

Personal Customisation of Mobile Phones – A Case Study

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ABSTRACT

Mobile phones are highly personal, customisable mobile computing devices that allow users to precisely control how they interact with the device and their environment. This paper examines the process of customisation and seeks to identify how this customisation can be improved as the rate of adoption of new phones increases. We present a user case study of how 60 mobile phone users personalised their mobile phones during the first few weeks of ownership, and how they perceived different personalisation methods.

Author Keywords

Customisation, personalisation, mobile phones, mobile computing.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Mobile phones have become common everyday devices, and many countries are reporting close to a 100% adoption rate for their population. Technical development has led to a growing number of features, and today's mobile phones can be regarded as versatile small computing devices often employing cameras, colour screens, and user interface (UI) animations.

Research into personal customisation of mobile user interfaces has so far focused on different application concepts rather than examining existing practices. O'Grady and O'Hare [7] have demonstrated a personalised interface for a tourist guide run on a PDA. Web site personalisation for mobile users has been investigated in [1]. Trevor et al. [8] consider personalisation in larger perspective for ubiquitous applications, and present in their design a

framework which also considers mobile devices. However the existing practices in customisation of mobile phones by end-users have not yet been considered.

Personal customisation of a user interface by end-users is already a familiar phenomenon within the computing world, where users often customise the look and functionality of their desktop computer, e.g. by changing wallpapers and installing different search tools. Personal customisation of mobile phones has gradually evolved from exchangeable covers and ringing tones to the ability to change the UI themes and overall graphical UI components. This customisation is often solely concerned with the style or appearance of the phone, and can be considered to have more aesthetic than functional value. But in addition to these aesthetic changes, more functional customisation has allowed users to adapt the phones interface and how it interacts with the network and other users (e.g. Bluetooth security settings). Features such as user-defined shortcuts and voice commands allow the user to improve the interaction efficiency according to their personal needs or usage styles.

Despite of the pervasive nature of mobile phones in everyday life, systematic studies on personal customisation of mobile phones have not yet been reported. Studies of mobile phone usage have so far concentrated around communication culture, particularly of teenagers' usage of mobile phones and of text message communication culture [2, 4]. Usage of camera phones, which have lately become a common phenomenon, have also been examined [6].

In this paper we present our survey based study that looks at mobile phone users, who had recently started to use a new mobile phone, and the customisations they undertook during the first weeks of usage. The study aims to chart how extensively customisation possibilities are used, and examines any patterns of personalisation of different mobile phone features. The study participants were self-selected from a population of active mobile phone users to ensure high levels of mobile phone use and familiarity with the non-standard features available in newer phones.

USER STUDY

The study included 60 participants, who had recently started using a new Nokia Series 60 mobile phone. All

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participants were active users of mobile phones, and over 90% had had two or more phones in active use during the last year. The respondents consisted of 42 males (70%) and 18 females (30%), and were predominately in their 20's (30%) and 30's (55%). The time participants had used their current (new) mobile phone was mostly between two weeks and a month (43%), or from one to two months (45%). The participants were predominately Finnish.

The study consisted of an online survey, which the participants filled out anonymously. The survey consisted both multiple-choice and free text questions. The following mobile phone customisation items were investigated:

- Background image (wall paper)
- Ringing tone
- Message alert tone
- Screen saver
- UI Theme (UI skin)
- Audio profiles
- Specified a ringing tone for certain contacts
- Alarm clock tone
- Speech commands
- Adding photo to a phonebook contact
- Defining fast dial numbers
- Reorganising menu items
- Soft key shortcuts
- Active idle shortcuts
- Screen brightness
- Screen backlight off timer
- Automatic keylock

In addition, we also investigated the editing of access point and email settings, although these are typically not considered as personalisation items. Figure 1 illustrates some of these personalisable elements of the Nokia Series 60 mobile phone.



Figure 1. Personalisation elements on the idle mode screen.

RESULTS

Intensity of Customisation

A primary motivation of this survey was to examine how and when users personalise their mobile phones. We asked

each respondent to indicate when, if ever, they personalised each of the seventeen different personalisable features of the Nokia Series 60 mobile phone. The study results illustrated active customisation of the phone, with most personalisation occurring shortly after using the new phone for the first time. Overall we found that 66% of all features were personalised, see table 1. Note the table describes the percentage against all of the answers.

