Chapter 3

Possibilities Engendered by a Symbiotic Networked Society

Section 1

Realization of a Ubiquitous Networked Society

1. Realization of a Ubiquitous Networked Society

The Information and Communications in Japan 2004 White Paper stated: "A ubiquitous networked society is becoming a reality in which anyone with any device at any time from any place can access a network and freely exchange information." ICT has become deeply immersed in our society and has developed into a public infrastructure that sustains citizen's lives and corporate activities. The ubiquitous networked society is no longer a vision; it is quickly becoming a reality.

Section 2

Possibilities and challenges of Social Media

1. Despite ICT's penetration of society, challenges remain for attaining an abundant, user-friendly society

The number of single-person households, seniors living alone, and single-parent households is forecast to rise[36] in the future, prompting concern about people becoming progressively segmented and isolated from society. As discussed in Chapter 2, one of the government's aims is to realize a society in which no one is excluded from mutual support networks — in other words, an inclusive society for all. ICT is expected to play a definite role in forming networks that will assist the attainment of this kind of inclusive society.

2. Expectations for social media

Social media is seen as having the potential to contribute positively to the real world in several ways. These include bringing people together and reviving or creating bonds between them as well as resolving personal concerns and difficulties faced by individuals. In the context of social isolation mentioned above, social media is expected to play a definite role in providing mutual support networks within individual's personal social relationships. Accordingly, we have verified the ways in which social media affects interpersonal relationships and people's real-world activities and analyzed social media's possibilities and challenges.

3. Possibilities and challenges of social media

(1) Current status of social media use
A. Number of social media services currently used and past usage
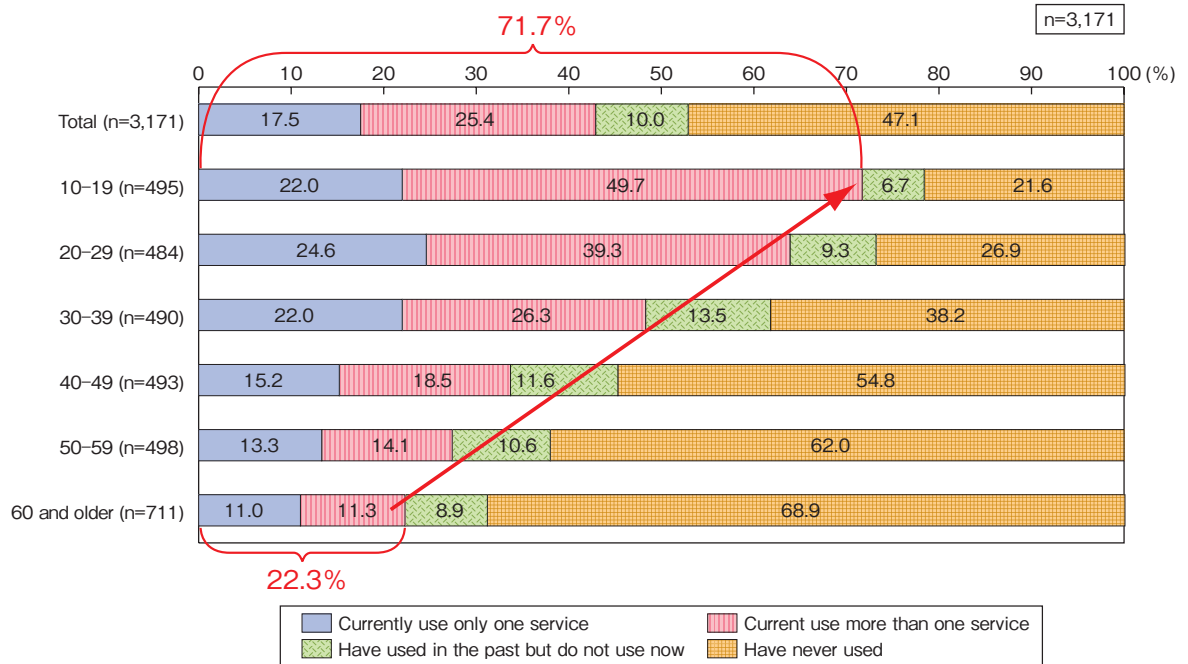In our study of the number of social media services currently being used and those that have been used, 42.9 percent of respondents were currently using at least one social media service. Of all respondents, 17.5 percent said they used only one service, while 25.4 percent said they used more than one service. Thus, nearly 60 percent of social media users use more than one service.[37] Additionally, 10.0 percent of respondents said they had used a social media service in the past but currently do not.

