



Mobile Internet for the Emerging Market

Hewlett Packard Laboratories - India

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ABSTRACT

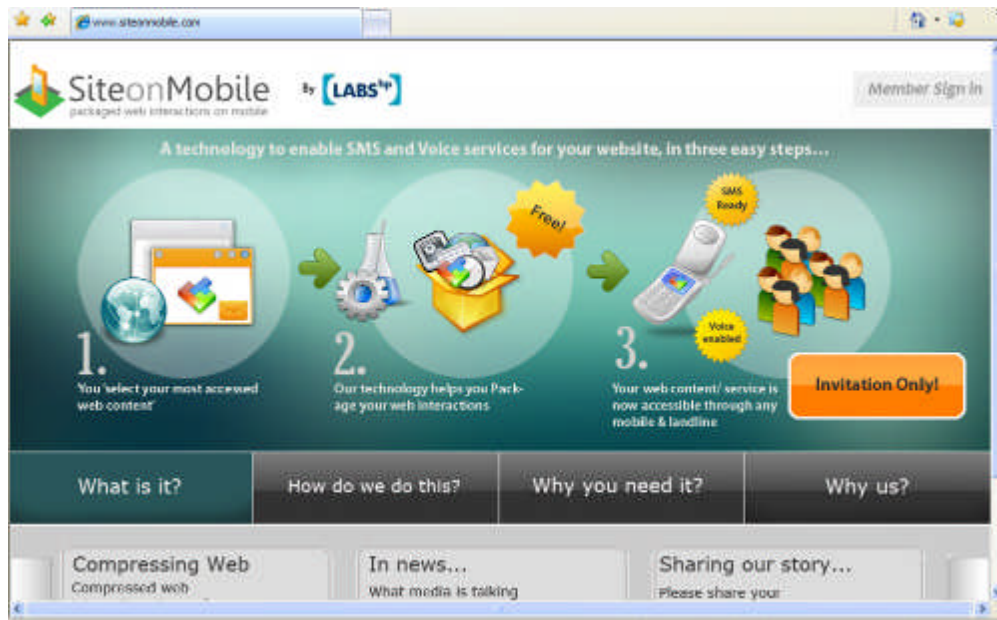
While mobile adoption has seen a huge growth in developing nations, PC and Internet are yet to see a similar growth trajectory. It is also believed that mobile will become the primary Internet consumption device for consumers in these fast-growing markets. However, more than 50% of the handsets sold in emerging markets like India are ultra low-end phones with just voice and data messaging capabilities. We propose a solution to deliver Internet experiences over SMS and Voice and overcome the technical hindrances of small and expensive bandwidth, device capabilities and need for technical knowledge to use the Web. A beta launch of the solution was made in January 2010 at www.siteonmobile.com which is now open to selected website owners.

1. INTRODUCTION

Mobile phone is believed to be a device that will deliver the first Internet experience to the next billion users in emerging markets. While mobile web users had already nearly equaled PC users by June 2007 [1] in countries like Japan, in contrast, even by June 2009, India had more than 400 million mobile phone users [2], which is nearly 40 times its mobile web users. Multiple studies have proved that a key factor behind low adoption of PC in these markets is the perceived complexity of PC. Based on the motivation of increasing the web penetration in emerging markets, we, in the SWAN project at HP Labs India are working towards simplifying web by reducing complexities associated with web interaction.

More than 50% of mobile phones in India are ultra-low cost, and only 15% are Internet-enabled [3], and less than 5% have GPRS enabled on their mobiles. So, support for low end phones was mandatory if we wanted to reach a typical user. Also, people in India are very familiar and comfortable using SMS as a medium of instant communication. SMS is commonly used as a mechanism for the viewers to provide feedback to TV programs and marketing campaigns. Based on the above considerations, we decided that the maximum impact of our technology to this part of the world would be through SMS and voice interfaces to the Internet.

Even the content providers (website owners), on the other hand, have realized the need to reach mobile users, but are discouraged by cost and technical hurdles of developing mobile applications, SMS gateways and integration with enterprise systems.



SiteOnMobile is a solution to deliver Internet content and services over SMS and Voice to end consumers. It also enables rapid creation of such simple interfaces over existing web sites through novel use of cloud services, thus addressing needs of both end consumers and content providers. Essentially, there were two classes of target users for the SiteOnMobile solution: first, the website owners who would be interested in enabling new content/services over SMS or voice and second, the class of users who are end consumers who would be interested in accessing specific web content or service using low end mobile phones (using either voice or SMS).



Figure 1: Tasklet Cloud Service enabling web tasks on multiple diverse clients

2. THE KEY INVENTION

One of the key contributions of HP Labs India that enabled the SiteOnMobile solution is a concept called *TaskLet* that represents a web task on one or more websites. A TaskLet is modeled as the sequence of web interactions that is needed to perform a web task on a set of websites. The key idea is to view the web not as a set of websites or web pages but as a set of web tasks that one would want to frequently perform. The researchers at HP Labs have developed a platform for automatically creating these TaskLets by *just showing* or performing the task once on a web browser - a technique called programming-by-demonstration. These user-created TaskLets can be hosted as a cloud-service to enable execution of web tasks from very thin mobile clients*. One of the primary advantages of cloud-hosting the TaskLet execution is that once created, a web task can be executed from diverse kinds of client devices – ranging from full-fledged desktops, browser-enabled mobile devices to even non-web enabled mobile devices. Specifically, TaskLets can be executed even from a very low-end mobile phone using Smart Gateways that map/convert a SMS or voice call to a specific TaskLet invocation.

3. CURRENT STATUS & NEXT STEPS

We are ready with the portal-based solution where website owners can create TaskLets for their services. The portal is currently hosted at <http://www.siteonmobile.com>. We have also validated the business fit of this solution for small web-based businesses through a dip-stick market survey. We approached a few selected businesses with this concept to partner and offered their content/services through our platform. We received an overwhelmingly positive response and all of them have signed up to use our solution. They not only agreed to use our platform, but also offered to revamp their web portals to offer services they wished to make available through mobile phones but hadn't been able to invest time, money and resources for it so far.

The portal is currently in an “invitation only” mode where only selected customers will be allowed to create TaskLets. Interested content owners can send in their request to access the solution on the portal, giving a brief description of their website.

Acknowledging that about 50% of mobiles sold in India are GPRS-capable, we have also recently extended the SiteOnMobile supported channels from SMS and voice, to support TaskLets on Windows mobile, Palm and Android devices. So, the portal now allows users to create personal mobile applications for any Windows Mobile, Android or Symbian device or Palm Web OS device without programming.

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* Patent pending