Chapter VIII
Digital Bridges:
Extending ICT to Rural Communities
Using Space Technologies

Phillip Olla
Madonna University, Michigan

ABSTRACT

Space technology has advanced rapidly in recent years. Nevertheless, a number of countries still lack the human, technical, and financial resources required to conduct even the most basic space-related activities, such as meteorology, communications natural-resource management, and education. The need to make the benefits of space technology available to all countries has thus grown more urgent with each passing year. This chapter proposes a two-phased approach for using space technology to deliver information communication technologies (ICT) to underserved areas. The first phase involves the definition and implementation of the satellite global infrastructure to provide connectivity to underserved regions. The second phase introduces the concept of a coalition of space Internet providers (COSIP) model. The aim of this model is to encourage the diffusion of space technology delivered by the GBBS infrastructure to the grassroots level. The model defines how Internet capabilities should be introduced to rural underprivileged societies to provide health and educational services in a sustainable manner. This model is a reincarnation of the local information utility (LIU) model that was successfully implemented over a decade ago to aid the diffusion of the Internet to rural American communities. This chapter explains the technology at the foundation of the COSIP model and describes the actors required along with their roles and responsibilities.
INTRODUCTION

Information communication technologies (ICT) are considered the driving force for economic, social, and technical development. In effect, high speed Internet delivers numerous imperative fundamental services such as education, health, telecommuting, electronic commerce, and e-government services, at unparalleled cost and performance conditions (Toumi, 2004).

There has been phenomenal growth in the increase in ICT over the globe; however, the digital divide still exists, posing major challenges to many of the developing countries, which are still grappling with a severe shortage of telephone lines, lack of electricity, and high levels of illiteracy. Although it is important to acknowledge the digital divide, it is more important to focus on the progress that has been made and dispel the myth about the digital divide. The most important document that highlighted the digital divide is the 20-year-old Maitland report. Some of statements that were accurate 20 years ago are now deeply established as global myth. Re-education will be needed to change opinions due to the constant e-mail chains and false reporting from journalists and researchers. An example is “There are more telephones in Tokyo or New York than in the whole of Africa.” As of the start of 2004, there were approximately 25 million fixed lines and more than 50 million mobile phones in Africa, which is several times more than the total population of Tokyo and New York. Another urban myth that you may recognize is “half of the world’s population have never made a telephone call.” Although considerable segments of the world’s population do not have access to a telephone, and probably could not afford to make a phone call if a phone was available, the international telecommunication union (ITU) estimates suggest the number is close to one-fifth of the world’s population that have no telephone access. Another myth relating to the availability of the Internet is that “there are more Internet users in Iceland than in Africa.” This statement originated in the 1999 report Internet for Development, and became obsolete in 2004. The Internet has become pervasive in society; however, rural and low-income urban areas are underserved in developing nations, and will probably remain so for the foreseeable future, for economic and structural reasons similar to those that limited expansion of Internet services in rural America over a decade ago (Clement, Holbrook, & Staman, 1996). The important thing to note from these statements is that the rate of adoption of ICT technologies around the globe is accelerating and there is a need for new models, technologies, and networks to introduce new services and applications to those living in underserved areas around the globe.

In recent years the requirements for connectivity and information services has expanded throughout the developing world. However, connectivity is hampered by the time-consuming and costly process of building traditional fixed (i.e., wired) infrastructure. For example, only 3.6 % of the population of Africa has online access (Internet-World-Stats, 2006). The situation in Africa is indicative of the entire developing world: there is a substantial unmet demand for connectivity in developing countries. Further, humanitarian services such as telelearning and telemedicine could effectively and broadly be provided if connectivity costs were lower. Satellite technology has great potential to reach people living in remote and underdeveloped parts of the globe, and in many instances, it is the only form of technology that can provide connectivity to remote or difficult-to-access regions. Satellite systems play an important role in enhancing the ICT landscape, extending necessary services to the hard-to-reach and bridging the digital divide. It is apparent that satellites, from their vantage points in low, medium, or geosynchronous orbit, dedicate a synoptic view and global coverage for either resources management or for global connectivity. Space technology, through communication and remote sensing satellites, contributes to
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