University of Massachusetts - Amherst
ScholarWorks@UMass Amherst

National Center for Digital Government | Research Centers and Institutes

8-6-2007

Increasing Social Capital for Disaster Response through Social Networking Services (SNS) in Japanese Local Governments

Alexander Schellong
Johann Wolfgang Goethe- University

Follow this and additional works at: http://scholarworks.umass.edu/ncdg

Part of the Computer Sciences Commons, Political Science Commons, and the Science and Technology Studies Commons

Schellong, Alexander, "Increasing Social Capital for Disaster Response through Social Networking Services (SNS) in Japanese Local Governments" (2007). *National Center for Digital Government.* Paper 11.
http://scholarworks.umass.edu/ncdg/11

This Research, creative, or professional activities is brought to you for free and open access by the Research Centers and Institutes at ScholarWorks@UMass Amherst. It has been accepted for inclusion in National Center for Digital Government by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

National Center for Digital Government

Increasing Social Capital for Disaster Response through Social Networking Services (SNS) in Japanese Local Governments

Alexander Schellong
Johann Wolfgang Goethe- University, Frankfurt am Main
Harvard University

alexander_schellong@ksg.harvard.edu / schellong@em.uni-franfkurt.de

NCDG Working Paper No. 07-005

Submitted August 6, 2007

This research project was funded by The University of Tokyo, 21st COE Program and a grant (Monbukagakusho) in aid for scientific research B: "Network Governance, Consensus Building and its Management". The researcher is sponsored by a Johann Wolfgang Goethe- University, Frankfurt am Main Doctoral Scholarship. Any opinions, findings, and conclusions or recommendations expressed in this paper are those of the author and do not necessarily reflect the views of the University of Tokyo, 21st COE Program or any other organization.

This material is based upon work supported by the National Science Foundation under Grant No. 0131923. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.

Increasing Social Capital for Disaster Response through Social Networking Services (SNS) in Japanese Local Governments

Alexander R. M. Schellong
J. W. Goethe- University, Frankfurt am Main
Harvard University

Researchers have argued that social networks within a community have positive effects on people's behavior in the four stages of disaster. The Japanese government is testing Social Networking Service (SNS) at the municipal level with the intention to improve community building, democratic processes and disaster management. This paper presents results from two case studies of local SNS in Yatsushiro city, Kumamoto prefecture and Nagaoka city, Niigata prefecture. While the Yatsushiro's solution seems to be sustainable, Nagaoka's SNS is in decline. Both have to compete with popular SNS like Mixi and lack critical mass. Based on the reviewed literature I discuss the role of local SNS in social capital development and disaster. I also present the concept of an individual disaster profile for future local SNS version by practitioners.

1. Introduction

Whenever there is a natural or man made disaster we can observe an emerging community structure (Quarantelli & Dynes, 1977). First, people help each other before they are supported or replaced by government entities. Administrators are trying to exploit this behavior in their disaster plans. When drafting preparation policies, however, they usually refer to people living in one geographical area as the community. Though, the idea of an all-embracing community and its territorial affiliation as a proxy would neglect its broadness beyond any area or underlying social networks based on shared interests and other factors (Durkheim, 1995/1965; Marsh & Buckle, 2001).

What happens when this is neglected by government could be observed in the old districts of Kobe, where the subculture issue was dominant and homogeneous regulations where applied, which created subsequent problems with dissatisfaction among residents. It also became clear after the Kobe earthquake in 1995 that many people had weak links with the larger community because their livelihoods were not rooted in the community. Immediately after the earthquake these missing stronger ties would have had an enormous influence on the speed of recovery (Shaw & Goda, 2004). Therefore, it is frequently asserted that vulnerability to natural hazards is directly related to a community's level of development (Buckland & Rahman, 1999). The level of development is commonly evaluated by economic and social indicators measuring average levels of physical and human capital accumulation, for example, income, productivity, education and life expectancy. Indicators of physical and human capital accumulation ignore the importance of community decision-making and management capacity. Consequently, researchers and emergency managers alike are now bringing back their attention to better understand the community.

Social capital is a useful concept that seeks to explain the characteristics required for effective and egalitarian community-based management capacity. There is evidence that a community which can be characterized by decentralized decision making through social networks using trusting and reciprocal

normative behavior leads to a more effective disaster response (Neal and Phillips 1995). At the same time technology is increasingly part of people's daily interactions and social relationships.

When using the term "Social Networking Services" (SNS) I refer specifically to social networking platforms such as Friendster, MySpace, Mixi or Xing. Social networking platforms gather information on users' social contacts, their attributes (i.e. interests), construct interconnected social network, and reveal to users how they are connected to others in the network.

It would be interesting to see how SNS can be utilized in or before a disaster. While, this exploratory study is not able to test this directly in a disaster it tries to do the following: First, the use of SNS has not been included in the discussion of researchers. Therefore, I take a closer look at the organizational arrangement, understanding, implementation and impact of local SNS through interviews of administrators, community- and NPO-members. Especially the perception of SNS, community and disaster of involved actors frame its implementation and utilization. Second, I try to find early proof that SNS can indeed be helpful before and in disaster by establishing a connection between research on social networking platforms, communities and disaster and the case findings. In general, the use of SNS by government in itself is an innovation and thus worthy of a detailed presentation and analysis.

I present the study in five sections. I begin the study with a brief discussion of disaster, social networks, social capital and social software literature. I then describe my research procedures. A subsequent section presents the two case studies. Based on reference from the reviewed literature I discuss both cases before I present some ideas for practitioners. My concluding section points to further research.

2. Disasters and social capital

In order to conceptualize and research disaster one needs to define the social unit and the phase of a disaster. I use (Dynes, 1991) definition of disaster as a normatively defined occasion in a community when extraordinary efforts are taken to protect and benefit some social resource whose existence is perceived as threatened. Disasters are events that can be observed in time and space. These events include natural, technological, social hazards or circumstances. These events have impacts on social units which can be as small as an individual.

