. (SP p. 27)
- Media-utilization rate: as for information gathering on the earthquake and tsunami, media with high-instantaneous capacity and broadcasting features were highly used; however, <u>the usage</u> rate of radio-broadcasting, the highest rated among the media, was just over 40%. (Sp. 27)
- Utilization of the Internet: some skilled users realized information gathering and communication with a region-specific and instantaneous information-provision capability. (F. 27)
- Evaluation of mobile phones: mobile phones, having been so highly evaluated as ready-to-use information terminals that most people evacuated with them, were highly criticized in terms of the serious negative-effects caused by their inability to be used for more than several hours. (\$\$\$"p. 27)

2. Information behaviors and usage of ICT in the neighboring areas

- Initial media used to learn of the earthquake: <u>TV is ranked the highest with a ratio of 53.4%</u>; on the other hand, <u>social media are ranked low</u>, for example the usage ratio of SNS was 0.9%. (Sp. 28)
- Most valuable media for obtaining disaster-related information: TV with a ratio of 63.1%, ranked far higher than other media. (\$\vert p.28)
- Media to obtain necessary information: according to the answers to the questionnaire, news-sites, with a ratio of 87.3%, ranked high at almost the same level as TV (88.2%). (Sp. 28)
- <u>PC-mail and PC-web: only 22.1% and 11.3% respectively chose the answer "totally disconnected"</u>; those media were in usable conditions. (©p. 28)

3. Activities for business continuity and utilization of ICT during and after the earthquake

- After the earthquake, about 70% of the local governments decided to enhance the utilization of the Internet; it shows that they have altered their policies. (SP. 29)
- In terms of the preparation of BCPs (Business Continuity Plan), <u>almost 40% of the prefectural governments</u> have prepared their plans; however, only <u>3.5% of the town / village offices</u> have such plans. (Sp.29)
- As for the private sector, while large-sized enterprises have promoted BCP preparation (43.3%), <u>medium/small-sized ones have been reluctant (14.0% BCP preparation rate); it shows</u> that BCP preparation has not been uniformly promoted, depending on the corporate size. (*sp. 30*)
- After the earthquake, <u>79% of the local governments</u> decided to consider the introduction of cloud computing, while <u>45.2% of the large-sized private enterprises and about 60 percent</u> <u>of the medium/small-sized enterprises have not; it shows the policy difference between public and private organizations</u>. (Sp. 29, 30)

4. Lessons of the Great Earthquake and utilization of ICT

- At the time of disasters, **prompt and firm information-provision by multi-dimensional delivery means that preventing information "air pockets" is vital**; such means include the Internet and social media, as well as broadcasting and mobile phones.
- As for <u>mobile phones</u>, because they are accepted as the most ready-to-use information terminals, <u>the enhancement of the disaster-resistance of their network systems</u> and simultaneous <u>enhancement of terminal features</u> is required in order to ensure the higher availability at the time of disaster.
- In terms of business continuity at the time of disaster, the recognition-gap concerning its importance among sectors should be eliminated. At the same time, the implementation of <u>cloud</u> <u>environments that can be relied on by local governments and the private sector</u> is required.
- For disaster-recovery and reconstruction, <u>based on a futuristic view, cutting-edge ICT should be employed for the construction of future-oriented safe and secure communities</u>; the creative-reconstruction-support projects employing ICT, such as smart-grid-communication infrastructure or the Tohoku-medical-megabank, should be promoted.

Information and Communication in Japan, 2012 Major Datasets

Unofficial translation

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TV and other video sites
News paper and magazine / Social Media

CHAPTER 1: ICT — KEYSTONE OF ECONOMIC GROWTH STRATEGY, AND ITS EXPANSION INTO THE GLOBAL MARKET

Globally Expanding Growth Potentiality of ICT (1)

- ICT is expected to be used as a GPT (general Purpose Technology) an effective tool in every field.
- Even in developing countries, use of mobile phones and the Internet expands; at the present point, 80% of mobile phone users and 60% of the Internet users world-wide belong to developing countries.
- Even in the countries where the literacy rate is 50 to 80%, mobile phones or the Internet are widely used; it suggests that ICT is expected as a tool for escaping from poverty.