Number of personalised items (n = 983)				
First Use	First Day	First Week	Later	Never
133 (13.5%)	189 (19.2%)	191 (19.4%)	133 (13.5%)	337 (34.3%)

Table 1: Personalisation time period.

Users described the act of personalisation to be both enjoyable and frustrating. Users reported that the personalisation was designed to make the phone feel and appear as 'your own', or to make it look and feel closer to a previous phone the users had used. The motivation 'to make the phone feel like the one I had before' appeared in several comments, and was linked with comments where the participant wanted to be able to find device functions and navigate the phone menus as they had done with an older phone.

The most common features that were personalised were the ringing tone (customised by 95% of the respondents), audio profiles (93%) and background image (90%). Other features that had been personalised by over 75% of the participants were the UI theme (86%), message alert tone (83%), soft key shortcuts (82%), and menu item reorganisation (76%). The least customised features were automatic keylock (45%), fast dial numbers (42%) and speech commands (38%).

What Was Customised When

The results show that half (50%) of all personalisation occurred during the first day, and almost four-fifths (79%) within the first week. The study reveals that personalisation does not happen arbitrarily, but patterns can be seen of what kind of features are customised when.

Audio settings were typically customised very shortly after getting a new phone, and they seem to be the first features to be personalised. During the first time of the use, almost half (43%) of the participants responded that they had changed the ringing tone. The message alert tone and audio profiles were changed almost as commonly (32% and 30% respectively). All other settings were customised much less frequently when using the phone for the first time.

In general, the features affecting on the outer appearance of the phone were personalised most predominately at the beginning. Whereas audio settings were typically personalised in the very beginning, either during the first

use or first day of usage, graphical elements were mostly customised during the first day or first week.

The results show active customisation not only of fun or style features, but also of functional phone settings. Functional phone settings (application short cuts, quick dial keys, voice commands etc.) were most often modified in the more long term, after a week or more of use. The more complicated the configuration or personalisation process, the less the features are personalised. This includes modifying access point or email settings. Also time-out adjustments (like the backlight or automatic keylock timers) were often left unmodified.

Context-Aware Personalisation

In addition to their current practices, the participants were asked about context-aware personalisation of their mobile phones. Context-awareness, where the devices is aware of the use situation, has been under active investigation during recent years, and has been suggested as a potential future trend for mobile devices [3]. The use cases chosen for these questions were ones that have been suggested in research before, and appear quite frequently as examples of potential context-aware mobile phone features.

To examine this context-aware personalisation, participants were asked to identify the usefulness of their phone reacting to their environment to personalise specific phone settings. This personalisation included allowing the phone to select current ring tones, determine the user’s availability for calls and provide the users with information on their current location. The results are described in Tables 2-4. The results indicate that there exists general interest for use of context-aware features if such were available. They also show that people are somewhat aware of the risks related to the uncertain nature of context-aware features, and do not trust that they would work 100% reliably. Relatively heavy support of conditionally positive answers also indicate that the design of such features need to provide users with sufficient means of controlling their device’s actions.

Environmental Personalisation: Context specific ring tones	Users (n = 60)
Yes, I would like to use such a feature	16 (26.7%)
Yes, but the phone should ask for confirmation before executing the action	35 (58.3%)
No - I like the idea, but I doubt it would work reliably enough	7 (11.7%)
No, I don't find the feature useful	2 (3.3%)

Table 2: User Support for Environmental Personalisation

Environmental Personalisation: Determining availability for calls	Users (n = 60)
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Yes, I would like to use such a feature	23 (38.3%)
No - I like the idea, but I doubt it would work reliably enough	21 (35.0%)
No, I don't find the feature useful	16 (26.7%)

Table 3: User Support for Environmental Personalisation

Environmental Personalisation: Providing information on your current location	Users (n = 60)
Yes, I would like to use such a feature	14 (23.3%)
Yes, but only selected information	38 (63.3%)
No - I like the idea, but I doubt it would work reliably enough	4 (6.7%)
No, I don't find the feature useful	3 (5.0%)

Table 4: User Support for Environmental Personalisation

Security Features

Current Usage

The most common security features of mobile phones are the keypad lock (to prevent accidental dialling), and a SIM card PIN code (to restrict access to the phone to those with the correct code). Vast majority (75%) of respondents used automatic keylock, which activates after a certain period of time when keys have not been pressed. The SIM card PIN code prompting was used by 85% of the respondents. Other security features were also used to secure a specific part of the phone or the phone itself. Five users (8.3%) also used a SIM Locking code to prevent a lost or stolen phone from having a new SIM card entered. Few users also reported using Wallet codes, Memory Card security codes and securing their Bluetooth connection.

