Wellness Applications – UI Design to Support Long-Term Usage Motivation

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Abstract

Due to the high penetration rate of mobile phones today, they have the potential to provide accessible and easy-to-use applications that help people manage their health and be physically more active. This paper describes the aim and progress of the author's PhD studies on the user interaction, usability and motivational issues related to mobile wellness applications.

ACM Classification Keywords

H.1.2 User/Machine Systems: Human factors. H.5.2 User Interfaces: Evaluation/methodology, User-centered design.

Keywords

User research, usability, wellness technologies, wellness applications, mobile applications.

Introduction

In the developed countries, people tend to be physically too inactive. Combined with unhealthy eating habits, the consequence is overweight, which is a growing problem in most western societies [5] and can cause different types of diseases, such as cardiovascular

Figure 1. Draft of the wellness product life-cycle. It shows the topics to be studied in the different phases of the usage.

problems and type 2 diabetes [11]. It is estimated that obesity accounts for 2-8% of the healthcare costs in Europe [5].

Wellness technologies (WTs) and wellness applications (WAs) aim to help users to maintain a healthy lifestyle by, e.g., motivating to increase the amount of physical activity and supporting weight management. The number of WTs on the market has increased rapidly. Gadgets, such as heart rate monitors and step counters, are available for different purposes and for various target user groups, and there are web portals offering tools for keeping exercise and food diaries, having virtual personal trainers and sharing results with other people. To succeed in supporting the users' wellbeing, WTs and WAs should be designed so that they motivate users to keep going with their targets. Previous studies reveal that there are several aspects, which can be exploited when designing applications in order to increase the motivation towards physical activity. Those include, for example, social sharing features [4], virtual personal trainers [2], music [10], gaming experience [9] and real-time feedback [3].

Solutions and concepts for supporting weight management have also been presented. For example, the Wellness Diary application [7] relies on increasing the self-awareness of the problem by regular recording of self-observations and getting feedback of these. Another application for the weight management, PmEB, [8] is based on monitoring caloric balance.

However, only little is so far known about how the user interface (UI) of the WA could best support the users in the process towards a better wellbeing. The PhD research presented in this paper aims at studying how

the UI of a mobile WAs could help, support and motivate users in both the initial and long-term use. The results will be used in creating guidelines for the user-centred design of WAs.

Approach and Research in Progress
Research Questions
The main research question of the PhD thesis is the following: *How can the UI design support the long-term usage life-cycle of mobile wellness applications?* This is an essential question, because if the WA could be designed in a way to motivate people to better take care of themselves, it would bring health-related benefits for both individuals and societies. Technological devices, e.g., mobile phones and the Internet are already now a part of the everyday lives of most people, so why not try designing applications that support people to take care of their most valuable property, health?

The supporting research questions are:

▪   What are the motivating factors and barriers in the different phases of the usage of WAs, and how could UI design support motivation?

▪   What are the reasons to drop out in different phases of the use: why do users give up during the initial usage, and why after long-term?

The outcome of the research will include a wellness product life-cycle model (see Figure 1), guidelines for designing user-centered WAs and evaluated UI mockups/prototypes.
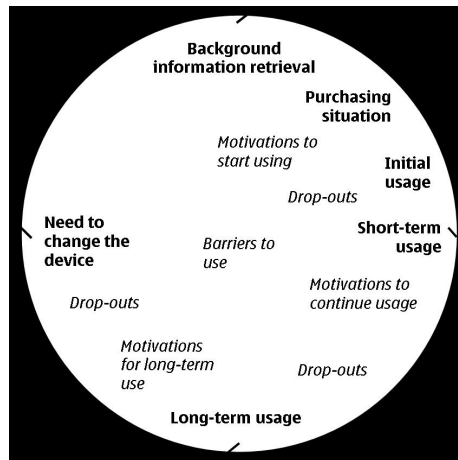
Figure 2. The main view of the Wellness Diary mobile application showing quick summaries of the data on the weight, exercise and eating modules.
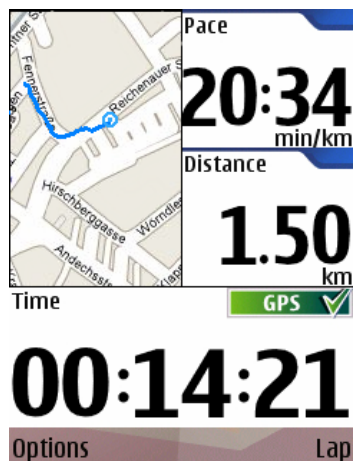

