A requirement engineering framework for the application of Web 2.0 technology in health care

Omid Shabestari[a], Abdul Roudsari[a,b]

[a]*Centre for health informatics, City University, London*
[b]*School of Health Information Science, University of Victoria,Canada*

Abstract

Web 2.0 is a concept that provides the potential of more interaction in the web environment. To develop a successful Web 2.0 project it is essential to obtain the needs of its end-users. Traditional requirement engineering models are mostly based on initial development of requirements and consequent continuous management of them, whereas recent advances in web programming has facilitated the opportunity to collect data for requirement management via a prototype platform designed for such systems. Health care systems have special demands which should be considered during the requirement engineering process. The integration of requirement engineering with prototype phase of system can ensure access to requirements of remote-users which are not easy accessible in some of telemedicine projects. This article proposes a step-by-step guide through a framework for this process.

Keywords:

Web 2.0, Requirement engineering, Health

Introduction

Introduction of the Internet and specially World Wide Web has facilitated telemedicine and remote communications in health. A big change in the Internet-based service occurred with introduction of blogging, followed by several new technologies developed in the Web environment such as wikis, tagging, multimedia sharing, podcasting, RSS and many other new services. These new developments changed the Web environment so much that it is described as Web 2.0. Technology mediated learning theory by Professor Maryam Alavi explains that for improving the effectiveness of knowledge transfer, adding multimedia features and increasing the interaction of the user with the system should be considered. Web 2.0 supports both of these features and improve the communication between the health care professionals, communication between the healthcare workers and patients and communication among the patients. There are several successful or unsuccessful projects using Web 2.0 technology in healthcare.

Methods

Requirements engineering is defined as a set of activities for discovering, analyzing, documenting, validating, and maintaining a set of requirements for a system. Requirement engineering is performed in two stages, requirement development and requirement management. In this research we are aiming to reduce the latency time of the requirement development by developing a framework and integrating it to the main system whereas in most of the traditional model the requirements are developed by a group of engineers via interactions with end-users before and during the development of the system. The model used in this study will help the end-users to have better understanding of the final system.

Results

The first part of the framework concerns requirement development. Needs assessment should be performed by the end-users of a system. Their expectations from the system will be identified by a semi-structured online questionnaire using a rating model. These values are directly connected to the perceived effectiveness of the final system as a measure of effectiveness and suitability (MOE/MOS).

About the functional requirements, the systems should utilize both pull and push methods to maximize the availability of the information. For information validation, we identified a mixture of static and dynamic input validation methods as the best method. Also these systems can be set to moderated mode and managed by healthcare professionals or expert patients. The end-users will have the opportunity of rating the content to bubble up the appreciated entries.

Non-functional requirement analysis of the Web 2.0 system can be achieved by the amount of usage and contribution of the users in pilot phase. Measuring the satisfaction of end-users will be done with the same criteria used for measuring the importance level of the system. The best method to measure this satisfaction is the “End-User Computing Satisfaction (ECUS)” developed by Doll and Torkzadeh.