The breakdown by age reveals a substantial difference in current usage rates between age brackets. The younger the demographic, the higher the usage rates: for example, the usage rate between 10 and 19 was 71.7 percent, whereas the usage rate 60 and older was just 22.3 percent. Furthermore, the younger the age bracket, the more multiple service users. For example, almost 70 percent of social media users between 10 and 19 use multiple services, whereas only about half of social media users 60 and older use multiple services (Figure 2-3-2-1).

B. Types of social media currently used
In general, men tend to use social media more than

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36 The circumstances behind this trend are believed to be the declining birth rate and aging population, people waiting until later in life to marry, and an increase in divorces, among other factors.

37 This percentage is obtained by dividing the number of multiple social media service users (25.4%) by the number of current social media users (42.9%).

Figure 2-3-2-1   Number of social media services currently used and past usage (by age)

71.7%

n=3,171

22.3%

- Currently use only one service
- Current use more than one service
- Have used in the past but do not use now
- Have never used

(Source) Ministry of Internal Affairs and Communications "Survey on Possibilities Resulting from a Next-Generation ICT Society" (2011)

Figure 2-3-2-2   Types of social media currently used (by age and by generation)

(Source) Ministry of Internal Affairs and Communications "Survey on Possibilities Resulting from a Next-Generation ICT Society" (2011)

women — a trend particularly pronounced with Twitter and Internet message boards. Women, however, use blogs in greater percentages than men. Viewing the results by generation — young adults, middle-aged, and seniors[38] — shows that the young-adult segment has a higher usage rate of SNS, Twitter, and microblogs than the other two segments. On the other hand, the local SNS usage rate was highest among seniors, the Internet message board usage rate was highest among the middle-aged, and there was no substantial different in blog usage rates among the three segments. These results
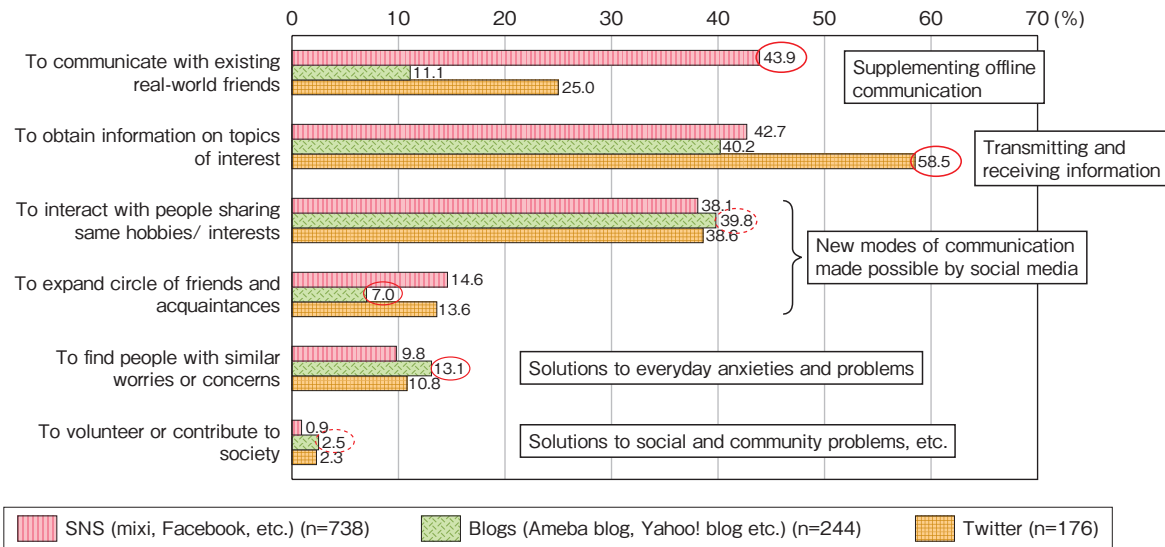
indicate these three types of social media are being widely used by people other than young adults (Figure 2-3-2-2).

C. Young people are driving social media use

It holds that young people are driving the real-time N-to-N sharing of information on Twitter, SNS, and other social media services because they are flocking to mobile devices that can access social media instantly from anywhere and adeptly making use of multiple social media services.