The social units enact responses that are related to these impacts. The impacts include both physical damages and losses incurred by social units and the disruption of the unit's routine functioning and within its network of other social units. I refer to this network of social units a social network embedded into a system of other networks. Individuals interacting in microstructures, are embedded in meso level structures, which in turn are linked to macro level structures (Tindall & Wellman, 2001).

Social networks are presumed to be embedded in larger social systems some might refer to as a community which is not bound to one geographical area. The size of a network, its connectedness

(density), centrality, formalization, and hierarchy reflect important social conditions. (Streeter & Gillespie, 1992). There is consensus that social capital consists of resources embedded in social networks and social structure, which can be mobilized by actors (Dynes, 2002). Social capital is defined by its function. It is not a single entity and can be characterized by two fundamentals: It has some aspect of social structures, and it facilitates certain actions of actors within the structure.

> *Unlike other forms of capital, social capital inheres in the structure of relations between actors and among actors. If physical capital is wholly tangible, being embodied in observable material form, and human capital is less tangible, being embodied in the skills and knowledge acquired by an individual, social capital is less tangible yet, for it exists in the relations among persons (Coleman, 1988).*

Social capital can also facilitate productivity and coordinated action (Nahapiet & Ghoshal, 1998; Putnam, 1993). Coleman gives the example of a group within which there is extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without those assets (1988). Networks, particularly those characterized through weak ties (Granovetter, 1983) and structural holes (Burt, 2004) increase the efficiency of information diffusion through minimizing redundancy while at the same time encouraging cooperative/supportive behavior. Social capital therefore, lowers the transaction costs of information acquisition. One means by which information can be acquired is by use of social relations that are maintained for other purposes. A prescriptive norm within a community that constitutes an especially important form of social capital for the discussion of disaster is the norm that one should forgo self-interest and act in the interests of the collectivity. A norm of this sort, reinforced by social support, status, honor, and other rewards, is the social capital that builds young nations, strengthens families by leading family members to act selflessly in “the family’s” interest, facilitates the development of nascent social movements through a small group of dedicated, inward-looking, and mutually rewarding members, and in general leads persons to work for the public good (Coleman, 1988). In short, ones attachment to a community produces a willingness to contribute to its maintenance (Kasarda & Janowitz, 1974) and it this sense of moral responsibility is what produces, in times of threat to the community, real like a disaster or perceived, collective action (Bensman & Vidich, 1995; Hunter & Suttles, 1972; Jannowitz, 1952). Furthermore, the social resources stream of network analysis has shown that success in a non-routine activity like job finding is enhanced by access to weak ties (Granovetter, 1983). Kin, non-surprisingly serve as the most important sources of informal support in routine and crisis situation (Haines & Hurlbert, 1992; House, Umberson, & Landis, 1988; Vaux, 1992). Li has similar findings for the pre-disaster period in her study of the Chinese Tangshan earthquake where the most frequently reported source of disaster information were relatives and friends (1991). In fact, access to social support is

associated with strong rather than weak ties and homophilous rather than heterophilous (Lin, Woelfel, & Light, 1985) and the dense networks that are associated with them (Hurlbert, Haines, & Beggs, 2000). Wellman and Wortley note that the support provided is often specialized according to the primary nature of the relationship (1990). This underlines Jannowitz's concept of communities of limited liability (1952). Communities of limited liability are intentional, voluntary, and partial in the level of involvement they engender. Beyond this members share few ties. Commitment can be narrowly defined. While the produced negative and positive externalities of a group need to be determined from case to case (i.e.Yakuza versus Salvation Army), strong norms and mutual identities (homophily) can limit a social units' openness to new information and to alternative ways of behavior, producing a form of collective blindness (Nahapiet & Ghoshal, 1998). Heterodox individuals who have multiple group memberships and identities thereby are becoming bearers of new ideas and information.

In line with Marsh and Buckle I assume that communities and their underlying social networks matter in disaster and beyond (2001). The impacted community is a direct and active participant at all distinct phases of dealing with a disaster which are: preparedness, response, recovery and mitigation (Mushkatel & Weschleer, 1985). Out of those four, the response phase presents the most socially complex phase of the disaster spectrum (Dynes, 1991). Disasters usually affect entire communities or large segments of social units and are present when the established social systems of the community abruptly cease to operate. Far from having a condition of social anomie, social systems continue to operate while new ones emerge because they have greatest knowledge of the community, and because they need to initiate recovery themselves as many of their needs will not be met by outside agencies. Haines, Hurlbert and Beggs actually find that disaster victims and their social networks mostly become resources (1996). In another study they also find that in the preparation phase 45 percent and in the recovery phase 63 percent of the individuals who provided informal support came from outside the core network (2000). On the other hand, differences in disaster perception and response vary on the basis of ethnicity, gender, socioeconomic status or educational level which is of importance for emergency planers (Fessenden-Raden, Fitchen, & Health, 1987; Gallup Organization, 1986). The following studies support these findings.

A study of the Flint-Beecher tornado of 1953 turned out that most of the 927 casualties were rescued by spontaneous local rescue groups. These informal teams tended to be based on some previously existing social relationship in the community, such as the family, the neighborhood, the school, friendship bonds and work associations. However, some groups were composed largely of strangers (Form et al., 1956). Similar results can be found for the Kobe's Nishi Suma area where 60 percent of the residents in the were reported by their own efforts, 20 percent by neighbors (Shaw & Goda, 2004). After the Mexican earthquake of 1985, the organizational response was also dominated by a substantial amount of independent activity (Quarantelli, 1993). When Kobe and the Hyogo prefectures were struck by an

earthquake in 1995, voluntary engagement from Japan (approx. 1 Mio people helped) and around the world was almost overwhelming for the local government (Tierney & Goltz, 1997). In a post-earthquake north-east Peru in 1990, informal community organizations were quick to respond but then ignored by official relief organizations (Schilderman, 1993). On the other hand, Buchanan found that NGOs may see themselves as close partners of a local community in disaster which might not see this in the same way (1996). Community or volunteer action are also not automatically effective as Form et al. note (1956). One person who is technically competent but not personally involved in the life of the community.

