

An Investigation and Development of an e-Health Component for the Dwesa-Cwebe Rural Area.

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Abstract - Rural communities are limited from accessing health information available on internet or the South African Department of Health website. This is due to poor infrastructures (i.e. lack of clinics or Internet) and that gives them problems in accessing information about health. The availability of Information and Communication Technologies (ICTs) in a rural community can provide the community with a number of beneficial solutions to their problems. This paper gives a description of an on-going e-Health component development process for Dwesa-Cwebe rural community using Free and Open Sources Software. This Rural community is situated in the Province of Eastern Cape of South Africa.

Keywords - Dwesa-Cwebe, e-Health, Free and Open Sources Software, ICT.

I. INTRODUCTION

People who reside in rural areas are unnecessarily exposed to health ailments because they have inadequate health facilities and health information [1]. The problem is that they stay far from town and that makes it difficult for Department of Health to reach them. In most cases rural communities have clinics that they can use, but these are few and that makes them ineffective because people living far from them need to travel long distances to get there. This problem makes them suffer from misdistribution of resources and also less or limited access to health care resources available in urban areas [1]. Most of the problems that are encountered by rural communities result into death, waste of resources and waste of money [1].

On the other hand, this community also consists of people who use traditional medicine and there are diseases that are best cured by traditional medicine. Traditional doctors are few and people need to travel long distances to get to them. On that account people of Dwesa-Cwebe community needs to have traditional health information.

Making use of the available ICTs in developing and deploy an e-Health component that will deliver the necessary health information required by the community is of best interest [2]. An e-Health “is the use of information and communications technology to deliver health services and exchange health information when distance separates the participants” [3]. The implementation of this component in the ICT platform can solve these problems because it addresses the issue of the unavailability of medical health information that influences each and every decision that they

make concerning their health [1, 2]. With a better knowledge or sufficient information and great awareness, people of Dwesa-Cwebe community can make better decisions on their health issues.

II. RESEARCH LOCATION

Dwesa-Cwebe is a rural area that is located in the province of Eastern Cape in South Africa. Dwesa and Cwebe are separated by Mbashe River. On the Northern side of the river there are Cwebe, Hobeni villagers and on the Southern side of the river there are Mendwane, Ntlangano, Ngoma, Mpume, and Ntubeni villagers. “The estimated population of Dwesa Cwebe area is 14 720 and there are 2 382 households” [4].

III. AIM OF THIS RESEARCH

The aim of this research is to make use of ICTs deployed in Dwesa-Cwebe to contribute to improving the health standards of the community [1]. This will be accomplished by implementing a robust e-health component, and this component will assist them to take care of their health by providing them with the necessary health information or support they require.

IV. AN E-HEALTH COMPONENT FOR THE DWESA-CWEBE COMMUNITY

The successful implementation of this e-health component will provide the community of Dwesa-Cwebe with a portal that will make the browsing of health resources from Internet or from the South African Health Department easier and also construct a channel for targeted advertising from South African Health Department on specific health and para-health issues such as HIV / AIDS or teen pregnancy. Adding to that, this research will also develop a medical ontology that will be based on Xhosa medicine for the e-Health component. Ontologies are “data schemas providing a controlled vocabulary of concepts” [5]. Its main purpose is to provide the community with the necessary traditional health information or support.

V. RESEARCH DESIGN AND METHODOLOGY

System development is one of important processes that require a well structured methodology to make sure that

system meets its requirements. The initial step of this project involves conducting interviews with community members to clarify on system specifications [6]. Combining system specifications and relevant e-health literature authors can produce software that is of high standard. After the process of defining the system specifications authors can now be able to choose software platform to use in developing this component.

The next step involves the development of a medical ontology. In order for this process to begin authors needs to develop a database of traditional medicine. This will be accomplished by interviewing the traditional practitioners specializing on Xhosa medicine, to make a collection of information about their medicine. The information will be text, audio and video. The information gathered should be able to guide the community on where to find the medicine, how to prepare it and how to use it. The collected information will then be used for constructing the required database using a Relational Database Management System (RDBMS).

The medical ontology will be developed from the information on the database. Ontology is necessary because it eliminates the problem of poor communication between a user and the system application [5]. Protégé 3.4 will be used in this project for creating the required ontology. This version comes with a Protégé-OWL plugin and this plugin eliminates the problem of defining and describing the concepts [7]. In addition the system will require a Resource Description Framework (RDF) that will help in discovery of information by providing the system with a better search capability [8].

Lastly the authors will work on developing a portal or website. This system will be built on Linux operating system using Apache sever, Hypertext Preprocessor (PHP) in designing the dynamic web pages. The making use of the Open Sources Software in developing this system will make it affordable to the community.

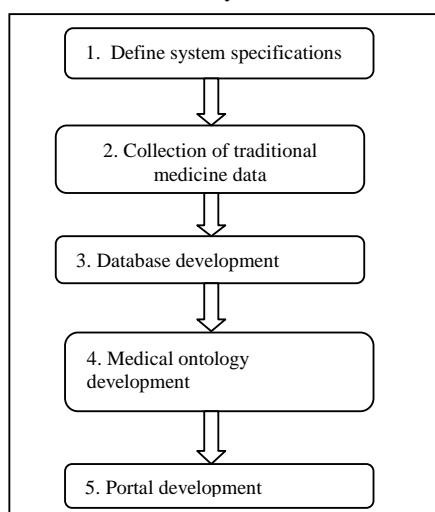


Fig 1. Development stages

VI. WORK COVERED AND FUTURE WORK ON THIS COMPONENT

So far the system requirements have been specified and enough literature in RSA and rest of the world pertaining e-

e-health services has been covered. Currently, a Linux system with MySQL, Apache Server, PHP and protégé is up and ready to start the project. Also, a collection of information about traditional medicine has been successfully made.

The authors would like now to construct a database of traditional information, build a medical ontology and begin developing a friendly portal or website.

VII. CONCLUSION

The deployment of ICTs in rural areas is of great importance, because it brings light to people. Dwesa-Cwebe community is benefiting from this through the Siyakhula Living Lab project that is deployed there. It is made up of web services that have already been implemented such as e-Commerce, e-Government and some are still under construction such as e-Judiciary, Helpdesk System, IVR System and more. E-Health also forms part of the Siyakhula Living Lab project.

The successful implementation of this e-health component will make a big contribution in educating and bringing a lot of awareness to the people of this rural community.

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