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VAIDYA-ANWESHANAM: One Stop Solution for All Medical Needs

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Abstract: *Delivering affordable health care to India's billion plus people presents enormous challenges and opportunity for the medical community. Access to good quality health information is a key component of any health system. India is home to a billion people, still most of them do not have access to basic health-care system. Even those who have, take health issues so lightly that until the health concerns grow to a developed stage, they hardly take any action. Due to their busy schedules, people often dismiss minor health issues. To save time and simplify the process of diagnosis of diseases, Vaidya-Anweshanam has come up with a solution to ensure we have a healthy population. Vaidya-Anweshanam is based on the concept of having a prior knowledge of the disease based on symptoms.*

With the emergence of information and communication technologies, new tools have become available to facilitate the compilation, publication and access to such data and one such tool which is increasing its base at a very fast pace is Mobile applications. This paper discusses about how this concept of mobile application can be used in medical sector efficiently and effectively. The collection and integration of medical data emerging from sources would be integrated and stored in SAP HANA for its speedy data recording and data retrieval capabilities. Our mobile app proposal for SAP HANA attempts to address issues related to reaching of hospitals, clinical laboratories, medical laboratories, nearby ATMs, medicines, diseases, Quacks identifiers, NGO's.

Keywords: *Sap Hana, NGO's, Quacks, in-memory, hospitals, blood banks.*

I. Introduction

A. Vaidya-Anweshanam

India's health care system is characterized by a mixed ownership pattern practicing different systems of medicine. There are two major groups in the provision of health care services in the country. These are the public health sector and the private health sector. The Indian healthcare industry, was valued at US\$ 79 billion in 2012, and is expected to reach US \$200 billion by 2020 i.e. it is expected to grow at about 15 percent year-on-year (y-o-y). [1]

According to Medical Council of India (2006), number of allopathic practitioners practicing in different states in India was 662646 which made India stand at 67th rank in terms of doctors among 133 developing countries. According to these statistics there was only 1 doctor per 2000 people in urban areas and around 24,000 people in rural areas. These numbers are very disappointing for country like India which is the seventh largest country in the world in terms of area.[2]

It is very much clear from the above statistics that it is very difficult in country like India (second largest country in the world in terms of population) to get the best possible Healthcare/Medical services as the resources available are very limited and those available are very costly which a normal middle class and poor people cannot afford.

In today's age of deadlines, competitions where people are always in the race to be ahead of everyone, health is usually taken a backseat and people rarely find the time to report trivial symptoms which they don't give much importance to and which could lead to severe complications later on. In order to solve this problem of getting the best possible Health Care/Medical services, we decide to build an app called "Vaidya-Anweshanam" according to which we can plan our visit to medical care units with the help of various information provided by it and can also access the various major information related to Healthcare/Medical sector of India.

This is where a next-generation data management platform like SAP HANA comes into the picture. Its capability of in-memory processing of large amounts of data extremely fast is absolutely critical for updating the huge volume of transactional data of Vaidya-Anweshanam on a real-time basis. Using SAP HANA, the application Vaidya-Anweshanam can be run on a single database, on clusters of affordable servers at appropriate locations, scaled to the exact needs of the healthcare business. But the advantages of Vaidya-Anweshanam do not stop here. By implementing it using SAP HANA, Vaidya-Anweshanam will also have unmatched analytical capabilities. It will have a record of all the drugs, hospitals, medical laboratories, major diseases and its symptoms, nearby ATM's etc.



Fig 1. Prototype of Vaidya-Anweshanam

B. About SAP HANA

SAP HANA Enterprise 1.0 is an in-memory computing appliance that combines SAP database software with pre-tuned server, storage, and networking hardware from one of several SAP hardware partners. It is designed to support real-time analytic and transactional processing. Fig 3 shows the architectural design of SAP HANA. The heart of SAP HANA Enterprise 1.0 is the SAP In-Memory Database 1.0, a massively parallel processing data store that melds row-based, column-based, and object-based storage techniques

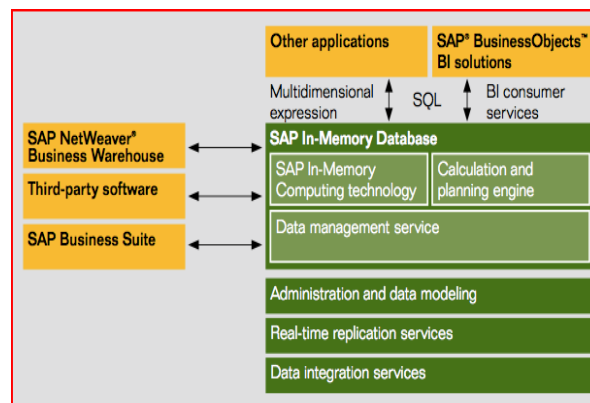


Fig 2. SAP HANA Architectural Design

SAP - HANA which uses RTDP (Real Time Data Platform) i.e. In-memory computing technology that allows the processing of massive quantities of data in main memory to provide immediate results from analysis and transaction. Data processed using In – Memory technique is almost 800 – 1000x as compared to other databases. [3][4] [5].