38 The young-adult segment was defined as 10 to 39, the middle-aged segment as 40 to 59, and the senior segment 60 and older. (The same definitions hold true for other generational analyses in this chapter.)

Figure 2-3-2-3　Purpose of using social media (by social media type)

To communicate with existing real-world friends	SNS: 43.9 / Blogs: 11.1 / Twitter: 25.0	Supplementing offline communication
To obtain information on topics of interest	SNS: 42.7 / Blogs: 40.2 / Twitter: 58.5	Transmitting and receiving information
To interact with people sharing same hobbies/ interests	SNS: 38.1 / Blogs: 39.8 / Twitter: 38.6	New modes of communication made possible by social media
To expand circle of friends and acquaintances	SNS: 14.6 / Blogs: 7.0 / Twitter: 13.6	
To find people with similar worries or concerns	SNS: 9.8 / Blogs: 13.1 / Twitter: 10.8	Solutions to everyday anxieties and problems
To volunteer or contribute to society	SNS: 0.9 / Blogs: 2.5 / Twitter: 2.3	Solutions to social and community problems, etc.

SNS (mixi, Facebook, etc.) (n=738)　Blogs (Ameba blog, Yahoo! blog etc.) (n=244)　Twitter (n=176)

(Source) Ministry of Internal Affairs and Communications "Survey on Possibilities Resulting from a Next-Generation ICT Society" (2011)

(2) Purposes and results of using social media

A. Analysis by social media type

We compared the purposes of using social media looking at SNS, blog, and Twitter users.[39] SNS users were by far the most likely to choose "to communicate with people who are already friends," Twitter users were the No. 1 selectors of "to search for information of interest," and blog users were more likely to choose "to find people with similar problems or concerns." Blog users were less likely to use social media "to widen my social relationships," yet they were slightly more likely than other users to use social media "to find people with the same interests or likes" and "to engage in volunteer activities or contribute socially" (Figure 2-3-2-3).

Given that nearly three in five users use multiple social media services, we can infer that social media users selectively employ social media for different purposes.

B. Analysis of all social media types

Figure 2-3-2-4 summarizes the responses of all social media users about the benefits of using social media. The two most frequently quoted benefits were "obtained information of interest" and "networked with people with the same interests or likes." Furthermore, a large number of respondents (36.8 percent) selected "resolved schooling, job-hunting, marriage, child-raising, or other personal or family problems," indicating that using social media has resolved personal concerns and problems.

C. Interpersonal collaborations via social media

The true state of social media's impact on the real world emerges when the purpose and results of using social media are considered together. Evidenced by responses such as "to find people to work together," "to find people to engage in volunteer or social-contribution activities together," "to find people with similar problems or concerns," and "to share information with neighbors and to serve in community activities," people are recognized as using social media to work together to resolve personal concerns or problems and to resolve social and local community problems. Furthermore, respondents selected as the results of using social media answers such as "resolved schooling, job-hunting, marriage, child-raising, or other personal or family problems," "resolved health-related concerns or problems for me, my family, or my relatives," "found a business partner," "resolved neighborhood or community concerns or problems," "helped to change social structures," and "influenced politics or government measures."

