Envisioning a Mobile Phone for 'All' Ages

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Abstract: This paper presents evidence from a survey that was carried out to investigate the age influence on the needs and preferences of mobile phone owners. The impact of mobile phone adoption in different generations of society is discussed to illustrate the need for the design of mobile phones that support 'all' generations of users. We conclude with a possible design solution to alleviate the age gap in which the findings from our survey, the 'four-pleasure' framework, user interface adaptation, and advanced wireless technologies are employed.

Keywords: Mobile telephony, age, inclusive design

1 Introduction

Recently there has been a heighten awareness of the need to design products and services for social diversity. This awareness is encapsulated in the concept of 'inclusive design' or design for 'all' principle. Designing for 'all' seeks to ensure products and services that can be used by *as many people* as possible (Shipley & Gill, n.d.). Considering the rapidly growing global population of older people, coupled with the fact that the older generation has more disposable income than the younger generation (Halstead, 1996), it would seem to make good business sense not to alienate the older generation in product design. However, the mobile phone industry seems to be moving in the opposite direction to this growing market share: predominately focusing their requirements capturing on the 'young and savvy' users at the early stages of design (Chattratichart & Brodie, forthcoming). This is leading to mobile phone handset designs that demonstrate diverse usage rather than embracing diverse user groups. It is, therefore, not surprising to witness that new mobile phones on the market today have become sleeker, trendier, smaller in size, and over-burdened with functionality.

There is a hidden cost to this 'one size fits all' approach. If these products ultimately do not support the activities and underlying needs of a range of different users effectively, then the loss of opportunity is potentially high both from a business and socio-cultural viewpoint.

This paper argues for the design of mobile phones that are inclusive of users of 'all' ages. This is supported both by the evidence of a generational gap from our survey data, and, more generally, examples of recent cultural and social trends. A possible solution to bridge (or at least) alleviate the age gap is proposed.

2 Evidence for an Age Gap

In November 2002, we carried out a survey with 326 mobile phone owners of different age groups that studied their needs and preferences. The opinions and preferences of respondents from diverse geographic and socio-economic backgrounds (29 countries, more than 35 occupations, and ranging from 13 to over 74 years old) were solicited. Chi-square tests were conducted on the frequency data of 32 preferential factors (such as alarm, call making, etc.) for three age groups: below 26, 26-40, and above 40 years old. We looked at these four key issues: functions that

are useful to respondents; reasons for having a phone; criteria for choosing a phone; and extra cellular technology wanted. The results as reported in Chattratichart & Brodie (forthcoming) showed an age gap among our respondents for 21 factors in all. On the whole, aesthetics, new cellular technologies, and manifold functionality were more important issues to the younger generation than the older generation of mobile phone owners. The following discussion analyses the survey data further to explain what may be the underlying cause of this.

On the basis of our data, all age groups overwhelmingly wanted the phone for contact and for emergency purpose. However, only call making and address book functions received high votes from all three age groups (see Figures 1). The functions of voice messaging, text messaging and check records (also facilitating the purposes of having the phone) did not score well among all age groups. There was also a wide age gap for two of these functions. This suggests that poor usability might have affected respondents' opinion of these functions.
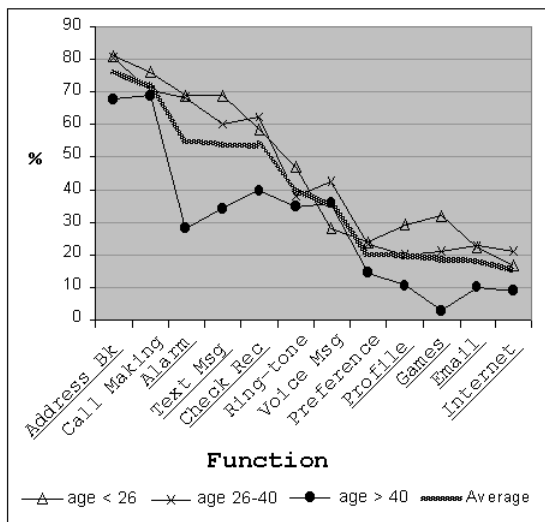

Figure 1: Preference for phone functions.

[Note: an underline indicates that an age gap was statistically significant for that function]

Figure 1 shows an age gap between the younger (above the thickened line) and older than 40 (below the thickened line) in their preferences for most of the functions. Patterns for users' preferences can be grouped as follows:

1. Functions that were rated highly by all groups were the address book and call-making functions.

2. Functions that were rated very poorly by all groups were preference setting, profile setting, games, email, and Internet. An age gap was found in all but one of these functions.

