

# Mobile Application Framework for the Next Billion Mobile Users

Jörg Dörflinger

SAP Research, CEC Karlsruhe, Vincenz-Priessnitz-Strasse 1  
Karlsruhe, 76131, Germany  
Tel: +49 6227 7-52556  
joerg.doerflinger@sap.com

## ABSTRACT

Every day about 1 million people become mobile phone users - 85% of these live in the developing world. The biggest potential of future mobile development will not be in the already saturated 1st economy market but in the market of about one billion potential mobile users in emerging economies. In contrast to the impressive rise of mobile phone usage, the mobile services and applications provided for this new market are far behind expectations. Due to infrastructural (low, erratic and expensive bandwidth, low end devices) and social (illiteracy, novice ICT users) impediments a copy&paste approach of well known application and architecture concepts from the 1st economy will not work. My research goal is the development of a Mobile Application Framework (MAF) containing guidelines, concepts, and best practices to provide novice IT users in rural areas of emerging economies with the most appropriate access to ICT according to the infrastructural and cultural impediments.

## Categories and Subject Descriptors

H1.2 [Information Systems]: User/Machine Systems; H5.2 [Information Systems and Presentation]: User Interfaces

## General Terms

Design, Experimentation, Human Factors

## Keywords

Mobile HCI, Next Billion; Mobile Application, ICT4D

## 1. MOTIVATION

The introduction of mobile technology into the Bottom of the Pyramid (BOP) market, such as the BRICS (Brazil, Russia, India, China and South Africa), will improve people's life, currently cut off from the formal economy, by providing them with access to relevant services (e.g. Health, Education). Mobile technology will be the key technology to foster economic growth and sustain development. Decreasing the Digital Divide therefore is critical to enable ICTs being the enabling mechanism. The motivation of my research is the lack of appropriate application and technology utilization to successfully deploy ICT in the Next Billion

market. A MAF, describing the requirements, guidelines, and best practices, able to cope with the infrastructural and social impediments in emerging economies will be a key research contribution to overcome the Digital Divide. The research problem can be summarized as follows: How do novice information technology users in rural areas of emerging economies in the context of ICT4D get access to ICT in the most appropriate way?

## 2. RESULTS AND CONTRIBUTION

Besides a literature review the research starts with an extensive requirements analysis which will serve as the basis for the MAF design and development. Understanding the requirements in every detail is a key prerequisite for the development of an appropriate MAF for emerging economies. This is achieved using the Living Lab methodology which involves the end user into the entire development life cycle (participatory design). The Living Lab in use is in the rural South Africa and was set up within the C@R<sup>12</sup> project.

The design, implementation, and evaluation of the prototypes is done in short cycles within the Living Lab using a rapid prototyping approach (Action Research) to ensure the appropriateness of the results by real end user validation.

Currently the first instance of the MAF (mobile/PC client, server applications) is in a 6 month pilot phase. Version 1.0 supports the well established first generation of ICT-based services on mobile phones, SMS applications, and desktop applications deployed on low end PCs running mostly off-line using optimized synchronization mechanisms to cope with the low and expensive bandwidth. It has proven its appropriateness during the pilot phase and now serves as basis for the second version of the MAF which will support the next generation of mobile applications - the Mobile Web.

SMS applications currently are the most appropriate approach to provide basic mobile services to the under-privileged populations of developing countries. However SMS will not allow a large scale, low cost deployment of services. This could be realized using the Mobile Web. But to make the Mobile Web usable and relevant to the Next Billion consumers the concepts of UI design, application (mobile browser, web content) design and mobile interaction design need to be rethought especially for this new user group in a completely new environment. Further prototypes will be designed and tested within the Living Lab to find out the most appropriate way to provide novice information technology users in rural areas of emerging economies with access to ICT.

Copyright is held by the author/owner(s).  
*MobileHCI'09* September 15-18, 2009, Bonn, Germany  
ACM 978-1-60558-281-8.

<sup>1</sup><http://www.c-rural.eu/Southafrica-LivingLab/>

<sup>2</sup><http://www.sap-tv.com/?a=3813&l=1>