



## A New Concept of Blood Bank Management System using Cloud Computing for Rural Area (INDIA)

Javed Akhtar Khan and M.R. Alony

\*\*Ph.D. Scholar, Department of Computer Science & Engineering,  
Takshshila Institute of Engineering & Technology, Jabalpur (M.P) INDIA

\*\* Department of Computer Science & Engineering,  
Bhagwant University Ajmer, (RJ) INDIA

(Corresponding author: Javed Akhtar Khan)

(Received 04 December, 2014 Accepted 14 February, 2015)

(Published by Research Trend, Website: [www.researchtrend.net](http://www.researchtrend.net))

**ABSTRACT:** As we all know the Working of Blood Bank Management System. A blood bank is a cache or bank of blood or blood components, gathered as a result of blood donation or collection, stored and preserved for later use in blood transfusion. But the Real Fact is Blood transfusion service is a multibillion dollar profession/ business worldwide [1]. So many Corruption involve in this System . Still, we will not like to call it a business because of the fear in our minds that our general population or blood donors will be annoyed with us and may not come to donate again. For solving This major problem I am Introduce the a new concept of Blood Bank Management System Using a Concept of Cloud Computing .This paper is also help to provide a way to reduces the corruption involve in this Good work .With the help of this New concept we also Improve the facilities of blood bank management system in the Rural Area .In this paper I am using a concept of Cloud Computing as we all know the what is the simple definition of Cloud computing in a very simple word we say Cloud Computing is On demand Services. Many a times, we do not clarify to the donor at the time of donation that there is service charge for blood units. As a result, when the donor needs blood, it comes as a rude shock and he makes allegations of the 'sale' of blood. At that moment, the situation becomes embarrassing because we hesitate to accept that we follow a cost recovery system which is a part of the business. In this research paper I am introduce mobile SMS based blood bank management system for rural area which is direct connect to cloud server located in other location. Because in rural area blood bank management system not have a sufficient facilities for storing a blood in long time.

**Key word:** cloud computing, information about the basic blood bank services, online blood bank services, concept of DBMS.

### I. INTRODUCTION

The paper is basically focused on improving conventional working of blood bank management information system using the concept of cloud computing. The term "blood bank" typically refers to a division of a hospital where the storage of blood product occurs and where proper testing is performed (to reduce the risk of transfusion related adverse events) [8]. Blood is the necessity of everyone and in every area specially in a rural area because of the lack facilities in conventional blood bank management system available in the rural area. This introduction part include the brief introduction about the conventional blood bank management system, blood bank services and some information about the cloud computing, its services. Terminology used in blood bank management system as follow [2]

(i) Donors : Person who wants to donate the blood.

(ii) Seekers : Person who wants the blood from the blood bank due to various reasons like accidents, surgeries, delivery and many more.

(iii) Blood bank: staff people which are working in the blood bank which includes staff member, operator, blood bank in charge, head of pathological department.

Blood bank management system provides the unique identification number at the time of blood donation camp which helps him for the future correspondence. Blood bank management system have a permission to edit their information regularly. One of the major task perform by blood bank management system administrator to collect the information of all the donors area wise and blood group wise. Seeker can get the information of the desired blood group from the central inventory of blood bank present in his her area or is in hospital. Seeker can also get the list of donors' area wise, blood group wise if the desired blood group is not available in the central inventory but sometime this is create a problem.

Seeker can get the information of the particular blood group available in the blood bank. Seeker can get the blood units according to his requirement from the blood bank. Blood bank in charge is getting rid from manual procedure and used the new technology [2]. These system is provide help to generate a report like donors, seekers information, total consumption of the blood units and overall report monthly, bi-monthly, quarterly, half yearly, annually.

