

Chapter 14

Proposed Framework for the Deployment of Telemedicine Centers in Rural Bangladesh

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ABSTRACT

This paper presents a unique and comprehensive framework for the deployment of effective telemedicine centers in diverse locations in Bangladesh. The framework employs a top-down analysis and design approach by properly organizing the key elements comprising it. The elements include a nationwide analysis of demographics along with current healthcare scenario as well location-specific pre-deployment studies and the recommended telemedicine solution. This framework will be a valuable guide to deploy effective and long-term telemedicine center at any given location. Towards this goal, the paper presents the framework along with a detailed discussion of the constituent elements, and analyzes several case studies to demonstrate the application of the framework to provide site-specific telemedicine solutions at some selected test sites. All the previous telemedicine projects in Bangladesh suffered from a lack of sustainability and it is expected that deployments based on the proposed framework will be effective, scalable, and long-lasting in bringing e-healthcare to the target population in Bangladesh.

INTRODUCTION

Telemedicine or e-Healthcare is being considered as an alternative healthcare system with an aim to provide a basic healthcare outreach to population that can not avail the existing systems. Telemedi-

cine is gradually becoming a global phenomenon as it is being used to bring adequate healthcare to rural and remote areas in the developing and underdeveloped countries. Elderly patient care and monitoring in the developed countries are turning to telemedicine to bring the required services to such patients. The key benefits of the telemedicine are the “live or real-time” doctor-patient

DOI: 10.4018/978-1-4666-2794-9.ch014

interaction or consultations that bring traditional healthcare practice using the advanced communication networks while providing the comfort of being at home. When such systems are used to reach out to people in rural and remote areas, the importance of telemedicine as an alternative healthcare service does stand out. There are numerous reports of telemedicine activities round the globe and the number of such reports keeps increasing as the trial deployments prove successful. In Asia alone, various countries including India, Pakistan, Nepal and Philippines participate and promote telemedicine to reach people in rural and remote locations (Elder & Clarke, 2009). It is worthwhile to mention a few of them: i) In Nepal a non-government organization Hnet telemedicine started telemedicine service by developing their own software, ii) In India there are as many as forty five telemedicine centers operated by Apollo, the largest telemedicine center; iii) Pakistan started its telemedicine project in 1998 with a project named Elixir and has also set up National Telemedicine Forum in 2001. It has also projects cosponsored by USA where about forty five doctors and nurses were trained. There is also a joint telemedicine project between Apollo hospital in India and Lahore Medical Imaging Center, Pakistan.

Telemedicine projects in African continent include Uganda (UNF Report, 2009) among others. Academy for Education Development (AED), a U.S. based nonprofit organization is working in Uganda to provide telemedicine service for the poor people in remote areas. European countries, e.g., Romania and France, among many others are developing e-healthcare services and are evaluating them (Banciu & Alexandru, 2009; Prieto-Guerrero, 2008).

Bangladesh, one of the developing countries in Asia, presents itself as a suitable candidate for telemedicine application due to its limited healthcare infrastructure to support the vast population residing in the rural areas and overly populated urban areas. The progressive development of telemedicine efforts is summarized in (Nessa,

2008) where it mentions significant number of telemedicine projects. Several private organizations such as Bangladesh Telemedicine Association (BTA) and Bangladesh Telemedicine Services (BTS) (Bennor, 2004), Bangladesh Society for Telemedicine and eHealth (BSTeH) (BSTEh) have been established to promote telemedicine in Bangladesh. BTS experimented on a trial project to provide E-healthcare services (Hermida, 2002). A complete telemedicine deployment was tested in a pilot project in Faridpur (2005) (Mamoon & Khan, 2005). The government of Bangladesh emphasized the use of telemedicine as early as 1999 (Begum, 1999) and has been calling for telemedicine project to start in (BSS, 2009). Even though enthusiasm has been observed in deploying telemedicine in Bangladesh from different quarters, however, lack of sustainability and long-term deployments are major issues. Unfortunately, many pilot projects are not followed up to turn into stable and fully functional healthcare systems. The primary reason is that the projects started with a narrow scope and did not address a proper framework for telemedicine application in Bangladesh. It is quite important to set up such a framework identifying all the essential components at the onset. The framework should be able to review and analyze the nationwide healthcare scenario and propose location-specific telemedicine solutions across the country. The framework needs to be modular to serve as an effective analysis and deployment tool, and scalable to account for future growth. Although a deployment strategy for generic e-healthcare solution has been discussed in (Mostafa 2010), however, a complete framework has not been addressed there. This paper addresses the key elements of the framework and applies the framework to propose deployments at several test locations in Bangladesh. The actual construction and functioning of the proposed deployments will be implemented in a future paper. The composition of the paper is as follows: the proposed framework is presented first with subsequent sections providing the details of the elements of the

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