1. Introduction

In South Korea it is mandatory to have a national identity card (NID). The current NID card has been in use since September 1999. In time the NID card should be redesigned to take advantage of advanced technology and improved design standards and to facilitate the use of electronic NID cards in compliance with the e-government policy. This study covers the design of a Korean electronic NID card for the future. Although the current NID card in Korea was designed with the aid of intensive anti-counterfeiting technologies, it faces a critical problem with regard to the disclosure of personal information. Most of the important personal information is on the outside of the NID card, so when information about individuals gets in the wrong hands it can be easily misused. Accordingly, this study focuses on the security of private information. The results of this paper are based on user research. Firstly, to understand the broad needs of users, we conducted a survey among users in the 20 to 40 age group. A focus group interview was conducted on the basis of the survey results. The user research includes a creative session in which subjects make an NID card; this step provides inspiration for designing the NID card. In this paper, we propose a future NID card that reflects insights from user research. The final outcomes underscore the importance of securing individual information, and different target times are set for each outcome.

2. User Research

We divided our user research into three parts. Firstly, we conducted a survey so that we could elicit meaningful design insights for a future NID card on the basis of our understanding of the current NID card. Secondly, we conducted a focus group so that we could learn from the participants’ abundant experience of using the NID card. Through the focus group, we tried to elicit the type of descriptive answers that are difficult to gather in a survey. Thirdly, we let the subjects design their own NID card to see what and where they put the information and images.

2.1. Plan and method

2.1.1. Survey

We designed a questionnaire to elicit information on the most frequently used ID card, the integration needs of ID cards, the level of satisfaction with the appearance of the cards, and the type of information that needs to be exposed or hidden in the current NID card. For a better understanding of the actual conditions of different age groups, the questionnaire was administered to 10 people in their twenties, 10 people in their thirties, and 10 people in their forties.

2.1.2. Focus group

Our focus group consisted of five graduate school students who were majoring in design. In the first session, we asked questions about how they carried their NID cards in their pocket, the integration of many ID cards, and the unsatisfactory elements of the current NID card’s appearance. We also asked the participants to nominate the one best designed card in their wallet and to explain why they nominated that card.

2.1.3. Self-made NID cards

In this part, we asked 14 design students to design their own NID card using the Microsoft PowerPoint program. They had to decide where and how much personal information should appear on the front or back of the card or in an Integrated Circuit (IC) chip. The design also had to include images that represent the national identity.

2.2. Results and analysis

2.2.1. Survey

Most survey respondents worry about their resident registration number (RRN) being exposed. They don’t like the RRN appear on the front part of the NID card because others can easily read the personal information. Furthermore, the RRN is connected to many other sources of information. The respondents in their twenties and thirties, in particular, don’t like their RRN being used for Web site registrations because the data may be easily exposed or copied by unauthorized people through a local area network. They would also like the NID card to be integrated with many other types of ID cards. Most respondents would like the NID card to be integrated with a drivers license and a bank security card because those are the most frequently used ID cards. The twenties group were unsatisfied with the design of the current NID card but most respondents didn’t consider the size or shape because they assumed those aspects of the NID card are set by the government. Most respondents were satisfied with the weight of the card. Our survey findings are summarized as follows: Firstly, a personal RRN contains considerable information. Secondly, the RRN can be easily and frequently exposed in daily activities. Thirdly, the frequently used identity cards need to be integrated. Fourthly, the aesthetic features of the current NID card should be improved.
2.2. Focus group

- Possession of the NID card
  The participants felt obligated to always carry an NID card because even though the card is not frequently used it is required in some urgent situations. The participants preferred to possess a photo ID card. They worry about personal information such as the RRN or their address being disclosed.

- Integration of ID cards
  The participants were mostly positive about the integration of official ID cards (such as a driver license and a bank security card). However, they were negative about adding other functions (such as the function of a mileage card) because of concerns that frequent use of the card might increase the risk of identity exposure.

- Appearance of the current NID card
  The participants said longer term use of the NID card should be considered in its graphical design. They also wanted the design to express their individual identity because the NID card is a symbolic card that reveals personal identity.

2.2.3. Self-made NID cards

The participants mostly preferred to put personal and identifying information, including a facial photograph, on the front of the NID card. On the back, they mostly preferred to put an IC chip and images that show the identity of the nation as well as other information such as a signature or fingerprints. They preferred to conceal the RRN in the IC chip and to put their birth information on the front. Most added an English version of their name because those in their twenties and thirties often use an English name. Finally, they preferred to put fingerprints or iris information inside the chip rather than exposing them on the surface of the card.

3. Proposal for the NID card design

3.1. Transparent NID card

We propose transparent NID card (Fig. 1). It normally shows simple information but can reveal detailed information when used with a card reader. Our user research suggests that the RRN is so important and critical that users prefer to keep it concealed. Moreover, they prefer not to show a facial image because the photographs are too old. We therefore separated information according to its level of importance. The surface of the card (Fig. 1) displays limited but necessary information for identification purposes in daily situations: for example, the user’s name, date of birth, gender and black-and-white photograph (Figs. 1-(a) to 1-(d)). There are many ways to print the photo transparently but notifiable [1]. The back of the card has an IC chip, which contains detailed information (Fig. 1-(e)), such as an ID, address and a colored photograph (Fig. 1-(f)) for official situations. Whenever the card privacy is protected. For the back of the card, users can also choose an image that expresses their own identity. The card has various security levels for individual items of information. Critical and detailed personal information cannot be disclosed without a card reader. Furthermore, the back of the card has space to reflect the user’s own personality with a customized graphic design.

3.2. Portable security NID card

We propose portable security (Fig. 2). Fingerprint identification technology [2] can be used to enhance the card’s portability and security. The surface of the card has only a sweep-type fingerprint reader (Fig. 2-(b)). When users sweep their fingerprints on the card, the information comes up on the surface of the card (Fig. 2-(a)). When this action is repeated, the information disappears. If the information is not activated, the card is just a small item with no information on it and it is easy to carry (Fig. 2). This type of card uses fingerprint-identification technology to strengthen the security of personal information. In addition, the curved surface of the card differentiates the card from other typical cards. When the information on the card is not activated, the card resembles a personal accessory.

4. Conclusion

This paper relies on the insights of user research to propose two types of NID cards. We conducted user research in three steps to determine the needs of general users. Our first step was to survey the views of people in their twenties, thirties and forties. We then conducted a focus group interview with five industrial design students. The last step involved a creative session with 14 design students. We obtained specific detailed responses from participants in the second and third steps. That information supplemented the more general information obtained from the survey. We propose two design concepts. The first concept has a high degree of feasibility now or in the near future. The second concept is more futuristic because it involves advanced technologies. The two concepts are a blueprint for changing the NID card over time.

5. Acknowledgement

This work was supported by Korea Minting & Security Printing Corporation grants.

6. Reference

2. S. BongSub, “Fingerprint technology”, suprema.co.kr, 2008. 10