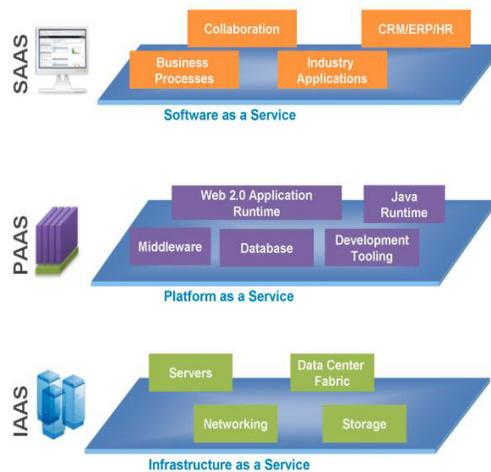
On the other hand a brief introduction about the cloud computing. A Cloud computing is an attractive and cost efficient continuation of server based computing [3] and application service provider model .We see

cloud computing as a highly available computing environment where secure services and data are delivered on-demand to authenticated devices Currently there are three primary categories of cloud computing service [9] in figure :

(i) Infrastructure as a service (IaaS). Computing infrastructure, such as servers, storage, and network, delivered as a cloud service, typically through virtualization.

(ii) Platform as a service (PaaS). Platforms that can be used to develop and deploy applications.

(iii) Software as a service (SaaS). Software deployed as a hosted service and accessed over the Internet.



**Fig. 1.**

Cloud computing is a hot topic all over the world nowadays, through which customers can access information and computer power via a web browser. Hence, it eliminates the need for maintaining expensive computing facilities. The characteristics of a typical cloud are: on—demand access, scalability, elasticity, cost reduction, minimum management effort, and device/location independence.

## II. LITERATURE SURVEY

During a literature survey we collect some of information about the blood bank management system located in city and rural area we am find some of the hospital have its own blood bank unit with each and all technical facilities in city but this conduction is poor in rural area. Some of the country maintain a online blood bank system like in Srilanka [7] this project have combination of three sub modules which is blood module, patient module, donor module. In this project blood bank staff has authorized access permission to

maintain the all module. Blood module can manage the types, quantity and expiry dates for each category of blood that stored in blood transfusion unit. With reference article [1] India total blood collection in 7.5 million units yearly, 2% of blood is discarded (minimum) due to various reasons. If we deduct 2% of discarded blood, the total usable whole blood or red cells will be 6460,000 units in India. For blood components, let us take a conservative estimate that only 25% blood is separated into components. In that situation, we will have about 1,365,000 components for patients. Now to find out the total revenue generation across the country, let us take the service charge ceiling laid down by the National AIDS Control Organization (NACO). NACO has prescribed Rs. 850 per unit of whole blood or RBC and 6460,000 units will generate Rs.549,1000,000. On the other hand, components will attract revenue of Rs.68,2500,000 (@ Rs.500 per component on an average).

Total revenue generated by whole blood/ red cells and components is Rs.617,3500,000 (or US\$123270000 @ 1 USD = Rs.50). We have four types of blood banks/centers (from the administrative point of view) in India.

They are managed by the public (government) sector, Indian Red Cross Society (IRCS), non-government organizations (NGOs, on not for profit basis) and corporate or commercial sectors. Let us discuss today how efficiently more than 2,460 blood banks in India are managed. Roughly, about 55% blood banks are from the government sector, 5% from the IRCS, about 20-25% are from the NGO sector and the rest are from corporate or profit-making sectors.

In this article author present a one major Problem every year our nation requires about 4 Crore units of blood [4], out of which only ameaagre 5 Lakh units of blood are available. It is not that, people do not want to donate blood. Often they are unaware of the need and also they do not have a proper facility to enquire about it. As a result, needy people end up going through a lot of pain.

India has many blood banks, all-functioning in a decentralized fashion. In the current system, individual hospitals have their own blood banks and there is no interaction between blood banks. The management is ad-hoc with no semblance of organisation or standard operating procedures. Donors cannot access blood from blood banks other than the bank where they have donated blood.3.2 Present System All the blood banks are attached to hospitals and there is no stand-alone blood bank.