3. Functions that were enjoyed by younger users but that alienated the over 40's were alarm, text messaging, and check records.

4. Functions that all groups found moderately useful were ring-tone setting and voice messaging.

All age groups rated the functions in the second group poorly. This suggests that owners might have considered them optional. As discussed before, the age-divide observed may be due to poor usability, which may well explain why our older users were less enthused with new cellular technology than younger users. This was also reflected in a comment made by one of our older respondents, *"... plus* [it] *is too complicated for me to use all the features. I hate it..."* [Respondent 185].

To summarise, while different age groups may have varying preferences regarding functions of the phone, our analysis indicates that the age gap could be narrowed if some functions are made easier to use for older users and if some functions of the phone are considered optional to all (e.g. alarm) while others are considered essential.

3 Social Impact

The explosive increase of mobile phone ownership during the past decade is sure to impact the way we live in many ways: socially, culturally, economically, and even politically. One magical property of a mobile phone is that it is an artefact that can be embraced and adopted by '*all*' generations. That is, it can be used as a toy (e.g. for children), as an accessory (e.g. for young girls), a status symbol (e.g. for young adults), a communication device (for anyone) or an emergency alert device (for an elderly person). However, the current impact of mobile phones on society is not the same for '*all*' generations.

Among the savvy youth, new languages have evolved from heavy usage of text messaging. For example, a 'U' and a '4' symbolise 'you' and 'for', respectively. This is partly due to the need for text messages to be quick and short and partly to reflect one's social image, and establish one's own unique identity (Ling, 2002). Another interesting example is 'slebbing' – sending photos of celebrities as code. For example, a photo of Britney Spears (a famous American pop star) means 'Fancy a few beers?' (Metro, 2003). As such the number of new mobile phone pseudo-languages is on the rise. Other forms

of emergent culture among the young include ring-tone exchanging and logo downloading.

For the older generation work patterns and lifestyles are changing in domains as diverse as homemaking to business travelling and from builders to CEO's. The arrival of the Japanese NTT Docomo's i-mode phone in 2000 has made an immediate impact on trucking business in Japan, eliminating the middleman between the truck drivers and the cargo firms from its chain (Sakamaki, 2000). Working life is moving at a much faster pace than a decade ago. More and more mobile phones are used to pay bills and make bookings and, by 2005, 23 million Europeans will use mobile phones to buy travel products and services and 49 million will use them for public transport tickets ("Europeans will", 2002).

One apparent negative effect - on a large scale – is the rising mobile phone crime rate in Britain (BBC News Online, 2001). Meanwhile, Rheingold (2002) in his book about 'smart mobs' argues mobile devices will drastically change our society in unpredictable ways. 'Smart mobs' describe ad hoc social group formation resulting from mobile-Internet technology. An example was when the Philippines' president, Joseph Estrada, was toppled from power in January 2001 by a demonstration that gathered over a million Filipinos via text messages sent in four days (Rheingold, 2002).

The rapidly advancing wireless technologies today allow seamless integration of multiple communication channels (email, fax, text messaging, voice call, etc.) and hence, multiple group conversations in mixed channels and formats (voice, text, and pictures) have become possible. Social change due to these possibilities is evident and on-going but, there is a real possibility that new forms of mobile ad hoc social organisations, or 'smart mobs', may profoundly change our societies in ways that lead to the exclusion of certain groups because current mobile handsets do not support them effectively.

4 Designing for All Ages

Jordan (2000) introduces the Four-Pleasures framework to be used as a requirements gathering tool for designing products that go 'beyond usability' but without ignoring the basic needs of users. The framework puts an emphasis on looking at users holistically: physiologically, socially, psychologically, and ideologically. Physio-pleasure deals with ergonomic issues of the product and addresses physical limitations of users. Socio-

pleasure refers to the extent to which a product satisfies its users in relation to social relationships, identity, image, and status. Psycho-pleasure is closely related to the usability of the product. Poor usability hinders a user's task performance, and adversely affects the user's experience and emotional responses. Ideo-pleasure deals with the user's tastes, aspirations, and values.

We believe that Jordan's (2000) approach is an effective way to move forward with mobile phone design because, as discussed above, mobile phone technology and its adoption clearly can have a considerable impact on society as a whole.

