Chapter 20
A Picture and a Thousand Words:
Visual Scaffolding for Mobile Communication in Developing Regions

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ABSTRACT

Mobile communication is a key enabler for economic, social, and political change in developing regions of the world. This paper describes IBM Picture Discussions, which is a mobile social computing application framework designed to facilitate local information sharing in regions with sparse Internet connectivity, low literacy rates, and having users with little prior experience with information technology. IBM Picture Discussions runs on today's internet-enabled smartphones as well as camera phones with multimedia messaging. In this paper, the authors argue that engaging citizens in developing regions in information creation and information sharing leverages peoples' existing social networks to facilitate transmission of critical information, exchange of ideas, and distributed problem solving. All of these activities can support economic development.

INTRODUCTION

We are interested in designing applications that enable people at the base of the economic pyramid (BoP) to create, share, and discuss information as is commonly done on the World-Wide Web today, but through mobile technologies. The BoP includes over one billion people with little access to computer technology often living on less than $1US per day in some of the least developed countries in sub-Saharan Africa, South/Central America the Indian Sub-continent, as well as several other parts of Asia. As others have recognized (Prahalad, 2004; Kumar et al., 2008), enabling connections among a wide spectrum of people can lead to the empowerment of the disenfranchised and enable people who have been largely excluded from modern technology and economic opportunity to express their entrepreneurial tendencies. This could result, for example, in the creation of broader markets for local goods and services. The global reach of mobile M communication networks offers, for the first time, a broad platform for delivering applications and software services that realize this potential.

We have three design goals for the mobile applications we build. First, we want these applications to be usable by even the most disadvantaged users. BoP users may be illiterate, even in their own language. Second, we want to enable these users to document local needs, problems, and issues by creating, storing, and sharing digital artifacts (e.g., maps, photos, graphics, radio news reports, music, games, TV segments, informal news). Third, we want to enable these users to engage in conversation about these digital artifacts to offer solutions, share perspectives, or to engage in social exchanges.

Our initial implementation toward these goals is IBM Picture Discussions, a mobile social computing application framework that supports three major features: first, mobile phone users can start an inclusive discussion forum with other mobile phone users by asynchronously sharing short recordings of their voice over a wireless network, second, they can supplement and provide structure for the unfolding conversation by adding pictures, and third, they can discover and participate in discussions shared by other users, reaping the rewards of prior users' ideas, comments, and solutions. These features could enable IBM Picture Discussions to become a powerful tool to support existing social behavior and social connections between users (Danis et al., 2009).

This article first discusses some of the obstacles that BoP communities face in trying to access information technology, then introduces the IBM Picture Discussions mobile social computing application framework, and finally discusses some of the particular challenges of the BoP environment for developers of mobile applications.

BACKGROUND

BoP populations face a number of obstacles in becoming part of the global online community. In the economically developed world, access to information technology has been largely through Internet-connected computers. An important benefit of access to the Internet has been the potential for contact with the worldwide community of users. Through online communities, Internet users engage in discussions on topics of common interest, write comments that serve as a means of self-expression, and solve each others' problems. We argue here that through mobile phones, similar applications could be deployed to BoP communities to enable discussions on topics of local interest, provide a voice for individuals who would otherwise have no forum for their ideas, and enable solutions to communal problems through information exchange.

However, there remain at least three obstacles to the widespread use of information technology to support online communities and other applications in developing regions. First, despite initiatives such as One Laptop Per Child (OLPC, 2009),

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