Software Programming Cohesion With Communication Technology To Accomplish Tb (Tuberculosis) Health Management

S.Jayabharathi, PG Scholar, CSE Dept, Ganadhipathy Tulsi’s Jain Engineering College, Vellore, Tamilnadu, India
A. Appandairaj, Faculty of computer science engg, Ganadhipathy tulsi’s Jain Engineering College, Vellore, Tamilnadu, India

Abstract
The Ontology define integration of architecture design with service based architecture and web services communication with other computing model to manage data in a home based online telemonitoring system. This describes in terms of two layers which form the scenario are conceptual layer and communication layer. The conceptual layer describes the ontology part where the data and communication layer defines web services provided by cloud. The flow of incoming data from various sources is the managed through ontology. This communication was done on online monitoring process. The data and communication layer works on restful service cross domain web client is suggested to enhance practical backup to the use of ontology. It will provide real implementation of the tasks it describes and provide a means of exchanging data. In this current study we embarked on the journey to find the system architecture and data management in TB (Tuberculosis) health management. Patients and Doctors are linked in this platform to monitor the patient’s routine intake of medicines and subsequently doctors will advise the patient through alert notifications.

Keywords: Home based telemonitoring scenarios, web services, Tuberculosis, Data Management, Health care.

Introduction
The vital challenge posed in achieving TB health management is the lengthy period of dosage intake. Most of the patients will discontinue in taking the medicine after they feel slightly recovered from the symptoms of this disease. In order to get complete recovery, the patient should take the medicine to complete the entire lifecycle; three or six or one year, based on the severity of the disease. This medication period will pose challenge to the health care providers like doctors, governments, and society at large. Active participation from patients is mandatory in order to achieve significant eradication of the disease. ICT (Information and Communication Technology) is the new era in technology will come in handy to achieve TB health management. This new shift is the central idea in the EU (European Union) health strategy. It was supported by WHO (World health organization) in order to achieve good health management.

In the above scenario, home-based telemonitoring is considered as best self-care management tools and it works on the platform called ICT. The collaboration between health care providers and patients are achieved through these ICT mechanisms. Continuously the patients will be monitored and proper advice will be given based on the outcome. Patients become the central part of this process and ICT will spin-the-web around them. The other members involved in this process are doctors, village health advice providers, Patient care takers, pharmaceuticals etc.

Exchange of clinical data between patient at home and to physicians located in remote sites will help to monitor the progress in medication. This type of remote monitoring will help avoid hospital overflows and environment friendly. It also brings energy efficient to the system and also cost effective. The information and communication technology make it possible to monitor the patient remotely and achieve progress in the healthcare system. In indirect way this system reduces the pollution generated by travelling and more cost effective and efficient way of maintaining patients. The two nodes of connectivity is home site and health care site. This will get integrated to form entire system in monitoring the patient’s progress. Data will be acquired using MDs along with patients feedback are collated in a concentrator device (HG), which is used to evaluate or transmit the acquired data outside the patients home.

The health care site was managed by a server device from the home site. It will help physician to manage the data and store the data in a common server as per the protocols. Even though there are significant researches contributions have done in this field there are many lacunae in development of this concept. By considering long term progress the telemedicine and e-health need to get more streamline in order to derive more benefit of it. The technical and operational level glitches need to be addressed to take this telemedicine to next level of health care provider.

Two things which may pose big challenges in this system are interoperability and integration. Both this issue need to be addressed by providing seamless communication among the various heterogeneous health entities that participate in the monitoring process. Transferring and
The patients should register for the web site to urge the Function of the Project Module. In addition providing personalized care services and taking into account the patients context have been identified as additional requirements. Consequently there is a need for the development of new telemonitoring architectures.