A potential future direction for designing a phone for '*all*' ages would then be to prioritise the four pleasures according to the users' age groups. For older users, unless the psycho-pleasure and physio-pleasure criteria are addressed, socio-pleasure cannot be enjoyed and 'smart mobs' will take root with only a subset of society. Physio-pleasure and psycho-pleasure should, therefore, be seen as more important than socio-pleasure for older users - in order to make a phone more usable and consequently more enjoyable to them. However, for young users, the socio-pleasure dimension appears to take precedence. They are more readily adapted to new technologies and to compromise usability of the phone for appearance, functionality, and advance technologies. Therefore, current mobile phone market approach for stylish phones loaded with functionality and supported by advanced technologies appears to be heading in the right direction for this user group.

However, we appreciate that the above suggestions are not easy to put into practice. For one thing, people do not want to be stigmatised through the need for 'special products' designed to cater for their limitations brought about by the ageing process. The key dilemma then is how we should design a phone that is functionally discriminating but *non*-discriminating in appearance so that all generations can access, use, and enjoy it without being stigmatised as 'old' or 'young'.

As an example of how we could design such a phone, the following discussion outlining the design of a future mobile phone for '*all*' ages draws upon our analysis in section 2 of this paper. For the design to be inclusive of '*all*' age groups, it is important that users from diverse age groups be considered at the requirements gathering stage. Data collected through research of diverse user groups, such as ours, can help provide insights for designers and decision makers alike. For example, the analysis of our survey data revealed that certain functions of

mobile phones were top priority to have for our users (what we call a 'must have' category), some were 'optional' while others fell in between these two categories – those that could be a 'must have' function provided that they were easy to use for the older generation. We call this category, 'could have'. The crux, again, is to prioritise the needs of users. The hypothetical phone should include the functions in the 'must have' category as its basic functions. The functions in the 'could have' category could either be included as basic functions upon improved design or else be provided through customisation and personalisation (discussed below) together with the functions in the 'optional' category.

At present mobile phone users can personalise their phones with music, wallpapers, screensavers, and so on, for pleasure. Emiliani and Stephanidis (n.d.), however, recommend promoting the notion of individualisation and user interface adaptation as a way to ensure accessibility by '*all*' in society. This concept could be applied to mobile phone design that caters for '*all*' ages, so that the same phone could have different capabilities, user interfaces, and prices – tailored to suit the owner's needs. Individualisation can be made possible by creative use of available advanced wireless technologies and the introduction of 3rd generation mobile systems, which are capable of transmitting all forms of data (text, voice, graphics) at high speeds through Java enabled interfaces. Indeed, user interface adaptation has been widely implemented by mobile data service and content providers to subscribers in promoting real time and intelligent customisation. It is only a matter of time until these advance technologies and interface adaptations are explored and utilised by manufacturers to customise handsets to the needs and wants of their users and, thereby, increase their market share.

5   Conclusion

In this paper we have explored the impact of current mobile phone designs and discussed the way mobile phones are adopted by users of different generations. On the basis of our findings, and the available literature, we have identified a need for adopting a more inclusive approach to the design of the mobile phone so that different age groups are not alienated. We ended with a possible design solution

for future mobile phones that is both discriminating in functionality and *non*-discriminating in form so that the underlying needs of users of different generations are effectively supported.

References

BBC News Online (2001), Available at: http://news.bbc.co.uk/1/hi/uk/1619107.stm

Chattratichart, J. & Brodie, J. (forthcoming), The age factor in the design equation of cell phones, *Proceedings of the 12th Annual Usability Professionals' Association Conference*, UPA 2003, 23-27 June, Arizona, U.S.A.

Emiliani, P. L. & Stephanidis, C. (n.d.), Bridging the Gap? Access to telecommunications for all people, *Scientific and Technological Reports*, Chapter 4. Available at: http://www.tiresias.org/phoneability/wireless.htm.

Europeans will use mobile phones to buy travel (2002), 24 January, 2002. Available at: http://www.m-travel.com/20124a.shtml

Halstead, R. (1996), Grey Power Rules. *Business Age*, January1996, 68-70.

Jordan, P. W. (2000), *Designing Pleasurable Products*. London: Taylor and Francis.

Ling, R. (2002), *Adolescent girls and young adult men: Two sub-cultures of the mobile telephone*. Available at: http://www.intermedia.uio.no/seminarer/mobilitet/ling.html.

Metro (2003), London, March 10, 2003, 3.

Rheingold, H. (2002), *Smart Mobs: The Next Social Revolution*. Perseus Publishing.

Sakamaki, S. (2000), Japan's mobile-phone culture, *Time Asia,* November 27, 2000. Available at: http://www.time.com/time/asia/magazine/2000/1127/telecom.docomo_sb1.html.

Shipley, T. & Gill, J. (n.d.), Call barred? Inclusive design of wireless systems, *Scientific and Technological Reports*. Available at http://www.tiresias.org/phoneability/wireless.htm.