Figure 3. An example view of the Sports Tracker mobile application showing a small map and numerical information of the current workout.

Methodology
The research approach will be case-based, utilizing user-centered design methods. Studies with existing technology will be carried out, e.g., by evaluating and long-term piloting with users. Moreover, new UI prototypes/mockups will be developed and evaluated. Several different data collection methods will be used: questionnaires, usability testing and observation. Field studies will be a preferred approach. The framework of the research combines case study [12] and design science research [6] approaches. A case study approach is used in the first phase, where user needs and requirements are investigated. In the second phase, where new UI mock-ups are built and evaluated, the design science research framework is utilised.

Conducted Research
The research will be constructed from several studies on the domain of WTs, which each contribute to the different aspects of the overall user experience, e.g., usability, motivational issues and application design.

The research already conducted contains several evaluation rounds and user interviews with the Wellness Diary mobile application (WD) [1], see Figure 2, and the related web portal. The results indicate a strong interest towards recording weight, eating and exercise-related personal data and getting feedback. Several ways to view feedback is appreciated by the users. For example, assistance for setting goals and completing healthy exercises is needed. Studies have also been carried out with the Sports Tracker (ST) mobile application, see Figure 3 [paper submitted to MobiSys 2008] to find out the motivating factors and barriers to track physical outdoor activities with a GPS-enabled mobile phone application. The results indicate that mobile phones

would be a suitable platform for the WAs and that offering automatically collected data about the exercises (route, time, distance, speed etc.) motivates users to utilise the application. What is more, the possibility to compete against your previous workouts seems to be a motivating issue.

In addition, the conducted research contains an interview and survey-based study with heart rate monitor users (novice and experienced) and vendors. The study explored the motivational aspects and trends of the usage of heart rate monitors, which are popular gadgets among certain user groups who are physically active. The analysis of the results is in progress.

Planned Research
A long-term pilot study (one year), which will focus on comparing traditional wellness intervention methods and technology-enabled wellness intervention methods, will start early 2008. The study will include several WT solutions, e.g., WD and the wellness web portal.

More research will be needed, e.g., about the social aspects in the wellness domain. In the previous studies, social sharing and comparing have been raised as important factors. In addition to social sharing aspects, the author believes that a study on cultural differences of the user needs and motivational issues related to wellness applications will give valuable insights into the design of mobile WAs. For example, a cross-cultural study in India, China, USA and Europe would give valuable material for the thesis.

Discussion and Conclusions
In this paper, the author has described her PhD research in progress on the UI design of mobile wellness

applications. The topic is essential because technological solutions have a great potential to motivate and support people to increase the amount of physical activity. Increased physical activity, in turn, will lead to several health-related benefits.

The current state of the research includes several studies, which have either been conducted or which are in progress – user studies with the WD and ST applications, and a long-term pilot with several wellness technology solutions. The preliminary results indicate that mobile phones are a suitable platform for wellness applications and that, for example, by offering a gaming-type of experience, social sharing opportunities and proper feedback, users are given support in keeping up the motivation for wellness management.

However, there are several areas on which feedback would be valued. As such, the focus of the research is relatively wide-spread and should be narrowed down. In addition, the author would like to get support in finding out the best means to study long-term motivational issues and how to convert the gathered knowledge to actual design guidelines.

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