World-wide Internet-user Population



Gaps in Fixed-line, Mobile Phone, Internet, and GDP

•The economic gaps seem to close through mobile phones and other information terminals.



Globally Expanding Growth Potentiality of ICT (2)

- The world-wide ICT market has expanded at the annual-average growth rate of 5.2% (more than twice of Japan's rate), especially 7.2% in Asia-Pacific Region; the potential growth power of ICT is large.
- In addition, use of daily-life related ICT services such as mobile-financial services has become popular and familiar, especially in low-income countries.
- Countries or regions, in order to take advantage of the potential growth power of ICT, have been promoting strategic activities focusing on enhancement of broadband environments or utilization of ICT.



Trends in the World Countries surrounding Japan (1)

ICT infrastructure development and dissemination

International ICT indices show a "sluggish Japan", ranked at around 15th or below.

• Japan is losing its advantages in telecommunication infrastructures and also falling behind in availability and utilization.



* Countries were color-coded as of April 12, 2012

Fixed-line Broadband Penetration Ratio, FTTH Ratio, and Personal-user Population Ratio

• Still at the highest rank in FTTH, Japan is in danger of being surpassed both in broadband and the



* Broadband here refers to a high-speed communication line with a speed of more than 256 kbps for upward, downward, or both directions (based on the definition by ITU).

Trends in Mobile (Mobile-Internet, 3G, Mobile Phone) Penetration

• In the 3G-ratio and mobile-Internet ratio, Japan is leading the world, but running is not far ahead of Korea.



Trends in the Countries surrounding Japan (2)

ICT utilization and Market

- In terms of ICT utilization, Japan is gradually falling further behind, especially in the private and public sectors, where the lag has become apparent.
- On the other hand, Japan has advantages of having skilled and sophisticated domestic users and having mobile industries based on the widely-used mobile Internet.



Economic Growth Driving Force and International Expansion of ICT Industries (1)

- Japan's ICT industries have steady good performance in the software/service sector, but are sluggish in the hardware sector (particularly in exports); the industries are becoming domestically oriented.
- Japan's ICT-export-coefficient, having remained positive for many years, was negative in 2011, especially in video equipment (TVs, etc.) and communication equipment (mobile phones, etc.)



•The domestic demand for information services or telecommunication services show steady growth; on the other hand, the foreign demand, especially for hardware, is declining.







Economic Growth Driving Force and International Expansion of ICT Industries (2)

- Japan's ICT corporations are gradually sliding down in the corporate ranking measured by stock-market capitalization or sales growth rate.
- While the worldwide telecom-service providers or ICT vendors are seeking growth by entering into the overseas markets, including those in developing countries, the pace of overseas market cultivation by Japanese corporations is slow.
- In the current situation where Asia has become the world-workshop, U. S. ICT manufacturers have been successful by adopting business strategies based on international specialization, such as EMS, in their globalization.



- In countries around the world, ICT has contributed to economic growth; the informatization factor of capital equipment provides positive impacts through the improvement of labor productivity.
- The growth in the information capital and TFP (Total Factor Productivity) has contributed to the GDP growth of Japan; ICT also has strongly contributed to the TFP growth.



Challenges for ICT User Sector Growth (2)