3. Social Software and Social Networking Services

The term Social software is used for software systems that are utilized for group communication and collaboration which thus foster building and managing social networks or publishing information and its dissemination (Allen, 2004). Blogs, discussion groups, Wikis, music streams with rating features, social networking platforms or picture sharing are examples of Social Software. They are mostly self organized by users, taking advantage of collective or swarm intelligence (Bonabeu & Meyer, 2001; Kennedy & Eberhart, 2001), replacing taxonomy with folksonomy (Guy & Tonkin, 2006) and bridge any kind of organizational or hierarchical boundaries.

Social networking websites model real social networks in a virtual environment. They assist each member in creating or seeking a network of friends, acquaintances, people who share the same interests or are of interest to the member. Access to the social networking platforms might be restricted to invitations by existing members only (i.e. aSmallworld, Orkut). Each member is encouraged to expand his or her network by inviting others to join and connecting with others. Each member also creates a personal profile, which may be very detailed to levels of personal relationship status or beyond. This information can be shared with all or restricted to a number of members within the network. Links that are made with existing users of platforms and added to ones network can also be controlled. Besides these functions, SNS might offer newsgroups around one or more sets of topics usually managed by members of the community, a personal blog, calendar, RSS, chat, classifieds and picture sharing functionality. While many of these platforms like Meetup allow bridging the virtual and physical presence thus mediating social process, they are not ubiquitous. As a result, a person can not take advantage of the social network once disconnected from the internet. Appearing in 1998 in Japan Lovegetty, which allowed users to find “love matches” based on a basic set of profiles, marked the first attempt to bridge this gap (Iwatani, 1998). Now ventures like Dodgeball or Sociallight are offering mobile device-based systems that help people coordinate social activities. The MIT based project Serendipity combines ones profile, social network and weighing of different factors with Bluetooth technology to find known and people of interest via ones mobile phone (Eagle & Pentland, 2005). The popular Japanese social networking platform Mixi as well as the system utilized in the case studies is also mobile friendly.

People can have memberships in different online social networks out of the over 300 available, which can serve narrowly or broad defined interests or purposes. However, this makes it difficult for people to decide where to go and how much time they should devote to each of their online identities. Users might also be in a dilemma through the way new ties are made (What happens if one says no?) and integrated into ones network (access to more personal information, granting the new tie a basic level of reputation visible for the other members of ones network). Moreover, sites already carry redundant data (user profile/content side) and are very likely only able cover parts of a user's offline social network. Just like with Instant Messaging systems the open Source movement might come up with tools that allow for a macro management of each site or standard protocol in the future.

Although in the past online networks have been treated as isolated entities, it has now been proofed that online networks and the internet are indeed social networks that increase interaction, the size and variety of interpersonal ties, especially useful for maintaining weak ties in between face-to-face encounters (Tindall & Wellman, 2001). As shown above these online social networks can support or initiate social interaction or action in the offline world.

4. Methods

4.1 Research Design

The study has a qualitative exploratory case study design (Hartley, 2004). As this research tries to answer questions like "Why did they start local SNS", "How did they do it?" or "How could it be used in disaster" about a contemporary set of events, the choice of case study research seemed to be the plausible (Yin, 2003, p.: 9). As for the research design I chose that of an exploratory, multiple-case study because I explore an emerging phenomenon where there is little to none knowledge available. Questions that did not cover the general areas of organization, motivation, implementation or impact were influenced by the literature on social capital, social network and disaster.

4.2 Sources of data

Since Japanese SNS started in Yatsushiro it was assumed that it could provide the most developed environment to study. Nagaoka city was one of the two national pilot projects in early 2006 of MIC to test the use of SNS and disaster. Fortunately, there was no disaster to truly test its application but involved actors had more experience with disasters and spent the more time thinking about it. I used informants and archival data for information gathering.

Four categories of informants were interviewed: Elected officials, executive level administrators, mid-level administrators (disaster section, citizen relations section and IT section) and NPO members. Additionally, I interviewed a researcher of the Center for Global Communications (GLOCOM) of the International University of Japan whose research on social networks covered local SNS before conducting the case study. In sum 7 people were interviewed in Yatsushiro and 9 in Nagaoka. Table 1 gives an

overview of the interviewee categories for each city. Introductions to and suggestions for Interviewees were arranged by the key actor of the local SNS project's so that a slight bias in favor of the actors and their project can be assumed. Interviews were semi-structured and covered various areas such as perception of SNS, implementation, management, impact, user behavior and local SNS application in disasters.

Category/City	Yatsushiro	Nagaoka
Elected Officials	0	1
Executive level administrators	2	2
Mid-level administrators	4	4
NPO	1	2

Table 1: Case interviewees per category

Guiding questions can be found in Appendix I. Questions that covered local SNS implementation or operation were skipped for those not directly involved. All interviews were between 60 and 90 minutes and were recorded when permitted. Questions were first asked in English and then translated by the interpreter. Answers were also translated by the interpreter. This process caused the interview process to be longer. In terms of archival data, I reviewed internal presentations or whitepaper about local SNS and disaster plans. Master students also reviewed each local SNS platform.

4.3. Data Collection and Analysis

Data collection occurred in October and November 2006. Both cities were visited for three days. Interview notes were structured around different topics using the guiding questions as a schema. Once the initial set of data was prepared, I reviewed and compared it to information received in the GLOCOM interview and work done by (Hamaya, 2005) for verification. The second step consisted of a chronological and non interpreted summary for each case. In the third step I did a cross-case analysis in line with the answer behavior for each question. The main purpose was to identify emerging patterns of perceptions and the like. Finally, I tried to match results from social capital and disaster research for connecting case data with the broader discussion of the usefulness of local SNS and disaster.

5. Results

5.1 Yatsushiro City, Kumamoto Prefecture

Yatsushiro is the second largest city of the Kumamoto prefecture and is centrally located about 40 km from the Kyushu west coast, the southernmost of the four Japanese islands. In August 2005 Yatsushiro merged with the municipalities of Izumi, Kagami, Sakamoto, Sencho and Toyo as part of Japanese municipal government reforms and has a population of approximately 140.000. Beginning with 3,232 municipalities in March 1999 the reforms decreased the number of municipalities by 40% (1,821 cities) in the seven year period which ended in March 2006. As part of these changes new shopping centers opened up in the suburbs forcing smaller shops in the city center to close which was formerly a common place to meet people. The main issues for the area with regard to disaster are flooding after Typhoons. According to a city official internet penetration is around 46% due to the high number of older people in the city and the region in general.