When the motivation behind using or not using the security features was asked, the security features were used to prevent data and financial loss when the phone is lost, and to prevent accidental dialling (e.g. when in users pocket, by user’s children etc). Some participants commented that they did not store personal information on their phone so they had less security concerns and could avoid using security features altogether. Inconvenience was also reported as a reason for not using different locking mechanisms. A typical comment was also that the use of SIM card PIN code was perceived to provide a sufficient level of security.

Suggested Features

The survey respondents were asked to suggest new security features to address perceived weaknesses in current phone functionality. Most of the respondents (73%) did not come up with any suggestions, but the given answers are described in the following.

Three respondents called for removable memory cards that could be secured with encryption to prevent unauthorised

access to the card's data. The same number also requested more fine grained control of the phone's address book, to allow selected sections to be secured with a password (e.g. friends and family's numbers might be secured, while common business numbers might not). A few users also suggested biometric phone security to reduce reliance on passcodes and to improve usability. Biometric security access could use e.g. voice or fingerprints of the user to confirm access rights. Users also suggested that some way of securing parts of the phone's functionality whilst leaving other parts accessible would be valuable. An example of this might be locking the dialling function of a phone whilst leaving the call receiving on.

Other suggestions included the use of virtual SIM cards, which could be a software only SIM card that was installed onto a phone via a direct link or downloaded via the internet. A virtual SIM card could, in theory, allow easy switching between multiple mobile phones and prevent data loss in the event of losing the phone. It could also allow the rapid personalisation of a mobile phone, by loading the users personal preferences from the virtual SIM card. This would greatly reduce the personalisation required when switching to a new mobile phone.

DISCUSSION

The study has shown that personalisation is a highly relevant issue with the use of mobile phones. The result is consistent with previous research identifying the personal nature of mobile phones and users desire to control access to their phone [5]. Mobile phones are inherently a personal device, and any move to make them more multiple-user friendly should focus on a method to store each user's personalisation preferences (either on the phone or a central server).

The study found that complicated settings, such as email or access point settings, which require somewhat more effort from the user, are often not personalised. This suggests that these add-on, 'nice to have' features that are not perceived crucial may easily be left unused if unreasonable effort is needed to configure them. Also, the evidence that time-out adjustments are not often modified suggests that the default settings should be well-defined.

These results are somewhat limited by the fact that the participants were active users of mobile phones and form quite a technology-orientated group. This group would potentially have more knowledge of technology than average users and therefore be better able to utilise the personalisable features of modern mobile phones. This may particularly affect the acceptance of context-aware personalisation and the use of additional security features.

CONCLUSIONS

This study shows that mobile phone personalisation is a highly relevant issue for the end-users, and most

possibilities for customising the phone are actively taken advantage of. The results also show that patterns can be recognised on what kinds of features are personalised when. In addition to making the device look and feel 'own', much of the early personalisation aimed at replicating the look and functionality of previously owned mobile phones.

In general we observed that the audio settings were personalised most predominately at the beginning, with graphical style settings personalised mostly over the first week. Functional phone settings such as short cuts, quick dial keys, or voice commands were most often changed in the more long term, after a week or more of use. The respondents also indicated that time-out adjustments (e.g. with keypad lock or backlight) and more complicated settings are quite often left unmodified.

A strong motivation for personalisation was to change the appearance of the phone to match to user's personal style and reflect their interaction preferences. Personalisation was often done to make the phone resemble the one the user had used before. The personalisation is used not only as a 'fun feature', but also for maintaining consistency over the platforms. This suggests that the ability to automatically save personal settings and transfer them a new phone would be a valuable addition to the personalisation process.

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