

Unconscious Transmission Services of Human Feelings

Mitsuhiko Karashima and Yuko Ishibashi

School of Information Science and Technology, Tokai University, 1117 Kita-Kaname,
Hiratsuka, Japan
mitsuk@keyaki.cc.u-tokai.ac.jp, yuuuko105@hotmail.com

Abstract. This paper was focused on the next generation of ubiquitous services by using ubiquitous networks and devices. This paper was especially focused on the transmission services of feelings to others. In the paper, some conventional transmission services of feelings were introduced and a few of the unconscious transmission services of feelings to both specific targets and multiple targets were pointed out. The paper proposed two examples of the new services that would enable the users to transmit their feelings unconsciously to others by using ubiquitous networks and devices. These services were proposed through the PRESPE (Participatory Requirements Elicitation using Scenarios and Photo Essays) approach and called respectively the "aura transmission system" and "back scratcher system". Further discussion about the usefulness and possible negative influences on human nature or society by the new services was done, and the future research efforts of these services were described.

Keywords: ubiquitous services, transmission of feelings.

1 Introduction

Since the first advocating of "ubiquitous computing" by Mark Weiser at The Xerox Palo Alto Research Center around 1990, many researchers and governors have advocated "ubiquitous network systems", "ubiquitous interaction devices", and "ubiquitous services" for the future. For example, MIC (Ministry of Internal Affairs and Communications) Of Japan aims to achieve a "ubiquitous network society" (u-Japan) in which "anything and anyone" can easily access networks and freely transmit information "from anywhere at any time" by 2010. Ubiquitous network infrastructure has been developed and spread as in areas such as broadband (DSL or FTTH) network, public wireless LAN, and mobile phone internet in Japan. Many kinds of ubiquitous interaction devices, such as μ tip and RFID (Radio Frequency Identification) have also been developed. Many kinds of ubiquitous services using ubiquitous networks and devices, such as child monitoring systems by GPS mobile phone and user monitoring systems by home appliances, have been proposed.

In many proposed services, however, the users who the service developers centered on in the design processes of the proposed services were passive to the information

from the services and could only acquire the information which was provided anytime and anywhere. There were few services by which the users could transmit the information anytime and anywhere (mobile emailing). The services where the users can acquire or transmit the subjective information are especially rare in Japan.

The blog hosting services and social networking services produce the virtual spaces in which the users can transmit their feelings as well as the objective information to the multiple targets. Some prototype services have also been developed in which the users could transmit their feelings to a specific person. IBM Japan Ltd. developed the "Kansei mail" system with the website, in which the mail sender could send the emotion of their emailing to the mail receiver by using special background animation with the text [1]. NEC Corp. developed "KOTOHANA" with two appliances in flower form and the internet, in which the user could transmit the emotion of their speech with the flower to the specific person who had the other flower by changing the color of the LED [2].

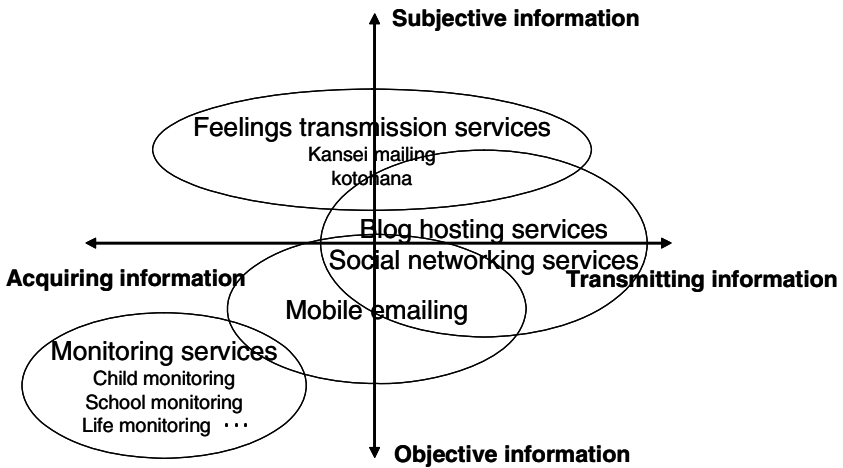


Fig. 1. Location of conventional ubiquitous services using ubiquitous networks and devices in two-dimensional space with Acquiring-Transmitting information axis and Subjective-Objective information axis

The development of these conventional transmission services of feelings revealed the reality of the feeling transmission services using ubiquitous networks and devices. Though in some cases persons might want to transmit the feelings intentionally, in other cases they might want to transmit the feelings unconsciously. These services, however, only targeted the communication between specific members and mainly the intentional transmission of feelings. The blog hosting services and social networking services also targeted the intentional transmission of feelings.