A committee consisting of members from all sections decided to offer citizens a way to communicate and find likeminded friends online as part of their eGovernment efforts in 2002/2003. “Gorotto Yatchiro” opened up besides the official website. It offered a bulletin board, calendar, link posting and email form functionality. However, it never got quite of the ground with a final community size of 600, 40 truly active users and 10.000 page views per month. Usage decreased over time and since membership offered anonymity some members did not stick to accepted conventions of online behaviour. As for Japanese culture, this keeps a lot of people critical of such initiatives paired with general mistrust in government and public administration in Japan (Pharr, 1997). More than 900 local governments around Japan had set up citizens’ virtual conference rooms by 2004 as part of their eParticipation efforts. Though, most of these projects met the same fate as the one in Yatsushiro city. In response and inspired by bigger and popular social networking platforms such as Mixi, Mr. Takao Kobayashi, a young member of the IT department, decided to design and program a new version of Gorotto in 2004. The above mentioned eGovernment committee did not exist anymore, so he was neither ordered to do so nor did he ask for permission. Executives still knew about his project though. The lack of visible leadership is related to the fact that top-level administrators are older and change their position every 2 years which is common for Japanese public administration. Therefore, when leaving, not only is knowledge lost but also any kind of support or interest. A senior manager with over 40 years working for government, says that those in charge have sometimes no interest or understanding of ICT which are in direct relation to each other. Nevertheless, they have to make the concepts and policies for ICT. Related policies or concepts are now left to some younger administrators which were less influential.

Within three months he developed the first version of the “Open-Gorotto” Social Networking Services using openSource software as Free BSD, PostgreSQL, and PHP. Except for being inspired by

existing social networking platforms no additional surveys were conducted. As the platform is hosted on government servers and development was done in work and free-time costs can be considered insignificant. Up to this day there is no additional budget set aside. Mr. Kobayashi mentions four points that motivated him to create the SNS platform: First, citizens are much better at sharing government information, so each citizen's network serves as a multiplier. Second, the platform helps the community to grow stronger, meaning that people who share mutual interests can get together in a pleasant atmosphere. Third, the platform presents general and government information in a different way. Finally, administrators can interact and learn from citizens, thus improving the citizen government relationship. Disaster is missing here but was picked up by the Ministry of Internal Affairs and Communications (MIC) as a goal. MIC conducted empirical testing of local SNS communities in the City of Nagaoka which will be described in the next section and in Tokyo's Chiyoda Ward in early 2006. Other administrators hope that SNS will help citizens to help each in every day problem solving.

The SNS platform exists parallel to the Yatsushiro city website which links to the former. "Open Gorotto" functionality includes a blog, networking, personal profile, picture/media library, calendar and newsgroups. Its uniqueness compared to sites like Mixi, Gree, MySpace, LinkedIn or Xing lies in additional features as GIS/Google maps mash-up (see Figure 1) open architecture with allows for

Figure 1: Open Gorotto Map functionality. Users can tag or link to the map and share it.

integration of other features. With regard to disaster the platform offers an automatic fire alert service and hazard overview for the map feature. Besides that the platform is mobile friendly. Although everybody can use the platform registered users can also invite contacts. In order to prevent a development similar to the bulletin board "Open Gorotto" includes the "Alien" or "Grey Person" feature. This automatically scans for swearwords and the like and also sends a quick note to the administrator (Mr. Kobayashi) and another person supporting him with this task.

Since the new version was put online by end of 2004 member expansion was left to invitations of users only. Mr. Kobayashi thinks that this allows developing a healthier online community and avoiding the objections citizens might have towards more visible government involvement although it is much slower. This opinion is shared by all other interviewed administrators. Advertising was only done through links on the city website, flyers and ads in the city magazine. Additional public attention came through press articles first in the regional and later in national press which is visible in higher website traffic after key interviews. The platform also received two awards from MIC. As of today, the platform has around 2800 members with 70% being from Yatsushiro. Average age of members is 39 with males tending to be more active than females (ratio: 7:3). 400 users can be counted as truly active in terms of their blog, commenting or in forum behavior. The most used features are the diary followed by the internal email system and forums. 400 users have also subscribed the RSS feature. Smaller forums are managed by citizens; bigger ones are managed by the administrators. 100 members of the community belong to the local administration or politics. Mr. Kobayashi did not decide on particular measures upfront to check the success of the platform. Though in the interview, Mr. Kobayashi mentioned that he would look for the number of well connected people on the platform as an indicator for measuring how well the online community of Yatsushiro has developed. So for him community size is not necessarily a sign for network quality.

Ms. Yukari, the leader of a local environmental NPO, is one of the active users of "Gorotto Yatchiro" and also on the cities committee on environmental issues where she first learned about the local SNS platform. She started writing environmental essays on her blog which drew a lot of attention and comments from other members, even those who lived in Kanagawa prefecture close to Tokyo. Moreover, more people joined the NGO and over 500 locals came to one of their events which were mainly marketed through the SNS. Out of her 30 contacts 15 are random people she got to know through the online platform and who share the same interests. Due to their general lack of interest in technology all the older people she knows showed no motivation in joining. The city hopes that the SNS helps reviving NPO activities in the area by allowing them to interact with the wider and younger public. Interviewees say that they and their friends joined the SNS because of its fun factor like sharing information about where to eat good food. Another interviewee pointed out that in the past many people mainly build their networks

around their friends from elementary or high-school. Now they can find others that share the same interest in sports or food which is especially helpful for those moving from somewhere else.