### III. PROBLEM DEFINITION

A hospital has its own systems and limitations, the coordination between the blood banks is practically impossible. Because of low number of donors and more number of blood banks, the efficiency and quality of blood banks are low, resulting in wastage of blood and blood components. The challenges in the present system are:

- (i) In rural area not have sufficient amount of blood banks.
- (ii) In rural area not have a good facilities for following Points.
- (iii) Collection and processing [8]- Units of WB and RBC are both kept refrigerated at 33.8 to 42.8 °F (1.0 to 6.0 °C), with maximum permitted storage periods (shelf lives) of 35 and 42 days respectively. RBC units can also be frozen when buffered with glycerol, but this is an expensive and time consuming process, and is rarely done. Frozen red cells are given an expiration date of

up to ten years and are stored at -85 °F (-65 °C). [citation needed].

(iv) Storage and management [8]- Routine blood storage is 42 days or 6 weeks for stored packed red blood cells (also called "StRBC" or "pRBC"), by far the most commonly transfused blood product, and involves refrigeration but usually not freezing.

(v) RBC storage lesion [8]- Insufficient transfusion efficacy can result from red blood cell (RBC) blood product units damaged by so-called storage lesion - a set of biochemical and biomechanical changes which occur during storage.

(vi) Platelet storage lesion[8]- Platelet storage lesion is a very different phenomenon from RBC storage lesion, due largely to the different functions of the products and purposes of the respective transfusions, along with different processing issues and inventory management considerations

(vii) Long-term storage [8] "Long-term" storage for all blood products is relatively uncommon, compared to routine/short-term storage. Cryopreservation of red blood cells is done to store rare units for up to ten years.[25] The cells are incubated in a glycerol solution which acts as a cryoprotectant ("antifreeze") within the cells. The units are then placed in special sterile containers in a freezer at very cold temperatures. The exact temperature depends on the glycerol concentration.

(viii) Some of the hospitals are having individual blood banks.

(ix) Some of the hospitals are not having blood banks.

(x) Donors do not have any record of their donations or information related to their blood diseases.

We Proposed System an efficient blood bank management system using a cloud computing concept with mobile SMS facilities should be developed, with the aim of ensuring that every patient has access to an adequate quantity of safe blood in a centralized manner. The management system should solve the issue of demand and wastage and lead to self-sufficiency in blood requirement. This should encourage new donors and retain old donors to donate blood.

### IV. PROPOSED SOLUTION & METHODOLOGY

In this paper we want to revisit autonomic computing , which defines a set of architectural characteristics to manage system ,where complexity is increasing but must be managed without increasing cost or the size of the management team ,where a system must be quickly adaptable to new technologies integrated to it, and where a system must be extensible from with in corporation out to the broader ecosystem and vice versa.

The primary goal of autonomic computing is that “System manage themselves according to an administrator ‘goals .People lived in rural area not have a knowledge about computer but those people have a knowledge about mobile phone .In this paper, Methodology used -Firstly, the properties of data and decisions in a blood bank are examined carefully; then, we introduce the development of computerized decision making support with special concerns on blood donation and transfusion service; This project is very help full for casualty case like Accidental cases deliver cases etc.

Technology used for implementing this project asp.net for developing a web storage data on blood cloud server , SMS service pack for wireless device data base connection.

Implantation step - Cloud server data base contain the following table:

-Table Number 1- Area list /City Name

-Table Number 2- Hospital Name

-Table number 3 - Donner mobile number / Donner Name

we proposed the solution for improving the services of conventional blood bank management system, using a new technology cloud computing. This technology explore the mechanisms of decision making support in blood bank information systems in rural area. -Table number 4 - Seeker(who need a blood ) mobile number

-First a fall Seeker send the SMS to given number (like 555 , 777 )in standard format like

**< City Name + Area Name > <Hospital Name > <Blood Group >**

Eg .< Jabalpur + Rashual chowk > < Jabalpur hospital> <A->

-After first step seeker automatic receive five to Seven Blood Donner Mobile Number from cloud blood server and then seeker call to Donner for donating a blood.