Readiness index for informatization in japan shows great variation sector by sector; compared with other developed countries, the level of variation is similar to the situation in the U.S. in the early 90's. • The corporations that undertook corporate innovation-activities combined with ICT introduction have enjoyed larger ICT-effects; such combination is the key to realize ICT effects. • Only about 20% of corporations in Japan have CIOs; however, the corporations that do have CIOs and involve them in the corporate management have taken full advantage of ICT introduction. Relationship among Utilization of ICT, Innovation Activities and ICT-introduction Advantage •Industries which use ICT more actively enjoy the greater advantage of the introduction of ICT and carry out Informatization-investment Progress Index* corporate innovation activities more vigorously. Size of each bubble represents the total score for ICT-effects cturing (large By industry By country • There is a large gap between the high-level industries •Japan stays at the lowest level, the same as the (e.g. transportation/telecommunication, electric level of the U.S. in the early 1990s. large Trading/wh 60 machinery) and the low-level industries (e.g. introduction advantage (high) Trading/wholesale/reta (small/mediu agriculture/forestry/fisheries). (transportation/telecommunication in 2000=100) (United States in 2000=100) ICT-effec 180 300 Transportation/ 285.5 ja 4.0 Telecommunication (163.3 Electric machinery (142.9) 160 Agriculture/forestry/fi 250 - Finance/insurance (117.2) (large (small/med Finance/insurance/investn mutual aid (large otal Service business (73.9) Wholesale/retail (31.4) Fransportation/storage/po 140 200 ICT-/storage/postal ervices (small/mediu 2.0 O Precision machinery (23.0) 167.7 Other manufacturing Health/medical/welfare 157.4 industries (22.2) (small/medium 150 120 - Chemical (19.0) -Foodstuffs (12.8) Electricity/gas/water (categorized by the company size) 95.8 100 services (11.6) 100 Transportation machinery (11.5) 3.0 Total score for ICT introduction 6.0 9.0 Construction (11 3) General machinery (9 ()) 50 ICT use (high) 80 Pulp/paper (8.5) 19.2 ICT-introduction Advantage through ICT-introduction Advantage through CIO's Petroleum/coal products 0 **ICT-and Business Innovation** involvement in Management Policy (7.5) Primary metal (6.0) 93 94 95 96 97 98 99 200 01 02 03 04 05 06 07 60 Metal products (5.2) ●ICT-effects can be achieved through the •Corporations that have CIOs and involve them in -----Germany <u></u>−**U**.K. – Australia combination of ICT introduction and business corporation management have taken full advantage of ICT 40 Character (4.1) 🔶 Japan innovation activities. introduction. Textile (3.7) Total score for ICT-effects (6 categories, 3 points for each; 18 points in total) -O-Pottery/soil and stone Score for ICT-effects (0-3 points) 20 (2.5) Agriculture/forestry/fish (0.8)18 12.8 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 (year) 15 12 0.6 '-introduction (high) CT-introduction (low) er no CIO * Informatization-investment Progress Index: An index which represents the degree of progress in informatization, obtained by estimating the gap Total score for ICT-Innovation (low) Innovation (high) introduction

(5 categories: 19 points

in total)

Total score for innovation activities

(3 categories; 17 points in total)

in marginal productivity between general capital and information capital, and calculating and indexing the inverse of the estimate.

- ICT-effects have been proven by the education/medical organizations that have forwarded ICT programs.
- Particularly in the medical sector, ICT is expected to provide a wide variety of effects, including the reducing the burden on the patient / medical organization side, the stable supply of local medical services, the improvement of medical services, and the optimization of medical expenditures.



•Front-running organizations reply "We take the advantage of ICT."





• Most significant replies on the effects of electronic health records (HER) are the quality-improvement of medical service or medication teaching, and the efficiency improvement of transaction-processing.



ICT-introduction effects in medical sector are evaluated in terms of 25 items; out of them, 16 items are quantitatively evaluated, for example at present 104.31 billion yen for medical expenses, and 331.71 billion yen for social benefit.
ICT-introduction effects are expected to grow along with the improvement of the adoption rate.

Beneficiary: Patients

Beneficiary:]	Medical	organizations/care	service	providers
Denerrent		organizations, eare		providero

			-	
Systems	Expected effects and benefits	Systems	Expected effects and benefits	
EMC, EHR	Proper charging of medical expenses Avoiding physical load	EMC (including the cloud services)	 Standardizing and increasing the efficiency of medical practice 	
Receipt computer, EHR	Receiving high-quality medical services	Receipt computer	sophisticating BCP	
In-house information system	Reducing time for waiting	Telemedicine system	Increasing revenues	
Telemedicine system	Proper charging of medical expenses Proper charging of medical expenses	SPD (supply, processing, and distribution) system	Reducing material costs	
Haalth management convices	Reducing expenses for outpatient treatment		Reducing film costs	
Medical-related web services	Receiving high-quality (or suitable) medical	In-house information system	Reducing general costs	
	services		Reducing personnel costs	
Beneficiary: Insurers			Improving the working environment	
Systems	Expected effects and benefits	EMC	Increasing safety	
EMC, EHR	 Proper charging of medical expenses (insurance benefits) 	Operation support system	Improving the working environment	
On-line billing system	Reducing operating costs	Beneficiary: Others		
Telemedicine system	• Proper charging of medical expenses (insurance benefits)	Systems	Expected effects and benefits	
Health guidance support		On-line billing system	Reducing operating costs	
Health guidance support	Reducing costs for health guidance (including outpoursing costs)	EMC/receipt computers	 Increasing development efficiency, developing innovative equipment 	
system	outsourchig costs)			

* Items within yellow frames are items subject to quantitative evaluation and others are items subject to qualitative evaluation. Estimate values of the effects are calculated on the basis of the current diffusion rate.

