Chapter 4.15
Open Source Software:
A Key Component of E-Health in Developing Nations

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ORGANIZATION OF THIS ARTICLE

This article is organized around a number of sections. The introduction outlines the rationale of the article and deals with some aspects of open source software (OSS) that make it attractive for software development in the health domain for low-income countries. The methodology section then introduces the framework of assessment that is being used. The majority of this article describes a case study of a project run by the authors in Bhutan in the obstetric domain. Critical success factors for such a project are then analyzed and some conclusions are drawn. The discussion covers some of the issues that have

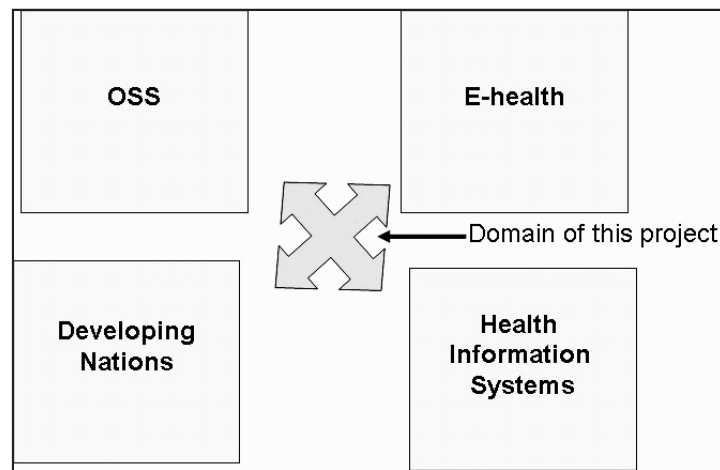arisen from this experience, and articulates some lessons learned.

INTRODUCTION

This project deals with the intersection of a number of domains, as shown in Figure 1.

E-Health

E-health has become a popular term for the transformation of healthcare that has occurred through the use of electronic communications,

Figure 1. Research domains

in a conscious imitation of "e-business." E-health encompasses more than the traditional electronic health record. It involves the use of information and communications technologies in the widest sense, including telemedicine, Web-based health and mobile devices for healthcare. A definition has been proposed, after comprehensive analysis, in Pagliari et al. (2005):

E-health is an emerging field of medical informatics, referring to the organization and delivery of health services and information using the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a new way of working, an attitude, and a commitment for networked, global thinking, to improve healthcare locally, regionally, and worldwide by using information and communication technology.

This definition is actually adapted from a previous one in an editorial which discussed the scope of "e-health" (Eysenbach, 2001). The globalized and networked aspects are particularly important in our case study—the emphasis is on communication and collaboration rather than distance

Health Information Systems

Health information systems (HIS) often have three main objectives: to improve patient care, improve management and form part of a quality improvement program. However, these objectives—as described by Littlejohns, Wyatt and Garvican (2003), are not always achieved. As part of a HIS implementation there are often major changes to workflow and practice, large expenditures on hardware including computing and communications, and system integration, as well as software development, training and implementation. Failures occur in HIS development often due to a lack of understanding of the complexity of the project (Littlejohns et al., 2003). Interestingly, OSS appears to answer some of these issues by providing more stable—if less feature-rich—software, and providing a generally larger pool of developers and users than for proprietary software.

Open Source Software

Open source software (OSS) has gained very wide acceptance particularly in the Web server community. Projects such as Apache (Mockus,

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