Thus, the positive real-world impact of social media is that it acts as a conduit for interpersonal collaborations and problem resolution.
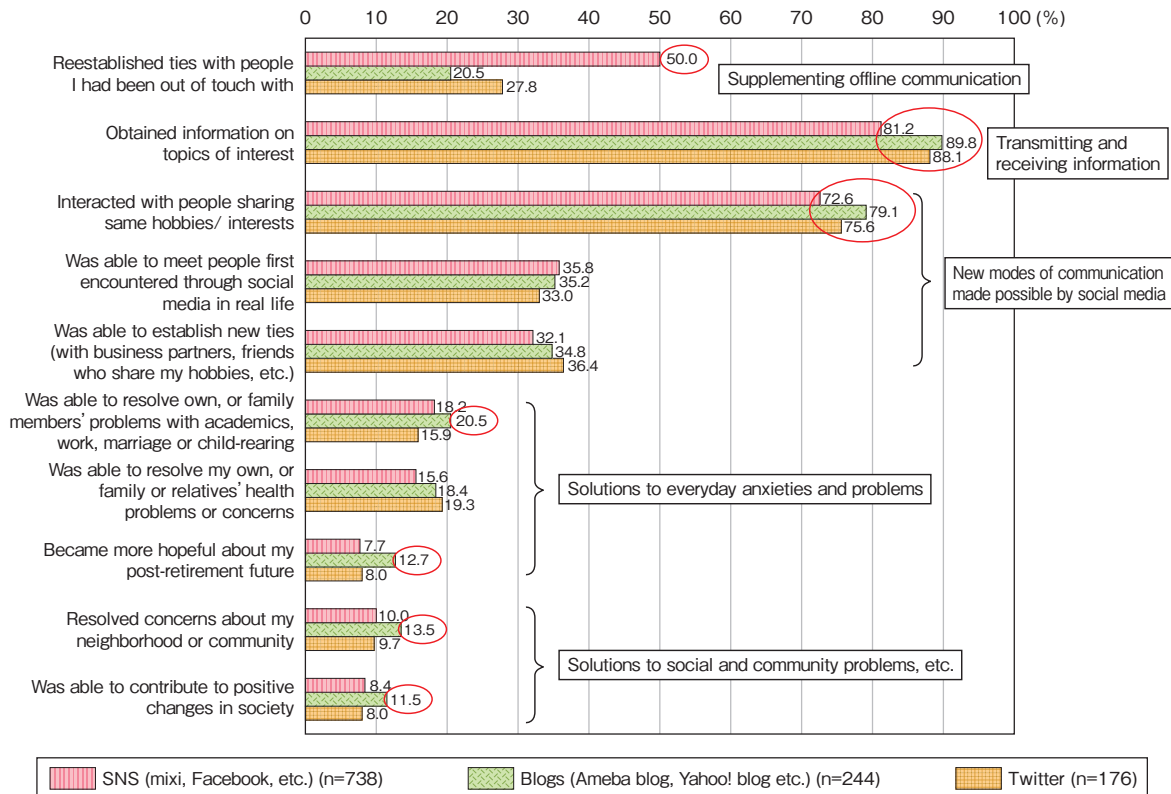
(3) Benefits and possibilities of social media

A. Analysis of the "obtain information of interest" benefit

In respect to social media, 24.6 percent of the respondents said it was the media they most frequently used to obtain "information on friends and acquaintances" (SNS

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39 In the study, respondents were shown 22 purposes of using social media and allowed to select multiple answers. In the analysis stage, frequently selected answers were identified and the social media benefits divided into five categories: "complement offline communications," "send and receive information," "new communications triggered by social media," "resolution of personal concerns or problems," and "resolution of social or local community problems." These results were broken down by SNS, blogs, and Twitter, as these were the most frequently mentioned social media on which users engaged in their favorite communities. (The same basic methodology was employed in following analyses broken down by SNS, blogs, and Twitter.)

Figure 2-3-2-4　Results of using social media

(Source) Ministry of Internal Affairs and Communications "Survey on Possibilities Resulting from a Next-Generation ICT Society" (2011)

was selected by 16.5 percent of the respondents). Similarly, 21.2 percent of the respondents named social media as the most important media for obtaining "information on interests and likes" (SNS was selected by 6.4 percent and Internet message boards by 5.2 percent), 7.6 percent named social media for "information on volunteer and social activities" (local SNS was selected by 2.4 percent), and 6.5 percent named social media for "information on sharing or rentals" (SNS was selected by 1.8 percent). Thus, social media is an important source for these kinds of information. SNS, in particular, had a high response rate in many of the information categories.

B. Analysis of the "complement offline communications" and "new communications triggered by social media" benefits

(A) State of community involvement by social media users

The study asked respondents who used social media for the three social media communities they most frequently used.[40] By far, the most common response (at 66.5 percent) for the most used social media community was "groups of friends with the same interests or who I socialize with."

The respondents were asked which type of social media they used to participate in the top-six most frequently used communities. The results showed that SNS was very frequently used for keeping in touch with old school friends and that local SNS was used comparatively often for volunteer activities and neighborhood associations and councils.

(B) Viewing and posting

Respondents were asked about how they used social media in terms of viewing and posting. Analyzing the results by social media type found that most blog users (67.2 percent) and Twitter users (65.3 percent) "both view and post" on social media. Blog users, however, were found to have clearly different usage patterns, in that the percentage that "primarily only post" (4.9 percent) was higher than other social media users and that the percentage that "primarily only view" (27.9 percent) was the lowest among social media users. These findings show that blog users tend to post more, either updating their own blog or posting to other blogs, than users of other social media types.