Those interviewed in administration admitted that they have no further ideas how they could take advantage of the SNS in or before a disaster than using it as a source of information dissemination to the public. Someone from the disaster section mentioned that citizens could add value to recovery operations by posting pictures and remarks on damages to their blog but there would be no one to check at the moment. Mr. Kobayashi said that people from other, far away areas that are only connected to very few members of "Gorotto Yatchiro" feel more connected through the network and thus are more likely to offer support. A story of the results of Ms. Yukari's actions during a flood seems to strengthen this assumption. She put information and a picture about the severely damaged house and family of her son's friend on her local SNS blog. Within days the family received rice, towels and other things from random people. Regardless, currently local SNS is not part of the cities disaster plan.

Mr. Kobayashi received attention throughout the country and is currently the most influential actor when it comes to the topic of local government SNS. It is his hope that all local governments will build similar SNS, and that numerous community-based SNS will be developed alongside each other. These SNS mirror each other and are interconnected so that members can access their local as well as other networks even when there is a disruption/failure caused by a disaster or similar. Future functionality should include shopping and displaying user's network maps.

5.2 Nagaoka, Niigata Praefecture

Nagaoka is a city located in the center of Niigata prefecture spanning from the northern coast inland of Japan's main island Honshu. Just like Yatsushiro, Nagaoka merged with a couple of surrounding cities and towns between April 2005 and January 2006 increasing its population by approximately 100.000. Nagaoka was completely destroyed during Second World War and always had to cope with some form of disaster (earthquakes, snow, flood). This fact left its distinctive mark on the now roughly 283.000 people living in Nagaoka and is a reason why the Phoenix was chosen as a symbol of the city. The recovery of the Chuuetsu earthquake in October 2004 is still taking place in some mountainous areas. The community is said to be still better connected in those rural areas than in the city. According to city officials internet penetration is now at 60%. During the earthquake the internet and basic mobile messaging were the only communication channels working. The citizen government relationship is described as top down. However, some think that putting government information online and volunteer activities would help in equalizing it.

Before Nagaoka introduced the local SNS platform, it had a web bulletin board besides its official city website. Citizens showed the same frustration with the language and inappropriate behavior of some users which led many to abandon the platform. The city's local SNS called "Ococo Nagaoka" was introduced in mid December 2005. As it is based on "Open Gorotto" I will not go into detail about its functionality. By now (December 2006) there are 600 registered users compared to 300 at the end of the MIC test phase in February. Only a few forums around casual topics like food eco-tourism can be considered active. The local SNS was marketed through publications in city newspapers and banners on the city website. Opinion leaders were also invited by the NPO to join the SNS to facilitate user growth. In contrast, Mixi has 2000 members just for Nagaoka.

The process that ultimately led to the Nagaoka local SNS started in 2004. Soiga, an NPO, originally founded for environmental activities in April 2004 used a blogs and RSS to inform the public when the region first experienced a severe flood in April and earthquake in October. They provided faster information than government which received wide media attention, especially when they took over communication after Nakanashima government was operational ineffective through flooding. The NPO tried to convince government officials later that year to start an official government blog but their idea was rejected because nobody saw any need or importance in it. Thereafter, the head of the NPO was asked by MIC to join a newly formed working group on local SNS. The group consisted of academics, members from MIC and members of local administrators among them Mr. Kobayashi. They formed two groups to cover the theoretical and implementation/system aspects. First, they all looked at Mixi and Gree as the majority of them had never heard of SNS or used it before. To get the funds, the official project goal was officially about improving civic participation in Nagaoka and Tokyo's Chiyoda Ward. Although they could not think of a different kind of use, improved information sharing in disasters was a secondary object. MIC covered the costs (¥ 1,500.000) for the local SNS pilot phase whereas the NPO was asked to manage it and work together with local government. Running costs are at around ¥ 30,000 per month.

When Nagaoka's local SNS started, many sections except for information policy did not understand the SNS concept and why Nagaoka was chosen. In fact, of those interviewed, many admit that they are still wondering what SNS is all about, why they should put their information online and how it could be further utilized for government. Many immediately joined Mixi to get a feeling for SNS. Perceptions of local SNS vary. The dominating view is that local SNS provides a convenient location for communication and information sharing for citizens and government. In the past neighbourhood associations (NA) were the link between government and citizens. However, most leaders and people in the NA are now very old and lack knowledge or interest in the use of IT. Some interviewees think it could complete or add value to real-life relationships. People could help each other more by learning more about each other, what they

could do for the community and as a result rely less on government. One mentions a group that started discussing how to have a nicer city and improve economic growth which members first got to each other through the local and later offline. A member of the disaster section adds that it is strengthening the community by building broad networks between the newly merged cities. Sceptics think that there are more dominating means of communication like mobile phones. A council member, who uses multiple blogs and the SNS, thinks that the level of impact on the community of the local SNS is low. To stress this point he compares his networks on Mixi (112 contacts) and the local SNS (12 contacts). In general though, SNS helped the council member to interact with the younger community.

When the Chuuetsu earthquake happened government facilities were severely damaged forcing citizens to completely rely on themselves. In the town of Yamakoshi people gathered in the center to check on each other. A senior manager of the disaster section underlines that during this period community strength, meaning social networks become very important. The disaster section tries to strengthen the community by handing out information about how to prepare, what can be done and how to form a disaster community. For a long time these measures were not necessary as people helped were well connected locally. Each ward is asked to organize volunteer disaster groups that train once a year. At the moment there are 500 of these groups in Nagaoka which include 30-100 households.

Local SNS is another way of strengthening the community and preventing people to panic by keeping them informed in a convenient way – if there is no complete power outage. Its direct tie to local government allows it to have the 2nd highest level of information credibility. However, because most people join for the local SNS platform fun, it will be difficult for government to encourage people to join by making disaster preparation and information its key selling point. Furthermore, the speed of information sharing has its downsides. First, in small disasters people and government can rely on the information provided by citizens, in larger disasters citizen information lacks quality but exceeds quantity. Government is in a dilemma because the SNS medium demands quick information but they are still required to be exact. Second, since information spreads quickly, reactions can interfere with government plans or operations. He tells the story of someone who wrote about a community that was out of supplies for diaper which thereafter got “flooded” with donated diapers. The rising volunteers are also hard to organize. According to administrators it took them over a week to somehow coordinate volunteers effectively in the recovery phase of the 2004 earthquake. In contrast, NGO/NPO members think government never realized that.