TB (Tuberculosis) medication spans around from six months to two years and its based on the severity of the disease penetration. BPL (Below poverty line) people are mostly affected by this disease. Most of the time patients discontinue the treatment after some point of time and this leads to condition call MDR TB (Multiple Drug Resistance TB) and XRD TB (Extensively Drug-Resistance TB) conditions. The MDR and XRD conditions are very severe and unable to control in the normal treatment and needs special attention. WHO devised a strategy to combat this medicine discontinuity among patients and named as DOTS (Directly Observed Therapy). Under this scheme the patients have to reach the concerned hospital and should take the medicines and later it will be recorded in the hospital. This will help the hospital to ensure the patient have taken medicines and easy for documentation.

The notification of TB cases to the nodal agency is become mandatory in this system. Monitoring of the cases will help the concerned stakeholders to plan for TB health mission in future. It will network with hospitals, village health advisors, patients and care takers. The daily alert will be sent by SMS and pre-recorded voice calls and subsequently email notifications.

Functioning Of The Project Module

The patients should register for the web site to urge the PatientID for approach a doctor. After obtaining the patientID then the doctor ought to receive the medical details of a patient. The doctor will recommends patients to require the tablets during a regular basis and also the web site can prepare a chart for the patients according to the details given by them. The patients will provide a SMS through the e-mail communication to the doctors by signing them web site or messaging them. The location may also offer immediate remedies to create a right away action. This also sends the reminder SMS to patients and it will pop up in their mobile phone, the patient have to click yes or no according to the option is present into the system, then the reply will be recorded in the hospital monitoring system and the database. This will help to keep online record of the patient daily intake of medicine. On the other way it avoids patient overflow to the hospital and reduce the cost often like in DOTS system. The nodal agency (Central Monitoring Office) can view their system to know the patient daily updates and can advice the patient accordingly. SMS will be shared to care taker or village health advisor mobile number if the patient is not replying to the initial SMS and this is happening at half an hour interval. The continuous SMS is to ensure the patient to take the medicine properly. This mobile communication will also alert the patients by periodic checkups and new drug discovery activities etc. It’s also helping a lot in education and research process.

Whether it’s a feature phone or smart phone, anyone can avail these monitoring services. The centrally stored database exchange platform will stored all the data exchanged between patients and the nodal agency. If the patient is not responding to any of the SMS, then at the end of the day the concern person will call the patient and remind him about the daily dosage intake. This system will also keep tab on inventory management ie; the daily tablets needed for a patient and when it will go out of stock. The days and dosages will be synchronized so that the inventory management (patient tablet stock in his/her hand) will be achieved in this system. If the amount of tablets going to drain soon, then alert SMS will be sent to patients to collect the routine tablets from any of the DOTS centre or TB sanatorium.

Database in the hospital system can be visualized via excel sheet and the sheet contain details like doctor official phone number, patient phone number, tablet intake details, tablet stock, last date of health check up and next due of health check up for the patient. Doctor or technician can login to this software and view the entire details pertaining to the patient monitoring. The software also link with warehouse of the hospital, if the level of tablet stock goes down after the threshold limit then it will alert the main warehouse in the district accordingly to do replenishment.

Existing System

This system is largely useful for Tele observation patients from home web site for perceptive chronic diseases. It’s the mix of ontology, rules, internet services and automatic computing paradigm to manage knowledge. The primary advantage of the system reducing prices and avoiding hospital overflows. Observe the patients conditions by the technique referred to as DOTS and update them health conditions often. This approach was introduced by World Health Organization (WHO) for chronic diseases. This provides you the small print of information illustration, advancement organization, and self-management capabilities to the system. Low information measure value is needed to transfer management profile and management result.
Proposed TB System Architecture

The ontology will create the service repositories and it can able to provide the services to the requested parties. The first and foremost step is to authenticate the valid user and it validates that the user is an admin. If authentication is successful then the admin can able to create the service repositories. After the service repositories have been created then the services are distributed to the admin who acquire the repositories. In order to enable the normal user to make use of the offered services. In this current proposal we advocate autosuggestion and medical aid distribution. Though the service is stimulated by a user, the request hits the patient monitoring hosts. The medical team members could respond back to the request immediately. All this method can work on a simultaneous manner in order that the flow of communication is channelized properly to bring the efficient system.