40 Respondents were shown 11 community types to choose from: "groups of friends with the same interests or who I socialize with," "groups of old school friends," "groups of close workplace colleagues who now work elsewhere," "study or practice groups," "volunteer groups," "neighbor association or council groups," "PTA groups," "co-op or consumer groups," "agriculture or other professional groups," "labor union groups," and "neighborhood movement or citizen campaign groups."

(C) "Complement offline communications" and "new communications triggered by social media"

To this point, we have confirmed that many social media users have benefited from interacting with others — such as "networked with people with the same interests or likes" and "reconnected with people I'd lost touch with" — and we have confirmed the degree of community involvement and social media posting. Next, social media users were asked whether these online interactions had deepened bonds with others with respect to "bonds with family and relatives" and eight other categories.[41] The most common answer, given by 69.6 percent of the users, was that social media exchanges had deepened "bonds with distant friends and acquaintances." This response was followed in order by "bonds with school friends and acquaintances," "bonds with friends and acquaintances who live nearby," "bonds with people younger or older than myself," and "bonds with family and relatives." In view that engagement over social media deepen bonds with existing friends made in the real world, we can conclude that social media does indeed demonstrate the benefit of "complementing offline communications."

Given that 64.3 percent of social media users answered that social media engagement had deepened "bonds with people met online," we can also conclude that social media fosters "new communications."

Incidentally, looking at the results by social media type finds that blog users were the least likely to say that exchanges had deepened bonds.

We also asked social media users about the number of people they had first met through social media instead of in person.[42] A large majority, 75.1 percent, said they had met at least one person online, and the most common number, given by 31.4 percent, was "1 to 5 people." Examining the results by social media type did not reveal any significant differences in response rates.

When asked, "have you met in real life anyone you first met through social media?" 47.7 percent said yes. By generation, 53.5 percent of the middle-age segment and 36.8 percent of the senior segment said yes, and by social media type, 51.1 percent of SNS users and 40.2 percent of blog users said yes, indicating that there are differences in terms of age and social media type.

C. Analysis of the "resolution of personal concerns or problems," and "resolution of social or local community problems" benefits

We analyzed the relationship[43] between the frequency of online-community involvement through social media[44] and the extent personal concerns or problems or social or local community problems have been resolved by using social media.[45] Two correlations, one each for SNS use and Twitter use, were found between the frequency of online-community involvement through social media and the extent personal concerns or problems, etc., have been resolved by using social media[46] (Figure 2-3-2-5).

D. Social media's possibilities

This section arranges some conclusions about social media's potential, in light of the varied benefits of social media confirmed in the analysis above.

By using social media, social media users deepen bonds in existing personal relationships, communicate with a diverse range of people, and deepen bonds in new personal relationships by, for example, meeting in real life people first met through social media. Even as community and family ties wane, social media has demonstrated that it can complement offline communications and foster communications with new people.

Furthermore, many social media users have been able to resolve personal concerns or problems, which is illustrated by responses such as "resolved schooling, job-hunting, marriage, child-raising, or other personal or family problems," "resolved health-related concerns or

41 For each of the nine categories, such as "bonds with family and relatives," the percentage of social media users who had deepened bonds with others through social media engagement were calculated by dividing the total number of social media users who answered that social media "has deepened" or "has somewhat deepened" bonds by all social media users, excluding those that answered they had "no social media exchanges" with the particular category of people.