In this paper some examples of the active services are presented that would enable the users to transmit their feelings unconsciously to both specific targets and multiple

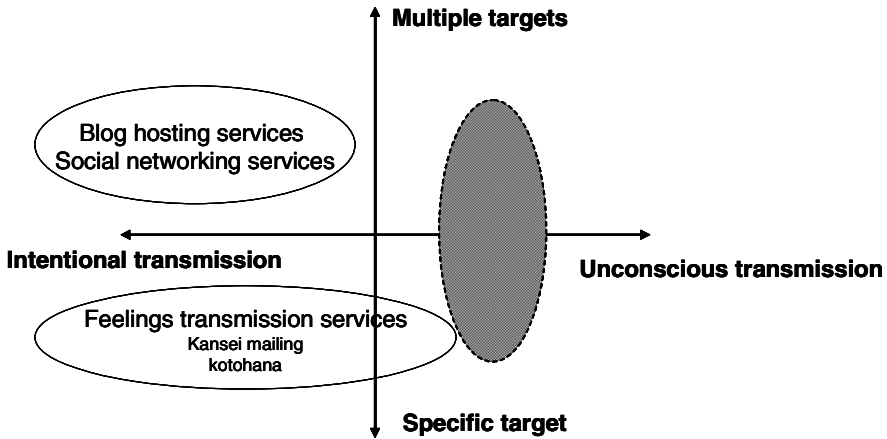


Fig. 2. Location of conventional ubiquitous services in two-dimensional space with Intentional-Unconscious targets axis and Specific-Multiple transmission axis

targets by using ubiquitous networks and devices as the next generation of ubiquitous services.

2 Proposal of Transmission Services of Feelings in Ubiquitous Networks Through PRESPE

The unconscious transmission services of feelings to both specific targets and multiple targets in this paper were proposed through the PRESPE (Participatory Requirements Elicitation using Scenarios and Photo Essays) approach [3]. Two brainstorming discussions for proposing the new information services by using the network system were done through the PRESPE. One (BS1) was done by the group of the universities’ faculty members, students, and the designers in the collaborative workshop of ERGO-DESIGN MEETING and INFORMATION SOCIETY ERGONOMICS MEETING of JAPAN ERGONOMICS SOCIETY. The other (BS2) was done by the group of our university students in our laboratory.

2.1 PRESPE Procedure

The PRESPE was a participatory design approach introduced by Dr. Go, in which a group of major stakeholders worked together to produce and evaluate new designs of products and services. The PRESPE approach is consisted of two roles: coordinator and participants. The coordinator assigns a project theme and provides some support for the participants’ activities. The participants work together in order to produce new products/services under the coordinator’s control. The outline of the procedure of the PRESPE in this paper is shown in Table 1, which was slightly different from the original PRESPE procedure. Procedure (3), (4), and (5) are the brainstorming sessions.

Table 1. Outline of procedure of PRESPE

Procedure	Contents
(1)	One of the participants makes a photo-diary according to the requirement of the coordinator.
(2)	For the assigned theme, he/she creates photo-essays to reflect the personal experience with existing artifacts.
(3)	The participants choose the photo from the photo-diary which he/she made. They analyze the photo-essay, identify the concept behind it, and develop the design concept.
(4)	They envision the use scenarios and context of the newly designed product/service and translate scenes described in the scenarios into artifacts by making sketches of the use scenes.
(5)	They also conduct a claim analysis on the newly designed product/service to enumerate the potential tradeoffs.

2.2 PRESPE Conditions

In BS1, the participants were three different universities' faculty members, two different universities' students, and one designer. In BS2, the participants were three university students. In both brainstorming sessions, one of the participants who was a university student was required to take photos of one day from getting up to going to bed as the photo-diary and make the photo-essays for all photos. The assigned theme was "Something that makes me feel happy". The participants can propose the new service without technical constraints.