This is table number one show city name and list of area’s located in the given city. **This is table number two show the list of Hospital name located in the given city (Table 1).**

**Table 1.**

City Name	Area Name
Jabalpur	Medical Rasal chowk Damoh naka Garha Mdan mhal

**Table 2.**

Hospital name
• Medical hospital
• Jabalpur hospital
• Marble city hospital
• Ranbaxy hospital
• Metro Hospital

This is table number three contain the city name and list of area next column show the area based list of hospital. We segregate the blood group and also make a block of five to seven donor mobile number of each blood group these donor are lived in the specific area or nearest hospital shown in the column three mention in above table. When a Seeker send a SMS to given number data fetch from this table and automatic send return SMS to seeker mobile number this SMS only contain the nearest donor mobile number of blood group specified by seeker during sending a SMS.

**< City Name + Area Name > <Hospital Name > <Blood Group >**

e.g. <Jabalpur + Medical> <Medical Hospital> <B’> After sending this SMS (Query) I run a *select Query select from MT where city name =’Jabalpur ‘ area name ‘medical’ hospital name ‘medical’ blood group ‘B’* after fire this query data fetch from the table or send to seeker.

Working of Conventional Blood bank management System when a Donor want to donate his her blood to blood bank of any hospital:



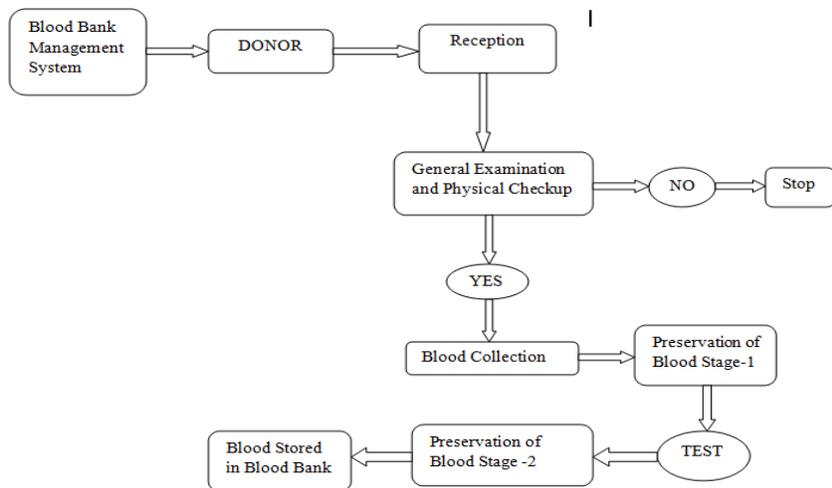


Fig. 2.

This architecture show the working of blood bank management when a person need blood from the blood bank shown in Fig. 3

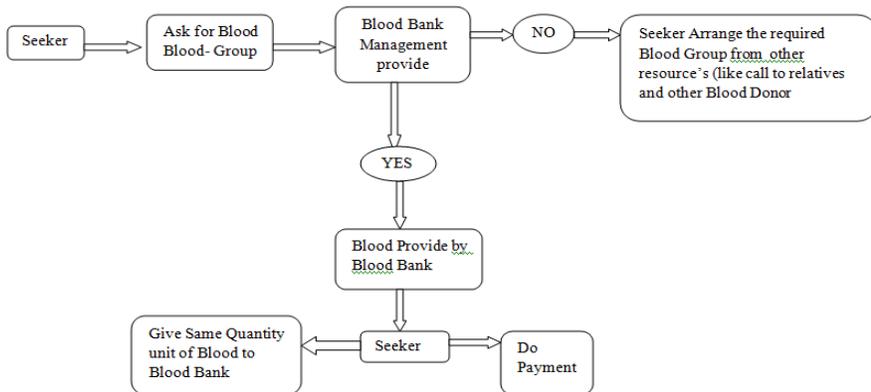


Fig.3.