Currently the members of Soiga are working on an updated version which should be online by early 2007. The biggest change lies in the use of the Google Maps API. They are as well talking about online advertisement space and how to attract more users to the platform. Significant changes to “Open Gorotto” can only be introduced if they are implemented by Mr. Kobayashi or someone with his skills.

6. Discussion

Before taking a closer look at the role of SNS and disaster I would like to begin by discussing some interesting aspects of the cases. The last paragraph ended with the key role of Mr. Kobayashi for the future development and functionalities of the platform. He started this local SNS completely on his own, inspired by the rise of private social networking platforms and personal interest in technology. His government membership and high level of involvement ensure the sustainability of “Gorotto Yatchiro”. By comparison, “Ococo Nagaoka” is in a critical situation because government officials mainly evaluate success by the quantity of users and their activity and the NPO, although well connected, has less leverage. Many online activities (i.e. exchanges) are depending on a critical mass for others to be attractive, a criteria which has not been met in both cases (1%< of the total population) and mostly include older generations. In addition both are competing with big platforms like Mixi. If the local SNS has more users, the load on technology and burden on involved managers will also grow. Although officials claim to learn something from citizens there is nobody checking the information of citizens in their blogs. Mr. Kobayashi is right when pointing to the importance taking a gradual approach of getting more users and introducing the platform. However, government marketing is not helping much and poorly done which reminded me of discussions with administrators who were wondering about the slow user service uptake in their eGovernment projects. Although Mr. Kobayashi added the map feature, functionality and design of existing platforms led to an early framing of his understanding of the possibilities and limits of local SNS. The lack of feedback by other people in the creation process is certainly a reason why its use in disaster or the government citizen relationship is not fully exploited. Administrative members would also be more willing to join, add content and engage with the citizen if there would be a considerable and visible amount of support by executive level administrators. Again, Mixi and Gree formed their perception of SNS so that in their words local SNS is mainly a way to interact with the public and offer it a way to interact with each other. They miss the aspect of building social capital. Moreover, MIC should have planned a longer pilot phase since the tendency of a slow user uptake was already available in the data for Yatsushiro. Central government is still influential in Japan so MIC could have also done more to inform and motivate the public and administrators alike.

Even without knowing the respective research and terms interviewees made the correct assumptions about social networks or tell stories reflecting results of reviewed literature on social networks and social support in disaster. Drawing for example on the narrative of the family that was helped by many strangers after a the mother of a sons friend (weak tie) wrote about their flooded house in her "Gorotto Yatchiro" blog which supports Granovetter's weak tie and Burt's structural hole role in non routine activities (2004; , 1983). Those interviewees who joined the local SNS found new friends on the platform and expanded their social network as concluded by Tindall and Wellman (2001). Furthermore, Soiga NPO is a great example how an organization, once brought into existence for one set of purposes (environmental activities), can also aid others for different purposes described by Coleman, thus constituting social capital available for use (1988). The NPO's blogs were considered a trusted source and can provide an alternative to the mass media which is regarded by many individuals as a more credible source of risk information than government (McComas, 2001). A centralized approach to the provision and publication of local information might not be fine-grained enough anyway to cater to the viral and capillary spread of word-of-mouth information. This informal interaction can only be supported by recognizing the peer-to-peer nature of local interaction which is distinct from the conventional many-to-many, few-to-many, or one-to-many broadcast nature of other online interaction (Foth, 2006). In the past this role was taken by neighbourhood organizations which are already impacted by demographic and cultural change.

Finally, if the majority of the population would be represented on local SNS platform sociograms could provide snapshots of networks and interaction structures. From these types of diagrams government and citizens can visually identify emergent positrons and clusters of interaction. By examining these patterns of mediated and unmediated interaction we gain an added perspective on communication structures that underpin explicit community processes as well as those that support affective, less instrumental behaviors (Garton, Haythornthwaite, & Wellman, 1997). Privacy might be a concern for citizens of course. At the moment, local SNS can serve the functions of managing and building social networks. In disasters it covers the areas of "observe and report" and "warn and inform". Along the lines of La Porte, I argue that the design and rules of the network constrain the character, use and content of member roles and exchanges and the network (1996). Consequently, local SNS could support the community and government beyond its current scope which I will briefly outline in the next section.

Design and Functionalities for local SNS in disaster

A key challenge during the disaster is effective communication and information provision. The better information flow during the response phase, the better coordination among the responding forces and operations will be. The current local SNS serves its main purpose of allowing people to connect and share information well in non-emergency situation. However, it could provide functionality for the preparedness, response and recovery phases (Mushkatel & Weschleer, 1985). In preparation is important

to know what the available resources are, be they public or private, which need to be considered. Local SNS could make it mandatory for each user to enter data in to a “disaster profile” upon registration (See Table 1).

Area	Data
Personal	Name, address, contact information, alternative emergency contact, social network, special health issues (on an opt in basis)
Address details	Family members living in household, number of people living at the same location (i.e. neighbors in other apartments)
Skills	Professional (i.e. Doctor), Rescue (i.e. CPR), Other (i.e. scuba diving, climbing, caves)
Tools/ Equipment	Trained dog, Heavy equipment (i.e. caterpillar)
Disaster	Membership (disaster reponse organizations or military)
Past Disaster response roles	i.e. led SAR team
Free text/ Important information	

Table 2: Disaster profile

The disaster profile is shared with all other citizens. To keep members privacy they can decide which information in the disaster they would like share with whom. Yet government has full access. Additionally, existing volunteer disaster groups are asked to join as a whole and form their own online community on the local SNS. This will allow anybody to assess the information (i.e. people missing) mobilize action and fin the right. Besides, as bandwidth and becomes sparse and access increases quickly, functionalities and design need to be reduced to the basics. Images combined with GIS data can provide emergency managers with situational, real time information but sections need to include resources for that kind of content scanning activity in their disaster plans. If they would also do that in non-emergency situations public administration can very likely learn about various trends and needs within the community. Of course, if power supply fails in a broad area for a long time, local SNS would not valuable to anybody in that area.