User Recognition and Appreciation of Public ICT Service

- As for ICT utilization in the public sector, the largest challenge is the improvement of residents' recognition of the value and purpose of ICT introduction in almost all the local governments, less than half of the residents recognize the purpose.
- To the question "Do you want to use ICT?", more than half replied "No."; it shows a significant gap with the satisfaction ratio among the respondents having actually used the services via ICT (almost 80%).

• As for the questions concerning the reason for not wanting to use ICT, "Not experiencing inconvenience with the conventional system" is the most frequent reply; the respondents having no experience of receiving ICT-based services do not feel any advantage in stopping use of the conventional system and actively shifting to new services.

Recognition Rate of Public ICT-service Names

• Services other than tax-related services are not so well recognized; they are recognized by less than 50%.



• "Not interested in using next time" is overwhelming, despite the high satisfaction.



• Services other than tax-related services are not so frequently used: they are used by less than 10%.

Usage Rate of Public ICT Services



• "Not interested in using next time" is overwhelming, despite the high satisfaction.



Why Not Use Services: Comparison of Local Government Responses with Residents Responses

• "Satisfied with the conventional system; no inconvenience," is the most frequent reply, higher than anticipated by the local governments.



ICT, Driving Force of Local Economic Growth



CHAPTER 2: TRANSFORMATION OF ICT INDUSTRIES AND SOCIETY, INDUCED AND ACCELERATED BY "SMART REVOLUTION"

Now fully available ubiquitous network environment, backed-up by the Internet, that has become part of the social infrastructure, combined with Big-Data utilization, is leading to the "Smart Revolution."



Problems emerging with the Internet's transformation as Social Infrastructure

Along with the Internet becoming part of the social infrastructure, a variety of problems, such as trends of network regulations or necessity of counter-cyber-attack measures have become apparent and more severe.

64.29

information sources

56.85

Regional or international nedia (satellite broadcasts

47.62

news

spapers, radio, n portals)

Tunisia (n=105)

40.00

Government media (TV, newspapers, radio, news

portals)

Regulations or Control of the Internet in the Emerging / Developing Countries

•In the "Arab Spring," social media played a big role.



Dubai School of Government (government-affiliated think-tank)

- •Emerging/developing countries are going to regulate the net or strengthen the government, as a response to the role of social media, etc. in the "Arab Spring."
- •At various international meetings, what cyber-space should be has been discussed; Japan has proactively participated multi-bilaterally in those discussions.

Cyber Attacks have become more sever (especially Targeted Attacks)

•The number of targeted attacks incidents has significantly increased; even middle/small-sized corporations are targeted.



(Source) Report by Symantec

•Note that the actual information-security-infringement damages of corporations have tended to decrease; counter-attack measures have been employed by corporations



(Source) 2011 Communications Usage Trend Survey

•Government-businesses collaboration has been strengthened since the incident of MHI last September

The Information Security Policy 2012, including targeted-attack-counter measures has been plotted-out.

"Smartphone Economy" (1): Changing Smartphone Market

Along with the wide-adoption of mobile phones, the communication terminal market has rapidly grown and transformed its structure; as a result, telecommunications carriers have shifted their business into value-added areas.

Trends in World-wide Smartphone Sales (2009 to 2011)

•IOS / Android terminals have driven the terminal market growth; as a result, Apple and manufacturers in China, Korea, and Taiwan boosted their sale world-wide.



<Proportion by major manufacturer>



Trends in the Business-performance of Japan's Major Mobile Network Operators (2009,3Q to 2011,3Q)

•KDDI and Softbank added to their value-added revenue; this contributed to the total revenue growth.