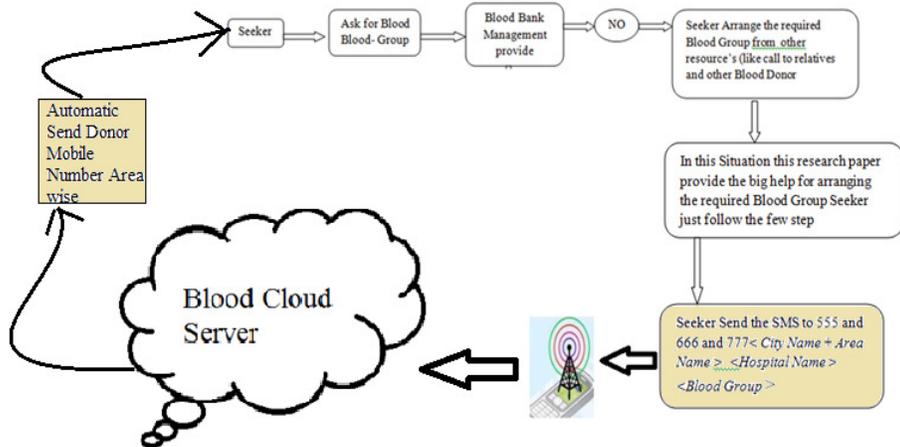


Fig. 4.

This is a new working architecture of blood bank management system shown in figure number 4 this figure show the concept of cloud computing when blood bank not able to provide a blood to seeker, in this situation user just follow the simple instruction and send the SMS is in the given format in given number blood cloud server receive this SMS in the query format and fetch a data based on this SMS and resend the nearest donor number to seeker.

### CONCLUSIONS

This paper is show the new working concept of blood bank management system for rural area. Information and computer technology is very famous in blood banks for its potentials in working efficiency as well as service quality we just provide a new facilities for all blood bank management as well as for seeker. It plays a vital role in this new concept. the main objective behind in this concept is more of places blood bank not have a good facilities for storing a blood unit in bank for large time period, but with the help of this new concept blood bank have to provide a blood to any time and any situation to seeker apart from that seeker is also able a call the donor for blood in a very serious condition of patient . In future we make this information system for education field, like implement in collage, schools etc where student parents get the information about student just sending a simple SMS.

### REFERENCES

- [1]. Articles from Asian Journal of Transfusion Science are provided here courtesy of Medknow Publications *Asian J Transfus Sci.* 2009 July; **3**(2): 57–59.doi: 10.4103/0973-6247.53871 N. Choudhury. “<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2920472/>”
- [2]. Benefits of Management Information System in Blood Bank Vikas Kulshreshtha, 2, Dr. Sharad Maheshwari RESEARCH INVENTY: *International Journal Of Engineering And Science* ISSN: 2278-4721, Vol. **1**, Issue 12(December 2012), PP 05-07 [Www.researchinventory.Com](http://www.researchinventory.com).
- [3]. 91-US-31-1\_Cloud\_Computing White Paper Cloud Computing: Thin clients in the clouds
- [4]Bharat BloodBank,<http://www.bharatbloodbank.com>
- 3.Jeevan BloodBank,<http://www.jeevan.org/11>
- [5] [http://www.ehow.com/about\\_5568190\\_importance-blood-banks.html](http://www.ehow.com/about_5568190_importance-blood-banks.html)
- [6]<http://www.cancer.org/treatment/treatmentsandsideeffects/treatmenttypes/bloodproductdonationandtransfusion/blood-transfusion-and-donation-donating-blood>
- [7]<http://seminarprojects.com/Thread-blood-bank-management-system-advantages-and-disadvantages#ixzz2pmvg7qv4>
- [8] [www.wikipedia.com](http://www.wikipedia.com)
- [9] Buecker, Lodewijkx, Moss, Skapinetz, Waidner, 2009.