7. Conclusion

In this article I described the results of 2 small case studies of local SNS use in Japanese municipalities. While the Yatsushiro’s local SNS seems to be sustainable through its founder, Nagaoka’s local SNS is in decline. However, both have to compete with popular SNS like Mixi and lack critical mass. Furthermore, both platforms need more support through long term marketing and true executive support. Of course, any conclusions must be tentative, especially as a consequence of the non representative number of users and the lack of testing in a disaster of both SNS platforms. The literature on social networks, social capital, social support and disaster supports the positive effects of a well connected community. The literature on online social networking finds that SNS help creating, managing and expanding an individual’s social network, even maintaining weak ties. However, while disaster research can already draw on a rich stream of social network, social capital and social support it has not covered the area of social software. ICT in disaster have been well discussed but social software which

combines social capital and communication aspects is different. Thus, I make contributions to disaster research by providing a new, yet very specific approach to building and taking advantage of social capital.

This article contributes to the research on eDemocracy and eParticipation by describing a new software tool and its embeddedness in the administrative organization. At least some indication for new ways of citizen government interaction can be found. Therefore, this article should motivate researchers of both fields to take further steps to integrate the role of social networking platforms in their research. Yet, creating sound data for a broader population will be difficult besides the difficulties of disaster research.

This article also provides practitioners with a real life case study on the implementation and use of local SNS in government which as an attempt seems to be the first one in the world. Furthermore, I offer practitioners new perspectives on how to use social networking platforms in disaster by means of building social capital and the disaster profile.

Finally, social capital can be a double-edged sword because it can effectively mobilize people as well as complicating decision making, coordination and control (Buckland & Rahman, 1999). But administrators who make full use of citizen expertise and energy will more effectively improve the safety and survival chances of their communities (Morrow, 1999). Twigg noted that community based activities are deeply rooted in the society and culture of an area, they enable people to express their real needs and priorities, allowing problems to be defined correctly and responsive measures to be designed and implemented (1999). Hence, other local governments should follow the Japanese attempt in utilizing local SNS. The positives effects are worth not to be neglected.

Acknowledgements

I would like to thank all interviewees in Yatsushiro and Nagaoka for their cooperation, time and support. I would also like to thank my interpreter Mr. Hideyuki Fujii for his efforts and insights into Japanese culture. Finally, I would like to thank Prof. Hirokazu Okumura and Prof. Hideaki Shiroyama for their support in arranging these case studies and revisions of this paper. An earlier version of this paper was published within the University of Tokyo's 21st Century COE program "Invention of Policy Systems in Advanced Countries".

Appendix I

Interview questions

Please tell me something about you and your current activities

Please describe your role with respect to the SNS project.

What was your first impression of SNS? (if not directly involved in the SNS project)

Could you summarize some lessons learned so far? (yourself, government)

What goals would you like to accomplish with the SNS?

Please describe the target group.

How would your describe the local citizen government relationship?

How did you get internal buy-in/support for the project? Who played an important role?

How did you try to communicate to citizens to join the SNS?

How do you include or let older people join?

How did citizens react? (please describe some unique experiences)

What additional value do you offer citizens that private SNS platforms like mixti do not offer?

What do you know about the level of connectedness of the community (citizens) before and after the introduction of your SNS?

What was your role in the implementation of SNS?

What were the challenges in the implementation and operation of SNS?

What were your considerations when defining design, features and policies of the SNS?

How do you manage the network?

What kinds of skills are needed to manage the network?

How do you plan to measure if the community is better connected?

How do you keep the SNS network alive and sustainable?

Who is responsible for what in the network?

How much control over the network do you have?

What are you doing if technology fails?

What can disrupt your operations?

How would you define Social Capital?

How did SNS change your way of information sharing with citizens?
How do you improve internal / government networking and information sharing?

How do you prepare (1) government, (2) partners and (3) citizens for disasters? (general procedures)

What role does SNS play in the different phases of a disaster: (1) preparedness (2) response (3) recovery (4) mitigation?

What is the advantage of having a community which is highly connected?

What value can citizens add for government in disasters?

What is your experience `with political and operational leadership during a disaster?

Is there any interesting information you know about similar SNS projects and their role in disasters and E-democracy you could share with us?

References

Allen, C. (2004). Tracing the Evolution of Social Software. Life with Alcrity. Retrieved 12.12, 2006, from http://www.lifewithalacrity.com/2004/10/tracing_the_evo.html

Bensman, J., & Vidich, A. J. (1995). Race, Ethnicity and New Forms of Urban Community. In P. Kasinitz (Ed.), *Metropolis: Center and Symbol of Our Times* (pp. 196-203). New York: New York University Press.

Bonabeu, E., & Meyer, C. (2001). Swarm Intelligence: A Whole New Way to Think about Business. *Harvard Business Review*(May), 106-114.

Buchanan, A. (1996). Partnership and Accountability. *Appropriate Technology, 22*(4), 6-8.

Buckland, J., & Rahman, M. (1999). Community-based Disaster Management during the 1997 Red River Flood in Canada. *Disasters, 23*(2), 174-191.

Burt, R. (2004). Structural Holes and Good Ideas. *American Journal of Sociology, 110*, 349-399.

Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *The American Journal of Sociology, 94*(Supplement), 95-120.

Durkheim, E. (1995/1965). *The Elementary Forms of the Religious Life*. New York: Free Press.

Dynes, R. R. (1991). *Conceptualizing disaster in ways productive for social science research* (No. #80). Newark: University of Delware, Disaster Research Center.

Dynes, R. R. (2002). *The importance of Social Capital in Disaster Response* (Preliminary Paper No. #327). Newark: University of Delaware, Disaster Research Center.

Eagle, N., & Pentland, A. (2005). Social serendipity: mobilizing social software. *Pervasive Computing IEEE, 4*(2), 28-34.

Fessenden-Raden, J., Fitchen, J. M., & Health, J. S. (1987). Providing risk information in communities: Factors influencing what is heard and accepted. *Science, Technology, and Human Values, 12*((3 & 4)), 94 –101.

