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CEPIS NEWS

Using Web Technologies and Mobile Phones for Social Development: W3C Approach

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This paper presents the new initiative that the World Wide Web Consortium (W3C) launched in May 2008; Mobile Web for Social Development. This new group explores how to bring the potential of Information and Communication Technologies (ICTs) to bear on mobile phones as a solution to bridge the digital divide and provide minimal services (health, education, governance, business...) to rural communities and under-privileged populations of developing countries. The first part of this paper presents the rationale behind the launch of the group and the second part deals with the vision and directions it is currently following, the expected schedule, and a list of its deliverables.

Keywords: Developing Countries, Digital Divide, Mobile Web for Social Development Interest Group, Mobile Web, Mobile Web Initiative, Rural Communities, Social Development, W3C.

1 Introduction

Since its creation in 1994 by Web inventor Sir Tim Berners-Lee, W3C [1] has been working towards the realization of its vision of 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 [2], creating services, providing information, connecting people, and creating new jobs and completely new sectors of activities.

Despite this enormous success in such a short timeframe, there are still more than 5 billion people today that are not benefiting from this Information Society created by the Web. However, the Web, and ICT in general, have been recognized as a great tool to potentially resolve the historical divide between developed and developing economies by providing an infrastructure to deploy essential services (health, education, business, government...) to rural communities and underprivileged 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 telecentres, have met with limited success so far. For example, the telecentre model has encountered many difficulties due to local conditions (lack of electricity, lack of maintenance skills…) and very few efforts in this area have achieved long-term sustainability and continued operation.

For the last 2-3 years a promising new opportunity has been 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 immediate environment) of billions of people, including the poorest segment of the population. Most developing countries who missed the telephony revolution due to a lack of infrastructure and required investment have participated in the mobile revolution directly. Can this be repeated for

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the Web? Four years ago, the W3C together with the mobile industry launched the Mobile Web Initiative [10] to make mobile phone users first class Web citizens, and the number of people accessing the Web from mobile phones is growing very quickly. Would it be possible, as it was for telephony, for most Developing Countries to skip the PC-Web revolution and jump directly onto the next phase, the Mobile Web?

In May 2008, W3C launched the Mobile Web for Social Development Interest Group (MW4D [9]) to explore this direction, and this paper presents the vision behind this new group, its objectives, its deliverables, and its expected output[1].

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[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 [12] for more details).

2 Mobile Web for Social Development Interest Group

The mission of the Mobile Web For Social Development (MW4D) Interest Group (IG), part of the Mobile Web Initiative Activity, is to explore the potential of Web technologies on mobile phones as a solution to bridge the digital divide and provide ICT-based services to rural communities and underprivileged populations of developing countries.

The four main goals of the MW4D Interest Group are:

1. Challenges to identification: To understand ICT-access issues in rural communities and underprivileged populations, and to document needs, challenges, and use cases.

2. Roadmap definition: To identify promising solutions for each challenge.

3. Community building: To create an interdisciplinary forum for discussing how mobile phone technologies can help bridge the digital divide.

4. Contribution to universal Web access: To help ensure that W3C is fulfilling its mission of making the Web available to all.

Another of MW4D IG's goals is to identify how the W3C community can contribute to bridging the Digital Divide and help reach the United Nations Millennium Development Goals. Therefore, it is within the scope of this Interest Group to:

■ Offer input to other W3C Working Groups on the specific challenges posed by the digital divide.

■ Propose new areas of work to the W3C community (e.g., via the drafting of a new Working Group charter).

■ Understand and propose to W3C groups how to contribute to the effort.

3 Mobile Web for Social Development

Today half of the world's population is living on less than $2.5 a day [3]. This segment of the population is suffering from a lack of all kinds of services (health, government, education, finance...) which prevents them from increasing their income.

In recent years, the potential of simple ICT services to provide solutions in this area has been amply demonstrated. For example, in the Indian fishery sector in Kerala, an in-depth economic study [4] has shown that the adoption of a mobile service delivering market information (needs and prices) from different geographical areas, allowing fishermen to deliver their goods to the most appropriate market, has increased the income of fishermen by 9% (including 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 achieved in other regions with other products (see grain market in Niger for example [5]).

Unfortunately, while these experiments are achieving impressive results, the number of these services at a global level is still very low, and the domains covered are mostly only agricultural and banking, while a similar potential exists in health, education, government, etc. In [6] we explained why the technology currently used, SMS, is clearly a limiting factor, preventing any large scale development, deploy-

ment, and use of numerous applications. Indeed, while there are many reasons why SMS is widely used today (availability on all phones, predictable costs, ease of use by users, free reception…), this technology has intrinsic limitations (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. Conversely, Web technologies have amply 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…) 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 on the lives of the poorer population segments in the developing world.

Successful 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:

■ Non-Governmental Organizations (NGO)/Grass-root/non-profit organizations.

■ Government/Public administration.

■ Individual social entrepreneurs investigating how to do business delivering social services.

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 MW4D focus diagram [7]).

Regarding the second step, MW4D is researching into 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 many different ways (technologies) of developing and deploying content on mobile phones today. Each of these technologies has specific domains of application, requirements (on the handset, on the operator…) and costs. MW4D is analysing and identifying the various dimensions to be considered in order to make the right choice 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 research paths that might lead to closing those gaps including, in particular, the training needs that would be required to empower people and enable them 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 target end-users (underprivileged populations of developing countries) have to access and use mobile services. These include affordability, usability, literacy, accessibility and internationalization/localization issues. MW4D is working on the identification of these different challenges and the way to work around them or find 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 will have developed:

1. A handbook for anyone willing to develop and deploy development-oriented mobile services. 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 (see [8]).

As of January 2009, some draft documents have already been collaboratively developed [11]. MW4D, unlike most other W3C groups, is freely open to public participation.

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