Using Web Technologies and Mobile Phones for Social Development: W3C\textsuperscript{1} Approach

Stephane BOYERA, Philipp HOSCHKA
World Wide Web Consortium (W3C)
Email: boyera@w3.org, ph@w3.org

Abstract: This paper presents the new initiative the World Wide Web Consortium (W3C) has launched in May 2008, Mobile Web for Social Development (MW4D). This new group explores how to use the potential of Information and Communication Technologies (ICTs) on Mobile phones as a solution to bridge the Digital Divide and provide minimal services (health, education, governance, business, etc.) to rural communities and under-privileged populations of Developing Countries. This paper presents in the first part the rationale behind the launch of the group and, in a second part, the vision and directions it is currently following, the expected schedule and its list of deliverables.

1. Introduction

Since its creation in 1994 by Web inventor Sir Tim Berners-Lee, W3C \cite{1} has been working towards the realization of its vision of the Universal Web Access: The Web anywhere, for everyone, at anytime, on everything. In the meantime, the Web has grown exponentially to almost 1.5 billion users in 2008 \cite{2}, creating services, providing information, connecting people, creating new jobs and completely new sectors of activities.

Despite this enormous success in such a short timeframe, there are still more than 5 billions people today that are not benefiting from this Information Society created by the Web. However, the Web, and Information and Communication Technologies (ICT) in general, have been recognized as a great tool to potentially resolve the historical divides between developed and developing economies by providing an infrastructure to deploy essential services (health, education, business, government, etc.) to rural communities and under-privileged populations. That is why many actions have been engaged in the last twenty years towards bridging the so-called Digital Divide. Unfortunately, many of these actions - often focusing on telecenters – have been met with limited success so far. For example, the telecenter model has encountered many difficulties due to the local conditions (lack of electricity and lack of maintenance skills, to mention two typical barriers) and very few efforts in this area have reached long-term sustainability and continued operation.

Since 2-3 years a promising new opportunity is emerging due to the very high penetration rate of mobile telephony in developing countries. Now a minimal infrastructure (GSM networks) and minimal computing power (mobile phones) are available in the pockets (or at least in their very close environment) of billions of people, including the poorest segment of the population. Most developing countries who missed the telephony revolution due to lack of infrastructure and required investments have participated in the mobile revolution directly. Can this be repeated for the Web? Four years ago, the W3C with the mobile industry have launched the Mobile Web Initiative (see \cite{10}) to make mobile phone users first class Web citizen, and the number of people accessing the Web from mobile phones is growing very

\textsuperscript{1}The work presented in this paper, while driven by W3C, is part of the EU FP7 project Digital World Forum on Accessible and Inclusive ICT (see \cite{12} for more details).

Proceedings of M4D 2008, Karlstad University, Sweden – 49
quickly. Would it be possible that, like for telephony, most Developing Countries will skip the PC-Web revolution and jump directly on the next phase, the Mobile Web?

In May 2008, W3C has launched the Mobile Web for Social Development Interest Group (MW4D [9]) to explore this direction, and this paper is presenting the vision behind this new group, its objectives, its deliverables, and its expected output.

2. Mobile Web for Social Development

Today half of the world’s population is living on less than $2.5 a day [3]. This part of the population is suffering from the lack of all types of services (health, government, etc., as mentioned above) which prevents them from increasing their income.

During the last few years, the potential of simple ICT services to provide solutions in this area has been largely demonstrated. For example, in the Indian fishery sector in Kerala, an in-depth economic study (see [4]) has demonstrated that the adoption of a mobile service delivering market information (needs and prices) from different geographical areas, allowing fishermen to provide their goods to the most appropriate market, has increased the income of fishermen by 9% (integrating the price of the mobile phone/subscription), while the overall price of fish dropped by 4% for consumers, due to the elimination of unsold and therefore wasted catches. Similar experiences and results have been demonstrated in other regions and products (see e.g. grain market in Niger [5]).

Unfortunately, while these experiments are achieving impressive results, the number of these services at the global level is still very low, and the domains covered are mostly agriculture and banking only, whereas similar potential exists in health, education, government etc. In [6], we explained why the technology currently used, SMS, is clearly a limiting factor, preventing a large scale development, deployment and use of numerous applications. Indeed, while there are many reasons why SMS is widely used today (availability on all mobile phones, predictable costs, ease of use by users, free reception, to mention some of the most obvious reasons), this technology has intrinsic limitations (e.g., required literacy, lack of localization, no automatic discovery mechanism, lack of standardization, 160-character limitation) that prevents large scale low cost development and deployment of services. At the opposite, Web technologies have largely demonstrated their strengths in these specific areas, and therefore the enabling of the next generation of mobile applications based on these technologies (mobile browsing, voice technologies, mobile widgets, etc.) could be a potential solution.

The aim of the MW4D working group is to investigate and understand the characteristics of an enabling environment that would drive the adoption of this new generation of applications. This will result in the appearance of numerous services impacting positively the lives of the poorest segment of the populations in the developing world.

Successful ICT projects generally follow three steps:

1. “Someone” who is observing how a community is working/living identifies the potential of an ICT service to help this community.
2. The idea is then implemented using the technology.
3. The potential targeted users find the service accessible, affordable, usable and useful, and make the effort to learn and adopt the service.

Regarding the first step, there are different kinds of actors:

- NGO/Grass-root/non-profit organizations
- Government/Public administration
- Individual social entrepreneurs investigating how to make business in delivering social services

50 – Proceedings of M4D 2008, Karlstad University, Sweden
Each of these actors has specific challenges, and objectives, and for each a specific approach is required. As a first step, MW4D is focusing on NGO/Grass-root/non-profit organizations (see [7] MW4D focus diagram).

Regarding the second step, MW4D is conducting investigations to identify the issues, barriers, needs and challenges for potential providers of development-oriented services when developing and deploying those services, and when exploiting the potential of the mobile platform. As previously mentioned, there are multiple ways (technologies) today for developing and deploying content on mobile phone. Each of these technologies has specific domains of application, requirements (on the handset, on the operator…) and costs. MW4D is analyzing and identifying the different dimensions to consider in order to make the appropriate selection based on the specificities of the application, the context, the targeted end-user etc. The group is also investigating the gaps that still exist today, and the most promising direction to follow to resolve them. This includes specifically the education needs that would help empowering people and enabling them to develop the applications they need without relying on external expertise.

Regarding the third step, it is critical to understand the key challenges and barriers that targeted end-users (underprivileged populations of Developing Countries) have to access and use mobile services. This includes affordability, usability, illiteracy, accessibility and internationalization/localization issues. MW4D is working on the identification of these different challenges and the way to work around them or the most promising direction to explore to solve them in the future.

In terms of final objectives, the MW4D working group is chartered until the end of May 2009. By that time, it is expected that the group has developed:

1. A handbook for anyone who is willing to develop and deploy development-oriented mobile service. The handbook will describe all the current technologies that can be used for this purpose, their domain of applicability, requirements, challenges, and specific aspects to consider.
2. A roadmap that will identify the major directions to explore, or the most promising actions to launch in order to lower the barriers of providing or accessing content and services on mobile phones
3. A directory of resources related to the use of mobile phones in development (cf. the repository in reference [8])

As of October 2008, some draft documents have been already collaboratively developed [11]. MW4D, unlike most of other W3C groups, is freely open to public participation.

References

[10] W3C Mobile Web Initiative http://www.w3.org/Mobile/