Form, W. H., Loomis, C. P., Clifford, R. A., Moore, H. E., Nosow, S., Stone, G. P., et al. (1956). The Persistence and Emergence of Social and Cultural Systems in Disasters. *American Sociological Review, 21*(2), 180-185.

Foth, M. (2006). Facilitating Social Networking in Inner-City Neighborhoods. *IEEE Computer, 39*(9).

Gallup Organization. (1986). *Nuclear Power Plants* (No. 250).

Garton, L., Haythornthwaite, C., & Wellman, B. (1997). Studying Online Soical Networks. *JCMC, 3*(1).

Granovetter, M. (1983). The Strength of Weak Ties. *Sociological Theory, 1*, 201-233.

Guy, M., & Tonkin, E. (2006). Folksonomies - Tidying up Tags? [Electronic Version]. *D-Lib*, 12. Retrieved 12.15.2006.

Haines, V. A., & Hurlbert, J. S. (1992). Network Range and Health. *Journal of Health and Social Behavior, 33*(September), 254-266.

Haines, V. A., Hurlbert, J. S., & Beggs, J. J. (1996). Exploring the Determinants of Support Provision: Provider Characteristics, Personal Networks, Community Contexts, and Support Following Life Events. *Journal of Health and Social Behavior, 37*(3), 252-264.

Hamaya, S. (2005). The Potential for Community-based Social Networking Sites. Retrieved 11.12, 2006, from http://jp.fujitsu.com/group/fri/en/column/economic-topics/200509/2005-09-22-2.html

Hartley, J. (2004). Case Study Research. In C. Cassell & G. Symon (Eds.), *Essential Guide to Qualitative Methods in Orgnizational Research* (pp. 323-333). London, Thousands Oaks, New Delhi: Sage.

House, J. S., Umberson, D., & Landis, K. R. (1988). Structures and Processes of Social Support. *Annual Review of Sociology, 14*, 293-318.

Hunter, A. J., & Suttles, G. D. (1972). The Expanding Community of Limited Liability. In G. D. Suttles (Ed.), *The Social Construction of Communities* (pp. 44-80). Chicago: : University of Chicago Press.

Hurlbert, J. S., Haines, V. A., & Beggs, J. J. (2000). Core Networks and Tie Activation: What kinds of routine networks allocate resources in nonroutine situations? *American Sociological Review, 65*(4), 598-618.

Iwatani, Y. (1998). Love: Japanese Style. *Wired News* Retrieved 12.14, 2006, from http://www.wired.com/news/culture/0,1284,12899,00.html

Jannowitz, M. (1952). *The Community Press in an Urban Setting*. Glencoe, IL: Free Press.

Kasarda, J. D., & Janowitz, M. (1974). Community Attachement in Mass Society. *American Sociological Review, 20*, 85-114.

Kennedy, J., & Eberhart, R. C. (2001). *Swarm Intelligence*. New York, San Francisco, CA: Morgan Kaufman Publishing.

La Porte, T. R. (1996). Shifting Vantage and Conceptual Puzzles in Understanding Public Organization Networks. *Journal of Public Administration Research and Theory, 6*(1), 49-74.

Li, J. (1991). *Social Responses to the Tangshan Earthquake* (Preliminary Paper No. 165). Delaware: University of Delaware Disaster Research Center.

Lin, N., Woelfel, M. M., & Light, S. C. (1985). The Buffering Effect of Social Support Subsequent to an Important Life Event. *Journal of Health and Social Behavior, 26*(3), 247-263.

Marsh, G., & Buckle, P. (2001). Community: The concept of community in the risk and emergency management context. *Australian Journal of Emergency Management, 16*(1).

McComas, K. A. (2001). Public Meetings About Local Waste Management Problems: Comparing Participants to Nonparticipants. *Environmental Management, 27*(1), 135-147.

Morrow, B. H. (1999). Identifying and Mapping Community Vulnerability. *Disasters, 23*(1), 1-18.

Mushkatel, A. H., & Weschleer, L. F. (1985). Emergency Management and the Intergovernmental System. *Public Administration Review, 45*(Jan.), 49-56.

Nahapiet, J., & Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *The Academy of Management Review, 23*(2), 242-266.

Pharr, S. J. (1997). Public trust and democracy. In J. S. Nye, P. D. Zelikow & D. C. King (Eds.), *Why People Don't Trust Government*. Cambridge, MA: Harvard University Press.

Putnam, R. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton: Princeton University Press.

Quarantelli, E. L. (1993). Community Crises: An Exploratory Comparison of the Characteristics and Consequences of Disasters and Riots. *Journal of Contingencies and Crisis Management, 1*(2), 67-78.

Quarantelli, E. L., & Dynes, R. R. (1977). Response to social crisis and disaster. *Ann. Rev. Social, 3*, 23-49.

Schilderman, T. (1993). Disasters and development: a case study from Peru. *Journal of International Development,, 5*(4), 415-423.

Shaw, R., & Goda, K. (2004). From Disaster to Sustainable Civil Society: The Kobe Experience. *Disasters, 28*(1), 16-40.

Streeter, C. L., & Gillespie, D. F. (1992). Social Network Analysis. *Journal of Social Service Research, 16*(1/2), 201-222.

Tierney, K., & Goltz, J. D. (1997). *Emergency Response: Lessons Learned from the Kobe Earthquake* (Preliminary Paper No. 260). Delaware: University of Delaware Disaster Research Center.

Tindall, D. B., & Wellman, B. (2001). Canada as Social Structure: Social Network Analysis and Canadian Sociology. *Canadian Journal of Sociology, 26*(3), 265-308.

Twigg, J. (1999). The Age of Accountability? Future Community Involvement in Disaster Reduction. *Australian Journal of Emergency Management, 14*(4), 51-58.

Vaux, A. (1992). Assessment of social support. In H. Veiel & U. Baumann (Eds.), *The Meaning and Measurement of Social Support* (pp. 193–215). London: Hemisphere Publishing.

Wellman, B., & Wortley, S. (1990). Different Strokes from Different Folks: Community Ties and Social Support. *The American Journal of Sociology, 96*(November), 558-588.

Yin, R. K. (2003). *Case Study Research, Design and Methods*. London: Sage.