42 Respondents were shown nine options to choose from: "1 to 5 people," "6 to 10 people," "11 to 20 people," "21 to 30 people," "31 to 50 people," "51 to 100 people," "101 to 200 people," "201 people or more," and "have met none."
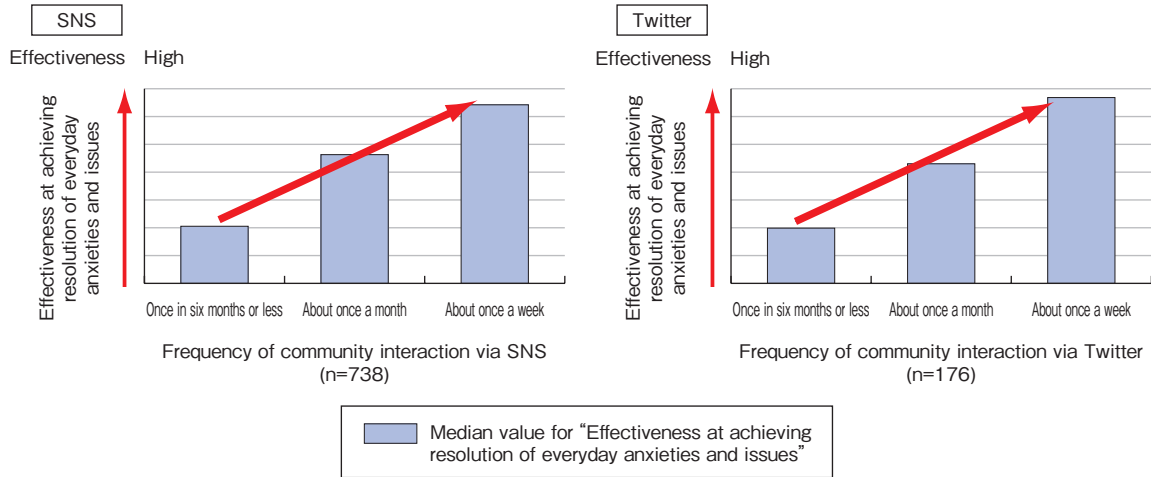
43 Respondents were shown 12 communities, including "neighbor association or council groups" and "groups of friends with the same interests or who I socialize with," and then asked to select in order the three communities they most frequently participated in through social media. Next, they were asked to select how often they participated in the three selected communities. From these responses, the frequency of involvement in the most frequently used communities was identified and used for this analysis.

44 Respondents were asked to rate the extent the use of social media had resolved problems in seven categories: "resolved schooling, job-hunting, marriage, child-raising, or other personal or family problems," "resolved health-related concerns or problems for me, my family, or my relatives," "improved relations between family members or relatives," "improved human relationships at school or work or improved work performance or grades," "resolved concerns or problems with income or assets," "gave hope for life in old age," and "resolved neighborhood or community concerns or problems." Respondents could answer "Strongly agree," "Somewhat agree," "Somewhat disagree," or "Strongly disagree" for each benefit. The responses were then used for this analysis.

45 The extent personal concerns or problems or social or local community problems have been resolved was calculated using a principle component analysis of the seven categories given in Footnote 44. Principle component analysis is a method of combining multiple variables that may possibly be correlated and finding one or a few uncorrelated variables called principle components. In this case, one component that accounted for most of the variability in the data was found from the answers to the seven categories, and this was defined as the principle component that indicated the extent personal concerns or problems or social or local community problems have been resolved.

46 Figure 2-3-2-5 was created by taking the extent personal concerns or problems or social or local community problems have been resolved calculated for each respondent and finding the median value at each frequency of online community exchanges through either SNS or Twitter.

Figure 2-3-2-5 Relationship between the frequency of online-community involvement through social media and the extent personal concerns or problems or social or local community problems have been resolved (by SNS and Twitter)

(Source) Ministry of Internal Affairs and Communications "Survey on Possibilities Resulting from a Next-Generation ICT Society" (2011)

problems for me, my family, or my relatives," and "gave hope for life in old age." Further evidence that "solving problems" is a key benefit is the fact that some respondents quoted "to consult or question a specialist or person with experience" as a reason for meeting in real life someone they became acquainted with through social media. Additionally, the survey results showed that the more frequently a person engages with an SNS or Twitter community, the more likely that person resolves personal concerns and problems using social media.

Social media has many benefits and, although it is understood that many people use different social media types for different purposes, we have confirmed that people do indeed use social media as a tool to connect people together, deepen their bonds, address personal real-world concerns and problems, and support each other. The use of social media, which is free of time or location limitations, is expected to help people who are in danger of becoming isolated from society to form mutual-support networks and, thereby, lead to a society that includes a wider section of people through the power of ICT.

(4) Challenges with social media

A. Concerns felt with using social media

When people who currently use social media were surveyed about the concerns they felt, it was discovered that many people have concerns about their personal information, as exemplified by such responses as "personal information theft," "illegal use of personal information," "privacy infringements," "inability to delete my personal information," and "recommendations and other information that make use of my personal information or logs of my online activities." Blog users were seen in particular to have a higher degree of concern, indicating that blog users tend to post frequently even as they harbor concerns about their personal information.