Latest Sales and Operation-profits of Top 3 US Carriers

•Shifting their business to smartphones with high ARPU, they have gradually added to their sales; however, their operating profits in the 4Q of 2011 declined significantly.



"Smartphone Economy" (2): Layer to Layer Analysis of ICT Internet-related Industries 19

- Market size: In the Japanese market, the network-layer has a large share of more than 50%; in the US or world market, the terminal layer has a large share of more than 50%.
- Growth Rate: In the Japanese, US, and world market, the upper layers (contents, application, and platform show high growth rates.



Shares or concentration of some services/platforms have drastically changed through the terminal-shift to smartphones.



"Smartphone Economy" (4) : Changes in User Behavior, and Economic Ripple-effect 21

Mobile-related expenses and service-usage increased through the smartphone-shift; the economic ripple-effects to the consuming market is 7.2 trillion yen annually, and 338 thousand jobs were created.



"Smartphone Economy" (5): Why Users Choose Smartphone?

• Web-poll surveys on what features of feature-phones and smartphones are attractive, and whether such attractiveness varied after the smartphone's emergence on the market, show the following: the availability of net-services gained attractiveness after the emergence of smartphones; the terminal price lost its attractiveness; others shows no significant variations.

The answers to the question in the same survey on the reason of the shift to smartphones are as follows: more than half of the respondents chose "Browsing the Internet through the same windows as those shown on PCs; attractiveness of contents/applications, or attractiveness of appearance ranks high.



Reasons for the shift to a smartphone

(multiple answers)

The most decisive factor (only one answer)

* Featurephones assumed here are the conventional type of terminals which can access Internet services for mobile phones (e.g., i-mode terminals)

Recognition Survey on Information Media Utilization (1)

For investigating the smartization-influence of the media-environments, surveys on people's appreciation of information media (mail-survey, both multianswer and single answer were used) were conducted in terms of the following 5 items: "appreciation as the information source," "appreciation as entertainment," "credibility," "usefulness," and "gossip sources." As for the appreciation of individual items (single answer), TV is the most-highly appreciated at present; net-related media is distinctive in the interannual, with especially high appreciation by 10's and 20's Appreciation of Individual Media — Most Appreciated in the interannual(single Appreciation of Individual Media — Most Frequently Used (single answer) answer) 100(%) 0 10 20 30 40 50 60 70 80 90 50 90 100(%) 0 10 20 30 40 60 70 80 Internet As As information information source source TV Appreciation Radio As As Newspaper/magazine entertainment entertainment Text news sites Video news sites Credibility Credibility Other general video sites Internet radio Social media Usefulness Usefulness Government/corporate site Other general sites Gossip sources Gossip sources Coverage: all subjects (1,625; excluding non-respondents) Coverage: all subjects (excluding non-respondents) Appreciation as Information Appreciation as Appreciation as Information Appreciation as Source Entertainment Entertainment Source 10 20 30 40 50 60 70 80 90 100(%) 0 0 10 20 30 40 50 60 70 80 90 100 (%) 10 20 30 40 50 60 70 80 90 100(%) 0 0 10 20 30 40 50 60 70 80 90 100 (%) Total Total 10-29 10-29 age group By age group 30-49 30-49 By 50-69

50-69

Recognition Survey on Information Media Utilization (2)

- Comparison on positive acceptance (multi-answer) of the categories: the image media (TV and other video sites, including YouTube and Nico Nico Douga), and the document-oriented group (News papers/magazines, and social media, including Mixi, Gree, Facebook, and Twitter)
- Radar charts displaying the difference of the positive acceptance in terms of the evaluation items show declining trends in the generation difference in both categories of the entertainment and gossip.
- Generation-by-generation analysis shows the closing of the evaluation difference by the 10-to-20s; particularly for document-oriented media, social media leads over newspapers/magazines for evaluation as "entertainment" and "gossip source."



Recognition Survey on Information Media Utilization (3)

- Comparison of the acceptance of the individual media in terms of "appreciation as the information source," and "appreciation as entertainment", displaying the following on the graphs below in a aggregated way: media-utilization, present appreciation (multi choice), and trends in the appreciation in past three years (multi choice)
- The graphs show the followings: in terms of "appreciation as the information source," news and document-oriented sites are appreciated as highly as the four-major media, and at the same time add to their appreciation; in terms of "appreciation as entertainment," particularly TV is appreciated the highest; however, because the appreciation gains of "social media" and "other video sites" are the highest, the trends of those are worth to watch.