Challenges In TB Health Services

TB is the real wellbeing concern in creating nation like India. As indicated by WHO (World Health Organization) 2.2 million cases is enlisted in India, while 8.7 million cases influenced with TB illness. We examine this area in two sections. The illustration we taken to depict the segment is from bio drug. Utilizing of ICT innovation serves to battle illnesses and this is the marvellous limit of this innovation. IT applications in health awareness convey radical changes and it makes to convey quality social insurance practices to the remote populace. Interfacing in the middle of correspondence and programming innovation is one of the fundamental difficulties in conveying quality human services. The difficulties incorporate as takes after

a) Increase of medicinal services cost because of maturing populace in creating nations as referred to by OECD (association for monetary co-operation and improvement).

b) Lifestyle progressions influence strength of the individuals and expanding occurrence of ceaseless degenerative sicknesses.

c) Low infiltration of new medication advancement in infections like TB

d) Increasing contamination and non-getting to nourishment sustenance is the significant concern in fighting fatal ailment like TB

To acquire out productivity human services framework, it obliges responsibility from all partners like government, NGO (non-administrative association), Doctors, Patients, Technical base, Communication foundation every one of these structures the effective motor in conveying quality health awareness to influenced people groups.

ICT (Information and correspondence Technology) is the significant devices in conveying quality wellbeing administrations to remote populace. It is conveying proficiency to the entire framework it works. Specialized base like Email, SMS, Voice calls, programming structural planning, Mobile correspondence, DBMS (Database Management System) are all expected to execute the undertaking in a productive way. The SMS can be seen in any customary telephone and additionally in cell phone. Occasional redesigns will be sent to the customers. Conveying attention to the patients can be attained to through SMS and additionally pre-recorded voice calls.

Intermittence is the significant concern of TB to develop among populaces. This ailment must be battle with consistent association with patients and specialists. The vast majority of the unskilled individuals are influenced with this malady. They are not mindful of the seriousness of the sickness. It can spread through air and considered as one of the deadliest ailment of various types. TB can influence any piece of the human body and just by legitimate admission or every day admission of drugs will quit advancing the illness. The significant test is the way to join patient and specialist and just here the ICT proves to be useful. It brings system and makes always to be touch with the whole network. Due to poor monetary condition of the patient they are not able to travel frequently to take pharmaceuticals so joining them with this stage will urge them to take drugs continuously. Currently telemedicine arrangements are utilized to remotely screen key signs, for example, pulse and glucose levels. These frameworks limit the versatility of the patient, notwithstanding being constrained in the quantity of fundamental signs that they bolster. The quick improvements in web administrations coupled with the progressions in even remote access innovations have made web benefits an inexorably appealing stage for conveying remote patient wellbeing observing administrations. This task exhibits the ability of web administrations to give ease, and productive remote wellbeing observing through Web administrations based methodology. The
proposed methodology demonstrates a nimble, adaptable, interoperable, and conservative different option for existing remote wellbeing observing frameworks.

Conclusion
We propose a conceptual architecture framework for ubiquitous remote health monitoring using Web services hosted on patients’ web devices. The proposed architecture places the patient at the core of controlling access to his/her own personal data. The Web administration gives the key functionalities of the remote wellbeing checking framework keeping in mind the end goal to attain to cross-stage similarity and empower simplicity of incorporation with existing or future social insurance frameworks. Since web gadgets are regularly outfitted with various system interfaces, the information accumulation eliminate is anything but difficult to convey through a short-run correspondence connection between web gadgets and advanced cells. A prototype is developed to show the ability of mobile Web services, hosted on web devices, to enable remote health monitoring. The opportunity made conceivable by the advancement of our preparatory evidence of-idea model urges us to actualize the framework, all things considered, and get criticism from wellbeing experts and patients.

References