



Public-Oriented Personalized Health Care Platform based on Web Service

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GJCST-B Classification : C.2.4 D.4.7



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I. INTRODUCTION

Health care is one of the most prominent problems faced by the society now a day. Every day a new disease is take birth which leads to illness of millions of people. Every disease has its own and unique medicine for its cure. Maintaining all the data related to every disease in a single database is not possible using the legacy system in order to solve this problem we use different types of external memory devices which again results in expensive maintenance of the system. To avoid this we use web service access the date form the patient this information is sent to specialized doctor. The introduction of web service in health care management system made the needy i.e. the stake holders to have the right to access the data stored using both SOA and WSC and acquire knowledge about the diseases. The use of this series of privacy setting in order to protect the patient's data from getting into the public hand in order to acquire the trust of people and get success in the field of health care.

This health management system is not based on the profit gained by the users this is mainly based on the use of mobile application sensors by the patients who are in need and maintain their profile according to the doctors instructions and help the patients by getting the immediate information from the nearest doctor in

The important challenges faces developing the application are inferring the information and knowledge about the diseases and keeping the patients records

reacting and prescribing the medicine without actually consulting the doctor.

stored in a particular area and sensing the patient behaviour and conditions using the sensor. The application must also consider the patients social interactions and communications which increases the goals of the application to a next level by acquiring a massive amount of data and provide a complete personalized health care assistant to the user .The application stored the information of the patient in the cloud using web service. This application is fed with the detail information about the frequent diseases caused in the surroundings and the protecting precautions form the diseases. The application is connected to the internet which gives online access to the data base and gets the up-to-date information about the diseases affection the people.

II. RELATED WORK

Creating a public-oriented health care system is an interesting because all people can get the information where they are and rapid growth will take place .Not only that rapid advance information and also through communication brings us more opportunities in the health care field[1] .Now a day's Some systems are available to provide various solutions, and some research projects are providing Web-based personalized health care support[2]. The web service data in health care organization had developed form single physician offices to large hospitals and healthcare organization by digitizing, combining and effective use of big data [3].Here we are using two web service technology are SOA and WSC where .

Gathering the information from the patients and holding the information in longitudinal records is a complex task[4] In health care, the encompasses a whole range of data types which includes clinical data which can be data which can be derived from the electronic records within any laboratories, pharmacies, organizations where the service are delivered[5].Health Vault is a Web-based platform developed by Microsoft to put people in control of their health and fitness information, which started in October 2007.

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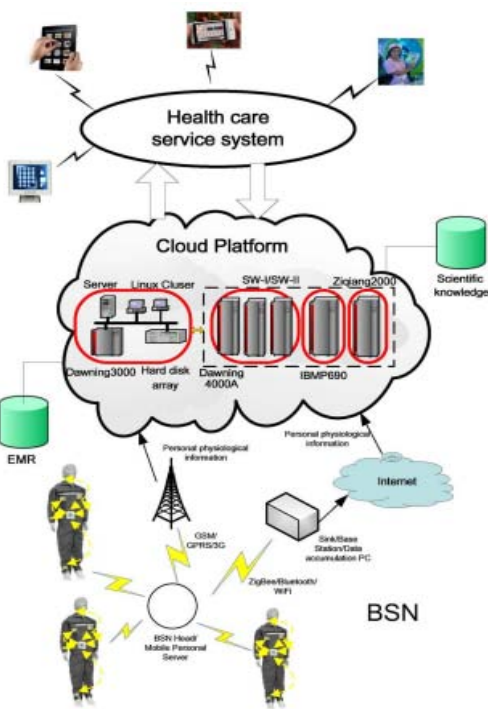


Fig. 1. PHISP architecture.

It helps the users collect, store, and share health information with family members and participating healthcare providers, and it provides people with a choice of third-party applications and devices to help them manage their fitness, diet, and health[6]. We have considered branch structures appearing in the process model of a composite service and have presented the corresponding solutions for two simple types of user preferences[7]. We are going to present a personalized health care information service platform. The main idea of SOA and Web service technologies to design and give more benefit to the patient[8]. In particular, some keys play a virtual role in the web service i.e., which include WSC techniques supporting branch structures and parallel structures.

