

Mobile Health Systems for Bipolar Disorder: The Relevance of Non-Functional Requirements in MONARCA Project

Oscar Mayora, CREATE-NET, Povo, Trento, Italy

Mads Frost, ITU Copenhagen, Copenhagen, Denmark

Bert Arnrich, ETH Zurich, Zurich, Switzerland

Franz Gravenhorst, ETH Zurich, Zurich, Switzerland

Agnes Grunerbl, TU Kaiserslautern, Kaiserslautern, Germany

Amir Muaremi, ETH Zurich, Zurich, Switzerland

Venet Osmani, CREATE-NET, Povo, Trento, Italy

Alessandro Puiatti, SUPSI, Manno, Switzerland

Nina Reichwaldt, PLRI-BITZ, Braunschweig, Germany

Corinna Scharnweber, PLRI-BITZ, Braunschweig, Germany

Gerhard Troster, ETH Zurich, Zurich, Switzerland

ABSTRACT

This paper presents a series of challenges for developing mobile health solutions for mental health as a result of MONARCA project three-year activities. The lessons learnt on the design, development and evaluation of a mobile health system for supporting the treatment of bipolar disorder. The findings presented here are the result of over 3 years of activity within the MONARCA EU project. The challenges listed and detailed in this paper may be used in future research as a starting point for identifying important non-functional requirements involved in mobile health provisioning that are fundamental for the successful implementation of mobile health services in real life contexts.

Keywords: Bipolar Disorder, Component, Lessons Learnt, Mental Health, Personal Health Systems

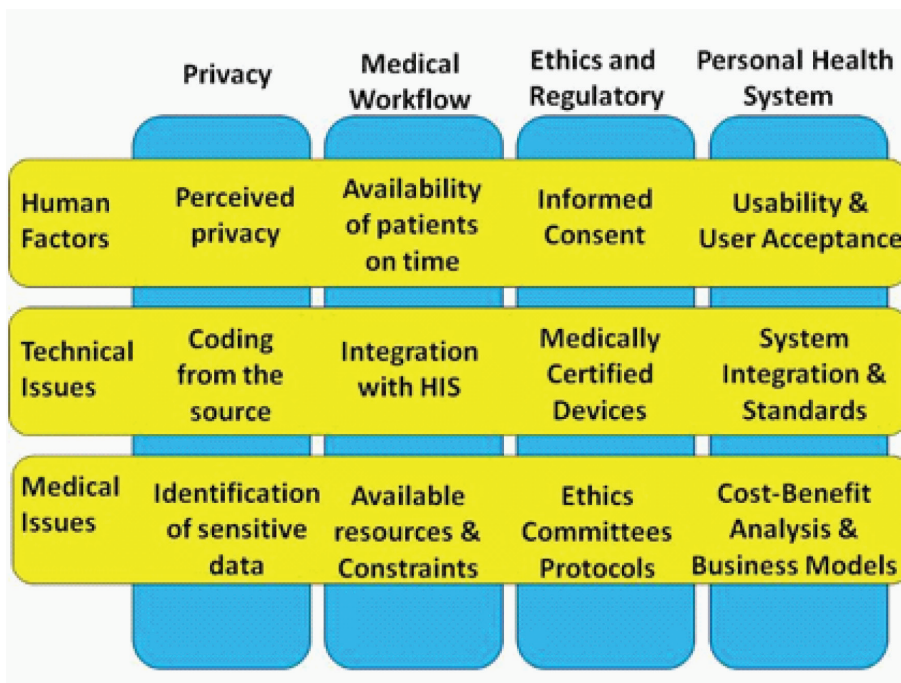
DOI: 10.4018/ijhcr.2014010101

INTRODUCTION

When designing mobile health systems the focal point of research is frequently concentrated on the design of innovative developments for improving the practice of healthcare and increase of wellbeing with a strong focus on functional requirements. On this regard, the aspects related to definition of non-functional requirements of mobile health provisioning are often underestimated or left as a secondary item to take into consideration by researchers. However only through a thorough consideration of potential implications on design of non-functional requirements, the mobile health innovations can find an opportunity to transform into sustainable solutions that can be applied in real life contexts. These kinds of requirements comprise all the practical aspects of healthcare provisioning that are necessary to implement mobile health services ranging from human factors to important medical and technological issues.

In this paper we introduce the experiences learnt in MONARCA project for developing a mobile monitoring system for better handling the treatment of bipolar disorder and the challenges found related to its implementation in a real life context. The main contribution of this paper focus not only on the innovative mobile health solution proposed by MONARCA but also on the technological and clinical aspects that were necessary for conducting multidisciplinary research in the context of such project and on other non-functional requirements that are key in the development of technological solutions for the design, development and evaluation of mobile health systems. Such requirements include aspects related to technology, human factors, medical practice, regulatory aspects and other practical issues that are identified in this paper as key challenges in the development of future mobile personal health systems and services (See Figure 1).

Figure 1. Relevant aspects in multidisciplinary IT-based clinical research



10 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/article/mobile-health-systems-for-bipolar-disorder/111344

Related Content

Multi-Layered Security Model for Hadoop Environment: Security Model for Hadoop

P. Victor Paul and D. Veeraiah (2017). *International Journal of Handheld Computing Research* (pp. 58-71).

www.irma-international.org/article/multi-layered-security-model-for-hadoop-environment/214024/

Interference Modeling and Analysis in Cognitive Radio Networks

Yanxiao Zhao, Bighnaraj Panigrahi, Kazem Sohraby and Wei Wang (2013). *International Journal of Handheld Computing Research* (pp. 1-15).

www.irma-international.org/article/interference-modeling-and-analysis-in-cognitive-radio-networks/103150/

A Piecewise Linear Time-Varying Model for Modeling the Charging and Discharging Processes of a Lithium-Ion Battery

Arab AlSharif and Manohar Das (2014). *International Journal of Handheld Computing Research* (pp. 87-103).

www.irma-international.org/article/a-piecewise-linear-time-varying-model-for-modeling-the-charging-and-discharging-processes-of-a-lithium-ion-battery/124962/

Development of a Framework for Technological Embedding in Private Social Solidarity Institutions: Technology for Inclusion in the Daily Activities of Third Sector Institutions – The Portuguese Case

Luis Barreto, António M. Amaral, Teresa Pereira and Filipe Carvalho (2018). *Mobile Applications and Solutions for Social Inclusion* (pp. 83-108).

www.irma-international.org/chapter/development-of-a-framework-for-technological-embedding-in-private-social-solidarity-institutions/204711/

Performance Measurement Study on Two Video Service Providers in China

Jiali You, Hanxing Xue, Yu Zhuo, Guoqiang Zhang, Jinlin Wang and Weining Qi
(2018). *International Journal of Mobile Computing and Multimedia Communications*
(pp. 62-78).

www.irma-international.org/article/performance-measurement-study-on-two-video-service-providers-in-china/198386/