Chapter 4
A Picture and a Thousand Words:
Visual Scaffolding for Mobile Communication in the Developing World

Robert Farrell
IBM T J Watson Research Center, USA

Jim Christensen
IBM T J Watson Research Center, USA

Catalina Danis
IBM T J Watson Research Center, USA

Mark Bailey
IBM T J Watson Research Center, USA

Thomas Erickson
IBM T J Watson Research Center, USA

Wendy A. Kellogg
IBM T J Watson Research Center, USA

Jason Ellis
IBM T J Watson Research Center, USA

ABSTRACT

Mobile communication is a key enabler for economic, social and political change in developing regions of the world. Today's internet-enabled multimedia and touch-screen mobile smartphones could become the future platform for delivering information and communication technology (ICT) to these regions. We describe Picture Talk, a smartphone 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. We 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 which can promote 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 living on less than $1US per day in some of the least developed countries in sub-Saharan Africa, the Indian Sub-continent, and parts of Asia and South/Central America. 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 at the BoP 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 mobileM communication networks offers, for the first time, a broad platform for delivering applications and software services in BoP regions.

We have three long-term goals for the mobile applications we build. First, we want applications we develop and deploy to be usable by even the most disadvantaged users. 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 Picture Talk, a social computing application framework that enhances persistent conversations with visual scaffolding. Picture Talk's social computing features support social behavior and social connections between users (Danis et al., 2009) through mobile phone conversations. Its persistent conversation feature allows users to engage in spoken discussion asynchronously.

Visual scaffolding provides structure for these asynchronous voice-based communications, enabling parallel access rather than requiring serial access as is done in voice-only messaging systems. Participants in Picture Talk conversations can engage in topics of shared interest using multiple access channels: telephone (voice-only), web browser or mobile smartphone (w/data connection), and mobile phones with Multimedia Messaging Service (MMS).

This chapter first discusses some of the obstacles that BoP communities face in trying to access information technology, then introduces the Picture Talk application framework design and an implementation, and then discusses some of the particular challenges of the BoP environment for application developers.

BACKGROUND

In this section we provide background on some of the obstacles that BoP populations currently face in becoming part of the global community with access to information technology.

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. The Usenet network, one of the earliest online discussion venues (created in 1979), supported threaded discussion on a wide variety of topics among participants distributed worldwide. Online communities became very popular in the 1980s and 1990s. For example, the WELL ("Whole Earth 'Lectronic Link") was a hybrid face-to-face and online group that served participants in the Bay area of San Francisco, California (Rheingold, 1993). Members of the WELL engaged in discussions of topics of common interest and the forum also served as a means of self-expression. Similar applications could be deployed to BoP communities to enable discussions on topics of

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