3 Proposed New Transmission Services of Feelings

3.1 Brainstorming Session 1

The participants chose the photo of Fig.3 from the photo-diary. The photo-essay of this photo is as follows. She felt happy that she read a book, did homework, and prepared something for a seminar at the lounge of the university. However she felt unhappy that she was obstructed by her friends when she was concentrating on doing something, while she welcomed the obstruction by her friends when she did something to kill time. If her feelings whether she wants to concentrate or not can be transmitted unconsciously to her friends, it will make her happier.

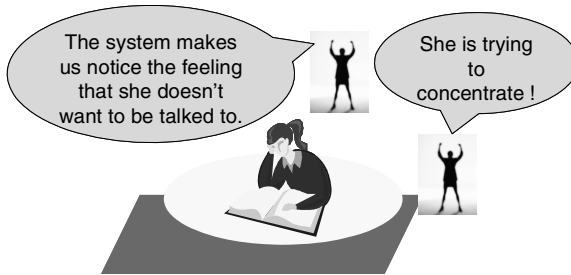
The participants analyzed the essay and they identified the keyword behind the essay. The keyword was "concentration". The participants conducted the use scenarios and context of the new service as follows.

One morning, a student is preparing something for the seminar. She has to make the report of the results of this week's research activities by one p.m.. Her friends find her. They try to talk to her, but the newly designed service makes them notice the feeling that she wants not to be obstructed by them. She can keep her concentration for the preparation of the seminar as they know her feeling from the new service and stop talking to her.

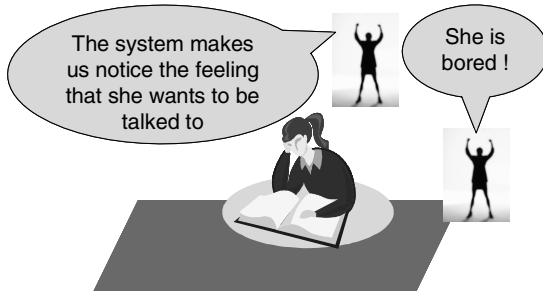
On the other hand, one afternoon, a student reads a book at the lounge to kill time because a class is cancelled. Her friends find her. The designed service makes them notice her feelings that she is bored and wants to talk with someone. She can enjoy talking with them as they know her feeling from the new service and talk to her.



Fig. 3. The photo chosen by the participants in BS1



(a) Scenario she is trying to concentrate



(b) Scenario she is bored

Fig. 4. Aura transmission system

Fig.4 illustrates the newly designed service by the participants which is named the "aura transmission system". This system aims at the unconscious presentation of the users' faint feelings, where it is mentally difficult to tell others in words either by text or

voice in public spaces, e.g., "I don't want to be obstructed by any others", "I'm bored and want to talk with someone". The system is consisted of the sensors for gathering the physiological information related to autonomic nerve system, database system for analyzing the users' feelings from physiological information, representing devices of the users' feelings, and the ubiquitous network for data communication.

3.2 Brainstorming Session 2

The participants chose the photo of Fig.5 from the photo-diary. The photo-essay of this photo is as follows. She felt happy that she did cardio exercise by indoor bicycling while watching TV. However she felt unhappy that someone of her family visited her room when she did serious exercise, while she also felt unhappy that anyone of her family didn't visit her room in order to talk with her when she did relaxing exercise while watching TV and the TV program was boring. If her feelings whether she wants to be alone or not can be transmitted unconsciously to her family, it will make her happier.

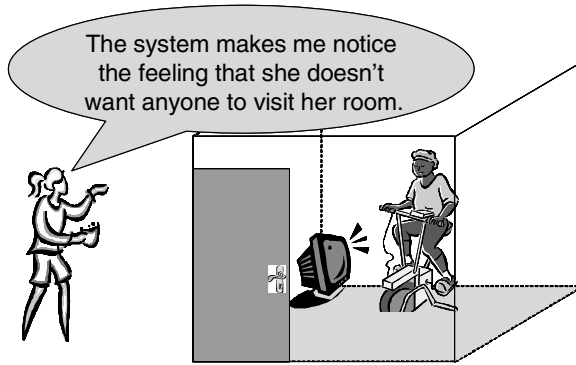


Fig. 5. The photo chosen by the participants in BS2

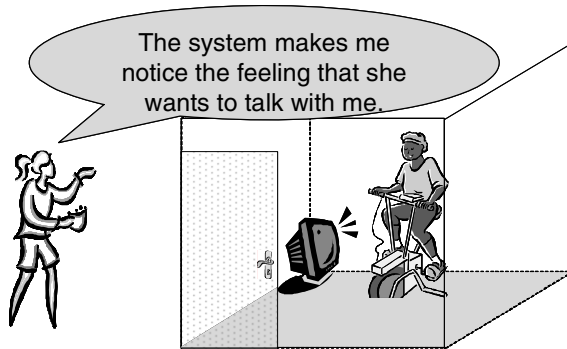
The participants analyzed the essay and they identified the keyword behind the essay. The keyword was "privacy". The participants conducted the use scenarios and context of the new service as follows.