We reiterate at this point that Vaidya-Anweshanam is not a substitute to physical consultation, but it can provide vital aid to a critical patient that could be life-saving; it is just a means to augment the load balancing across the present infrastructure, such that the efficiency utilization of the currently present system goes up.

C. Working of Vaidya-Anweshanam

The app will be designed keeping in mind the huge user population comprising of patients, doctors, pharmacy companies and medical stores and hence the prototype was built keeping in mind user friendliness, simple to use and exhaustive so that all the necessary data can be displayed effectively.



Fig 3. Probable Interface of Vaidya-Anweshanam

Suppose if user wants to use this app, first of all she/he will have to choose from various options available in app for which he wants to search the information. After choosing the right option, he/she have to manually input the data as search criteria. On the basis of search criteria, the app will search the required data in the database and returns the available data matching to search criteria. The information that will be made available by various modules of the app on the basis of some criteria are as follows:

1. Hospitals :

It will provide a list of hospitals, clinics, dispensaries etc. in a structured manner with all major details like their address with map, contact details, facilities provided, and any specialization provided. Search criteria for it will be Name or location.

2. Clinical Laboratories :

It will provide the list of various clinical laboratories in a structured manner with all major details like their address with map, contact details, tests available. Here also search criteria will be Name or location.

3. Medical Stores :

It will provide the list of various Medical stores in a structured manner with all major details like their address with map, contact details on the basis of their working hours i.e. 24 X 7 or normal working hours. Here also search criteria will be Name, location or working hours.

4. Medicines :

It will provide the details about the various medicines with their salts, corresponding Generic drugs, their pros & cons and their current market price. In this search criteria will be Name of Medicine or manufacturer of medicine.

5. Diseases :

It will provide information about various major diseases which are prevalent in India with their overviews, Symptoms, related statistics, risk factors, latest research regarding that disease. This part is introduced in our app to create the awareness about the various diseases. Here search criteria will be the name of diseases.

6. Quacks Identifier :

This is the most interesting aspect of our app. As we know that number of medical practitioners are increasing year on year, due to which it is almost impossible to check whether our practitioner is registered one or is he/she is a Quack. We understood the sensitivity behind this issue and incorporating the feature of the Quack Identifier in our app. In this search criteria will be Name of doctor, registered practitioner number or year of registration.

7. Latest researches & articles :

This section will include the details about various latest researches & articles related to the Healthcare / Medical industry.

8. NGOs :

As we know there are various NGOs operating in India to cater the needs of middle class, poor & unprivileged people who cannot afford the expense of their medical treatment. Our app will list the details about these NGOs with their contact & address details with map. Here also search criteria will be Name or location.

9. Health Insurance :

As we all know, Health Insurance plays a very major role in catering the medical needs of middle class people. This aspect of our app will list the available Health insurance options with their ratings, contact and address details.

10. Nearby Banks & ATMs :

Sometimes in case of any medical emergency or while visiting any health care unit, there may be a situation that you will be out of pocket at that time, to cater this need we are providing the list of Banks & ATMs near the health care unit you are visiting. In this the search criteria will location.

11. Nearby Blood Banks :

Sometimes in case of emergency, there may be a situation when a patient requires a blood urgently for carrying out some urgent medical procedure. To get the availability of blood, this feature has been included in Vaidya-Anweshanam which will the display the list of blood banks in which required blood is available with their name, address & map. In this search criteria will be the blood group or location.

II. Conclusion

Vaidya-Anweshanam mobile application can help us to reach out to the all medical needs on single click. Vaidya-Anweshanam will act as a hub i.e. it will connect the people to medical facilities across the world. It combines the utility of mobile technology to reach out to the masses and quick real-time processing using SAP HANA. It will help in increasing the efficiency of treatment processes and also provide Cost Effectiveness in terms of managing huge database as medicines, hospitals, etc. can cater to masses and reduce costs. It will also help in better handling of Pharmacovigilance data.

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