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Uta Knebel

Technische Universität München, knebel@in.tum.de

Sebastian Esch

Technische Universität München, esch@in.tum.de

Jan Marco Leimeister

Technische Universität München, leimeister@acm.org

Helmut Krcmar

Technische Universität München, krcmar@in.tum.de

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Personal Health Manager – Designing an intermediary system supporting health education and exercise programs

Uta Knebel, Sebastian Esch, Jan Marco Leimeister, Helmut Krcmar
 Technische Universität München, Information Systems, Munich, Germany
 {knebel; esch; leimeister; krcmar}@in.tum.de

ABSTRACT

The Personal Health Manager (PHM) is an IT-based product-service system (combining face to face, automated and computer-mediated services, hardware, software) supporting health exercise programs in workplace health promotion. Major HCI design challenges are different target groups, unstructured tasks, various hardware and service components, and finding the limit between face to face and automated services – ranging from top quality human supervision to cheap, scalable automated services in hedonic systems. We present an iterative development and test design as well as first design ideas. Through this case we try to highlight that traditional MIS and HCI approaches ‘as is’ are hardly applicable for designing IT-based product-service systems and that new approaches are necessary.

Keywords

affective engineering, hedonic systems, motivation, health, exercise, product-service system

The idea: The Personal Health Manager - The objective of our research is to design, build and evaluate an IT-supported training system for health-oriented exercising (the Personal Health Manager, PHM) that closely interlocks product components (software / hardware) and corresponding services (face-to-face examination and individual training advice). The PHM software is a tool for the athlete as well as for the supervisor that is closely interlocked with corresponding face-to-face (f2f) services. Based on regular, f2f meetings between athlete and supervisor, the supervisor will analyze the athlete’s situation and work out an exercise plan. This is supported by the PHM supervisor software, which provides exercise building blocks, descriptions, animations and references to medical conditions etc., accelerating the planning process considerably compared to the paper and pencil method. Using the PHM athlete software, the athlete accesses his exercise plan via internet on his PC or mobile device. He documents his training units along with corresponding data (e.g. heart rates, perceived well-being) and transmits it to his supervisor. If he needs further advice, he will consult the help library, contact the support, or schedule a meeting with his supervisor via the software. The system helps him to take adequate exercise accurately. In the PHM supervisor software, the supervisor will get an overview over the status of all athletes he is training, quickly

recognizing who is doing well, who seems to have problems and who needs a personal talk or interaction. He chooses from a variety of communication tools and contacts the “problem” athletes to motivate, give advice, compliment or reprove the respective athlete. Main goals of the software are to accelerate work, enable to supervise more athletes in less time, at less cost and effort and to represent a supervisor, give guidance for adequate and accurate exercise, motivate to stick to exercising.

The development approach - As health and lifestyle are very personal and individual topics and no similar systems already exist, an early and frequent involvement of users and experts as well as continuous evaluation and revision of the interaction design seem essential for the success of the system. Therefore, we have decided to choose an iterative, multistage development approach. The chosen development process is a combination of the generic spiral process model (Boehm, 1988) and prototyping. The results of each iteration are evaluated by experts and / or lead users, its findings are the basis for the next iteration (Arnold et al.,2003 , Knebel et al.,2007). After four iterations, the system will tested by end users, in our case, health-oriented athletes and their supervisors in workplace health promotion.

When combining face-to-face services with automated and computer-mediated services one of the major challenges is how to intertwine different service types to a close net that cannot be separated, and to integrate all actions in a process model. Another challenge is to determine the “line of visibility” between automated and f2f services. Exploring different intensities of face-to-face, automated und computer-mediated services seems like unknown territory to HCI research.

Summary - We are developing a complex, hedonistic IT-based product-service-system with two target groups (trainers and athletes), who at the same time are part of the overall training system. We have presented a first development process model and first suggestions for the system design. Developing the PHM, we try to explore more about how to develop complex product-service systems and to what extent current HCI methods are appropriate or how they could be adapted.