B. Reasons for not using social media

When asked for their reasons for not using social media, the most common answer by non-users was "no interest." Apart from this response, though, many of the quoted reasons were connected to personal information — "don't want others to know my personal information" (18.2 percent), "don't want to be known by the general public (even if I participate anonymously people who know me can still identify me)" (9.9 percent), "potential for my profile to be abused" (7.5 percent), and "be personally identified" (6.5 percent). Other frequent reasons were "potential for spam or scams" (17.9 percent) and "no opportunity to participate" (15.7 percent).

C. Personal information posted online and use of real names

(A) Personal information posted online

Social media users were questioned about the personal information they post online when they use social media in terms of information made public to all Net users and information revealed only to friends on social media. Filtering the results by social media type shows that SNS users tend to disclose virtually all their information including their address, photos, workplace or school, real name, academic background, job, date of birth, blood type, and birthplace. Twitter and blog users, however, tended to avoid posting all their personal details. Still, a high percentage of blog users do post their family details, email address, and interests and likes. Whether made public to all Net users or revealed only to friends on social media, the most commonly posted personal information included "year of birth," "month and day of birth," "blood type," "birthplace," and "interests and likes."

Looking at the personal information made public to all Net users when using social media by generation finds that a high percentage of young adults post details such as "workplace or school," "academic background," "date

of birth," "blood type," "birthplace," and "interests and likes" and that this percentage among the middle aged and seniors was low. Conversely, a higher percentage of seniors than young adults posted such information as "phone number," "address," "real name," and "email address." A possible explanation for this tendency is that seniors post this information because they are more oriented toward one-to-one communications.

(B) Use of real names

Social media users were surveyed about whether they used their real name, a pseudonym linked to their real-world identity, or a pseudonym not linked to their real-world identity for each social media type they used.[47] Real names were used by 20.9 percent of SNS users, 5.5 percent of blog users, 7.2 percent of Twitter users, 4.0 percent of Internet message board users, 17.5 percent of local SNS users, and 9.6 percent of microblogs users. Thus, a relatively high percentage of SNS and local SNS users reveal their real name. Pseudonyms not linked to their real-world identity were used by 68.4 percent of Internet message board users, a particularly high percentage, and by more than half of blog and Twitter users.

By generation, seniors were the most likely to use either their real name or a pseudonym linked to their real-world identity and the least likely to use a pseudonym not linked to their real-world identity.

D. Internet and real-world awareness and behavior

Social media users were asked about differences in awareness and behavior between the Internet and the real world. The results, in one sense, held that there were differences in awareness and behavior, such as "it is easier to break off an Internet-based relationship than a real-world relationship" (63.6 percent), "I can be more forthcoming on the Internet than in the real world" (60.3 percent), and "on the Internet, it is more possible to have equal relationships, regardless of age, profession, or social standing, than in the real world" (58.3 percent). Yet other results suggested that social media users' behavior (expressions) on the Net were governed by an awareness of their impact on their real-world self, such as "I act (or express myself) spontaneously more often on the Internet than in the real world" (48.3 percent), "I act (or express myself) on the Internet without as much thought as in the real world" (48.2 percent), and "as long as I act (or express myself) anonymously on the Internet, it has no impact on my real-world self" (24.8 percent). In particular, that only one in four people said "as long as I act (or express myself) anonymously on the Internet, it has no impact on my real-world self" means

that three in four respondents were aware that their behavior (expressions) on the Internet are related to their real selves even if they act (or express themselves) anonymously.

Section 3

Expectations for a Symbiotic Networked Society

1. Changes brought about by the penetration of social media into people's lifestyles

So far we have learned that the young-adult segment is driving the utilization of social media and that people use social media for many different purposes. It is also evident that social media is used as a tool to enable interpersonal collaborations, solve problems, resolve personal concerns and problems, and to enable interpersonal support.

This section examines the prospects of future communication and broadcast networks and their environments. As stated in Section 1, as ICT naturally integrates into society, a ubiquitous computing environment is coming into being that joins people to people, people to machines, and machines to machines in N-to-N relationships. It is conceivable that in the near future an advanced ubiquitous networked society will form with even stronger connections between real space and cyberspace because of the prevalence of M2M communications and because all devices will be connected to the Internet. It is also imaginable that broadcast networks based on 1-to-N communications, communication networks based on 1-to-1 communications, and social media based on N-to-N communications will merge in an organic, complementary fashion and that an environment will form in which networks and devices can freely associate according to each user's needs while taking advantage of the strengths of each network and media.