One evening after dinner, a student does serious cardio exercise by indoor bicycling while watching TV. Her mother wants to visit her room and talk with her. Her mother tries to visit her room, but the newly designed service makes her mother notice the feeling that she doesn't want anyone to visit her room. She can keep on doing serious exercise alone as her mother knows her feeling from the new service and stops visiting her room.

On the other hand, one midnight a student does relaxing exercise while watching TV. She wants to talk with her mother because the TV program is boring. The newly designed service makes her mother notice the feeling that she wants to talk with her mother. She can talk with her mother during relaxing exercise as her mother knows her feeling from the new service and visits her room.



(a) Scenario she does serious exercise



(b) Scenario she does relaxing exercise

Fig. 6. Back scratcher system

Fig.6 illustrates the newly designed service by the participants which is named the "back scratcher system". This system aims at the unconscious presentation of the users' feelings, where it is troublesome to tell specific others in words either by text or voice in private spaces, e.g., "I want to talk with you now", "I don't want you to contact me now unless only briefly". The system is consisted of the sensors for gathering the physiological information related to autonomic nerve system, the video monitoring system for gathering the behavior information, database system for analyzing the users' feelings from the physiological and behavioral information, representing devices of the users' feelings, and the ubiquitous network for data communication.

4 Discussions

This paper proposed two newly designed services to transmit human feelings unconsciously to others through the PRESPE. The first service was designed from the keyword "concentration" and the second service was designed from the keyword

“privacy”. Although these services were designed from different keywords and by different participants, both of them can be regarded as examples of the active services with which the users could transmit their feelings unconsciously to others by using ubiquitous networks and devices. It suggested that there are some potential needs of the services to transmit human feelings unconsciously to others as the next generation of the ubiquitous services.

On the other hand, in the claim analysis of both new services, the participants indicated that the users did not always want their feelings to be known to others. It revealed the necessity of the option in the services that the users could choose whether they used these transmission services of their feelings or not.

The participants also indicated that the others could not understand correctly the feelings because they could not understand the background of why the users had the feelings as these new services were only able to transmit the users' feelings to others. These services should also transmit the information to the others that the others can understand the background of why the users have the feelings. Further research to clarify what kinds of information about the situations and the contexts are needed in order to enable the others to understand the reasons why the users have the feelings are in the field of the Ethno-methodology[4]. Future Ethno-methodological research will be needed in order to select what kinds of information about the situations and the contexts are transmitted to the others with the feelings in these services.

These new services might be useful for the users because their feelings are transmitted unconsciously to others without any troublesome effort. As the third indication, however, there might be the apprehension that it might have some negative influences on human nature or society that the users' communication ability to transmit feelings to others is decreased by the transmission services of feelings such as the proposed services. Further research like the socio-technical design approach will be needed in order to clarify the influences of these new services on human nature or society[5] and it should be considered where these services are adopted even though these services can be developed technically wherever the people want.

5 Conclusion

Through the PRESPE, this paper presented two examples of the active services that would enable the users to transmit their feelings unconsciously to others by using ubiquitous networks and devices as the next generation of ubiquitous services. It suggested that there are some potential needs of the services to transmit human feelings unconsciously to others.

One was named the "aura transmission system" which aimed at the unconscious presentation of the users' faint feelings, where it was mentally difficult to tell others in words either by text or voice in public spaces. The other was named the "back scratcher system" which aimed at the unconscious presentation of the users' feelings, where it is troublesome to tell specific others in words either by text or voice in private spaces.

These new services might be useful for the users because their feelings were transmitted unconsciously to others without any troublesome effort. Some claims,

however, which should be solved before the development of these services were indicated, and the directions of the future researches were also indicated in order to solve these claims.

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