The above graphs are drawn by converting the present appreciation for each indicator (five-point scale) and the change in the appreciation over the last three years (the difference between the percentage of "giving higher appreciation" and that of "giving lower appreciation") into deviation values, and plotting these values on the horizontal and vertical axes. These graphs can be used to compare the relative positions of the respective media.

CHAPTER3: LESSONS OF THE GREAT EARTHQUAKE AND THE ROLES OF ICT

Information Behaviors and Usage of ICT in the Disaster Areas

- Evaluating the media: during the time of the occurrence of the earthquake, the radio broadcasting was highly evaluated for its capability of instantaneous information-delivery; for the period just after the occurrence of the earthquake, the mobile phone and the e-mail were positively evaluated for their bi-directional features, and also the terrestrial TV broadcasting for its image-delivery features.
- Media-utilization rate: as for the information gathering on the earthquake and tsunami, media with high-instantaneous capacity and broadcasting feature were highly used; however, the usage rate of radio-broadcasting, the highest rated among the media, was just over 40%.
- Utilization of the Internet: some skilled users realized information gathering and communication with region-specific and instantaneous information-provision capability.
- Evaluation of mobile phones: mobile phones, having been so highly evaluated as ready-to-use information terminals that most people evacuated with them, were highly criticized in terms of the serious negative-effects caused by their inability of use lasting for many hours.



Information Behaviors and Usage of ICT in the Neighboring Areas

- Initial media used to learn of the earthquake: TV is ranked the highest with a ratio of 53.4%; on the other hand, social media are ranked low, for example the usage ratio of SNS was 0.9%.
- Most valuable media for obtaining disaster-related information: TV with a ratio of 63.1%, ranked far higher than other media.
- Media to obtain necessary information: according to the answers to the questionnaire, news-sites, with a ratio of 87.3%, ranked high at almost the same level as TV (88.2%).
- PC-mail and PC-web: only 22.1% and 11.3% respectively chose the answer "totally disconnected"; those media were in usable conditions.
- The people who were on their way home after the earthquake had high demand for the goods critical for information-gathering, such as portable TVs, and mobile phone batteries.



Activities for business continuity and utilization of ICT at and after the earthquake [(Local governments)

- Local governments pay attention to "Prompt and firm information provision" (the 68.5% of them chose) as a serious challenge of information provision to the residents at and after the earthquake.
- After the earthquake, about 70% of the local governments decided to enhance the utilization of the Internet; it shows that they have altered their policies.
- In terms of the preparation of BCPs (Business Continuity Plan), almost 40% of the prefectural governments have prepared their plans; however, only 3.5% of the town / village offices have such plans.
- The recognition of BCP, since the Great Earthquake, has been improved among the local governments; the 34.6% of the city governments and the 33.6% of the town/village offices are in the discussion phase of such plans.
- As for cloud-computing, about 80% of the local governments are in the discussion phase of its introduction.



"What actions are taken with regards to the experiences of the Great Earthquake?"



State of Cloud-computing Introduction Study in Local Governments



Activities for Business Continuity and Utilization of ICT At and After the Earthquake 30 (Private sector)

• Only 40% of the respondents have already prepared BCPs or started the study since the Earth quake; the awareness stays low in comparison to the local governments.

- Large enterprises are promoting BCP preparations the 43.3% of the respondents replied "yes"; medium/small-sized enterprises lag behind only 14.0% have BCPS; it suggests the difference due to the corporate size.
- Among large-sized enterprises, the awareness of the importance of ICT for BCP has grown; however, the half of medium/small-sized enterprises stay in the low awareness; it shows that bi-polarization is going on.
- Cloud-computing has already been introduced in about 30% of the whole respondents; on the other hand, the 45.2% of the large-sized enterprises, and about 60% of the medium/small-sized enterprises have shown no interests in using cloud-computing.

State of BCP Preparation in private sector

State of Cloud-computing Utilization in private sector





State of Cloud-computing Introduction Study in private sector