III. SYSTEM ARCHITECTURE

In this section, we are present our health care service platform: PHISP. Its conceptual architecture is shown in Fig. 1. [9] There are some main components those are body sensor networks (BSNs), cloud platform, and health care service system.

1. BSN: according to different circumstances and needs, appropriate health information collection terminals are configured for different individuals. BSN is used to realize the multimode acquisition, integration, encryption, and real-time transmission of personal health information in living or working environment[11].
2. Cloud platform: based on cloud computing technology, it achieves the rapid storage, management, retrieval, and analysis of massive

health data, which mainly includes[12]. EMR repository, scientific knowledge base of health care, and personal health data acquired from BSN. Meanwhile, it provides support for the deployment, management, and execution of application-level health-care-related services and systems[13].

3. Health care service system: it includes a series of subsystems, such as personal health information management system, personal health risk assessment and guidance system, seasonal disease early warning system, decision making libraries for various diseases, remote nursing, and medical systems for such patients as cardiovascular, cerebral apoplexy, and diabetic ones[14].

The serious problem faced by the present world is increase of population which results in aging of people of some age group people which results in many health care issues as the aging people have a low immunity levels to fight towards an disease and the stress caused daily also makes them weak[15]. These people must be protected from different kinds of illness by constantly providing a system to look after them by checking their health conditions and providing solutions for their regular problems and reminding them for their regular checkups services. The users are dispersed in the whole country and with enormous diversity[16]. Managing such a diverse user group is a challenge faced by the health service providers[17]. A new era of medication is done by collaborating the mobile computing and SOA, Web Service and WSC[18]. Every person can have an access to preloaded and instant service for any health issue by using the information form provided Web Service[19]. There services can be of different types regarding different issues e.g., daily health checks, medication reminders, first aid instructions, commonly affected diseases and their precautions. Application present in the cloud can be downloaded to the mobiles for an instant service for any emergency health issue[21]. Storing all such information in a single system quite a big task. which requires large amount of physical data in order to avoid that healthcare is collaborated with the Big Data by completely using the data entry and data analyst[22].

In this paper, we pay attention to only user/domain preferences in which we are interested in the field of health care and give them a simple expression[23]. There are three types of user/domain preferences with which we are concerned. The first type is that a user prefers a class of services over another if certain conditions are met (e.g., "Lucy prefers to go to a doctor's office by walk over bus, if the walk time is less than 30 minutes and weather is pleasant."). The second type is that the user prefers different services according to different conditions. The third type is that the user assigns priorities over services with similar

functionalities. We use the following forms to express them, respectively:

- 1) The first type: condition?W S1 : W S2;
- 2) The second type: switch(condition){case C1 : W S1; case C2 : W S2; ... ; case Cn : W Sn; };
- 3) The third type: W S1 W S2 ... W Sn. T.

The expressions that we adopt are similar to some general expressions in programming languages, especially the first two, which are the conditional expressions commonly used in C, C++, and Java. For the first one, it finds the truth value of expression "condition" first. If it is TRUE, then execute service W S1, and otherwise W S2. For the second one, it also finds the truth value of expression "condition" first and then execute the corresponding service accordingly. The third one means that W S1 has higher priority than W S2 and W S2 has higher priority than W S3, etc. In other words, W S2 will be executed only if W S1 fails, and W S3 will be executed only if W S1 and W S2 both fail, etc. The proposed expressions are simple and easy to understand and use. They can help users express their preferences and developers build applications quickly.