As for future changes in ICT usage, we will likely see the rapid advancement of ICT usage in which the user, and not the supplier, is the main entity; for example, development of products and services through the wisdom of crowds. And while a movement to share goods, services, and information is growing, ICT is apt to spur on this movement with its mediation and matching functionality.[48]

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47 The question was asked for six social media types: SNS, blogs, Twitter, Internet message boards, local SNS, and microblogs. Users of multiple social media types gave an answer for each social media type they used.

48 Although businesses based on the sharing of goods have existed for centuries, some of the leading ICT-driven goods-sharing businesses include Zipcar, a car-sharing company, thredUP, which provides a used kids clothing exchange service, and Etsy, which shares handmade and vintage goods. Cloud services can also be mentioned in the migration from ownership to use.

2. Expectations for a symbiotic networked society

(1) Prospects for a symbiotic networked society

If, based on the social media analyses described above and based on the future direction of network environments and ICT usage, we were to sketch a vision of the ICT society that will emerge as social media use progresses and as it becomes part of people's everyday lives, we could characterize this society as an advanced ubiquitous networked society in which people, acting as the primary agents, support each other, which is inclusive of citizens from all walks of life, and in which ICT creates value by mediating interpersonal collaborations and resolving problems. Taking this a step farther, we could call such an ICT society with these characteristics a "symbiotic networked society." Although the symbiotic networked society is characterized by the positive factors given above, we have discovered challenges that need to be dealt with from our social media analyses. For example, it is clear that many current social media users are concerned about personal information theft, illegal use of personal information, privacy, and other personal information matters. Also evident is that some non-users are eschewing social media because of fears of personal information abuses and privacy worries. Another concern with the growth of social media is that, although N-to-N information delivery will become commonplace and individuals will be able publish information and collaborate over the Internet, it will be impossible in the flood of information to sort out credible or appropriate information. And as social media is used more and proliferates throughout society, it is very probable problems, including unforeseen problems, will crop up that will impact our lives and will require corresponding measures. To extract the maximum potential from social media and to minimize the negative aspects associated with its use, we will need current and future debate on points of contention accompanying the use of social media and we will need both technical measures and ongoing efforts to find a social consensus on these challenges.

(2) Expectations for a symbiotic networked society

A symbiotic networked society refers to a society in which social media and ICT has naturally integrated with society and that connects to the real world in a form that uses cyberspace connections and ICT to solve concerns, enable interpersonal support, and include a wide spectrum of citizens, or it can refer to a society with expectations for these to be realized.[49] In other words, a symbiotic networked society is a society in which the benefits of ICT, which has penetrated all aspects of society, are enjoyed by the broadest cross-section of citizens and in which citizens can lead rich, fulfilling lives. Users must be at the forefront of efforts to address the challenges discussed earlier, negative aspects associated with social media use must be minimized by addressing, as needed, problems that emerge in the future, and citizens must be able to have a tangible sense of the benefits of social media and ICT as we aim to realize a symbiotic networked society. Japan, in particular, with its recent experience as the victim of the Great East Japan Earthquake, now needs interpersonal support, interregional support, the formation and revival of bonds, the resolution of personal concerns, and the resolution of local community issues. Thus, it is here that we need ICT to help enable mutual support, form and revive bonds, solve personal concerns, and resolve local community issues as we aim to realize a symbiotic networked society.

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49 Research is underway at present in brain wave communications, multimodal interfaces (interfaces operated by combinations of the five senses, such as voice recognition and gesture interfaces), and other areas as ways to use ICT to include more members of society. Other countries are also moving ahead with initiatives that recognize similar issues. For example, the EU is continuing under the Digital Agenda for Europe (announced in 2010) six action items from e-Inclusion (announced in 2006): (1) promotion of ICT use by all people, (2) measures for an aging population, (3) improvement of digital literacy, (4) inclusion of ethnic minorities and immigrants, (5) improvement of social welfare in sparsely populated areas, and (6) advancement of eGovernment. Specifically, under the Ambient Assisted Living Joint Programme (AAL-JP), the EU is moving ahead with projects that will make qualitative improvements in the lives of older people, including (1) a project that ascertains the health of older people with wearable body sensors woven into clothes and (2) a project that detects in real time with neuromorphic image sensors that an older person living alone has fallen and can't move.