IV. IMPLEMENTATION

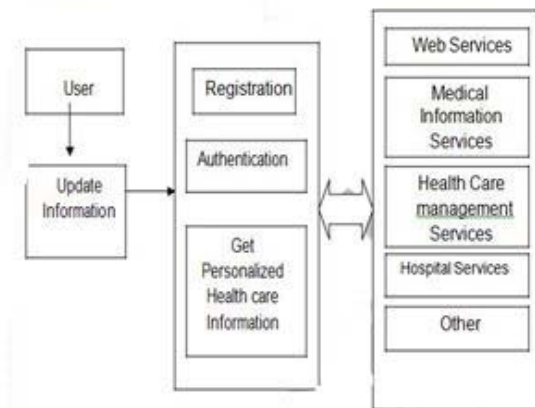
Based on SOA, Web services, and WSC technologies, we have designed and constructed a medical and health care platform in collaboration with many universities and medical institutions. It has been used to provide teaching, research, medical treatment, and health care services for college students and teachers, researchers, medical professionals, and ordinary people. In our implemented platform, some functions and services require improvements.



Figure 1 : Basic idea of the page

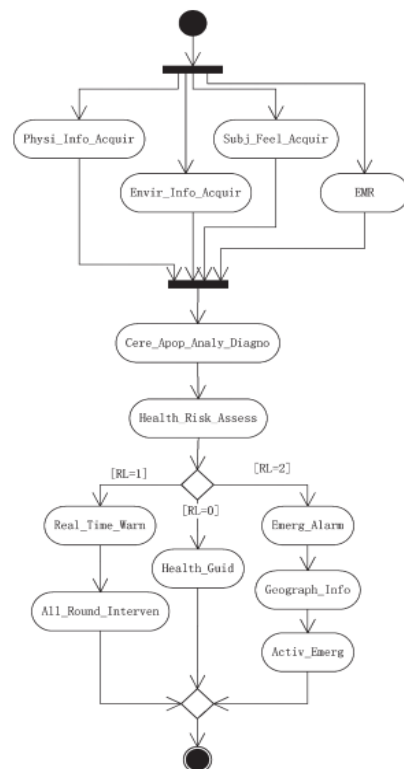
For example, for specific diseases mentioned in this paper, we have just adopted some relatively simple data analysis models and diagnostic and decision-making systems. Furthermore, the medical and health

care platform that we have implemented is only a research and demonstration system.



For its large-scale commercial applications, much more work is needed. Further improvement and optimization of the proposed composition methods supporting branch and parallel structures is another future research, including learning from the work on automatic program synthesis and the technique of multiage planning and optimization.

In UML activity diagrams, an action is denoted by a round rectangle and is labeled with an action name of a given service class as defined in a service ontology. The flow of control is denoted by connectors (transitions) between actions. A decision node represents a conditional branch in a flow, and it has one input and two or more outputs.



A merge node is required to merge flows that are split with a decision node, and it has two or more inputs and one output. Both decision and merge nodes are denoted by diamonds. The initial node of an activity diagram is denoted by a filled circle, while the final one is denoted by two concentric circles. A simplified UML activity diagram specifying a “treating a stroke patient” composite service is shown in Fig. 2. In the example, various information acquisition services and EMR service can be executed in parallel first in order to acquire physiological signals, environmental information, subjective feeling, and medical history information of the patient. Then, the information can be analyzed by the cerebral-apoplexy oriented data analysis and diagnosis service, and the personal health risk assessment service can assess the patient’s risk level. According to different risk levels, there will be different solutions. The decision node denotes a branch structure. Three transitions (connectors) stem from it, and they are labeled with disjoint guards—conditions that specify whether a token can flow along a connector.

V. CONCLUSION

In this paper, we have presented a health care platform. It supports personal health information management, personal health risk assessment and guidance, dynamic personal health monitoring and real-time early warning, active recommendation of personalized medical treatment, active seasonal disease warning, and other health care services for individuals. In future we have design and implemented the health care platform based on SOA and Web service technologies, which makes our developed system have higher reusability, flexibility, and extensibility.

It supports personal health information management, personal health risk assessment and guidance, dynamic personal health monitoring and real-time early warning, active recommendation of personalized medical treatment, active seasonal disease warning, and other health care services for individuals. Moreover, for some specific diseases, PHISP provides remote medical and care services.

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