

# WIRELESS INFLUENCED BLUETOOTH IN HOSPITAL MANAGEMENT SYSTEM

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**Abstract:** The article describe a Bluetooth based hospital management system which provides sufficient facilities to the doctors, staff nurses and In and Outpatients' parties to share information among them without others in person. By deploying wireless based Bluetooth technology, we can reduce the electromagnetic frequency(EMF) , when compared to wifi. The key features of Bluetooth are Robustness, low power, and low cost and, data and voice transmissions can be handled simultaneously. As wifi is a reasonably fast method of transmitting information in the waveform, it emits a wide range of electromagnetic frequency which is harmful to the patients. In other hands, using Bluetooth, the records of hospital management are better on security and privacy standards. This paper provides ample information related to providing flexibility for users and management to deliver the best security and user-friendly and safe environment.

**Index Terms:** Bluetooth, wireless Networking, Hospital Management System, Bluetooth Beacons

## 1. INTRODUCTION

In recent years, wireless based network infrastructures, identifying cellular networks, are becoming an essential factor for exchanging electronic data in low-income countries. Several key sectors deploying and the health care sector is also aiming to tackle outstanding challenges like providing basic health care services to remote communities by using cheap mobile devices [1]. Selecting Bluetooth technology as a data transfer medium has some specific advantages. Now there are various types of wireless networking technology mainly like Wi-Fi, RFID. The main advantages of Bluetooth over Wi-Fi technology are that in the hospital area, there are many patients having bypass surgery. The interference level of Wi-Fi is so high that it interferes with the can break the instruments down. In Bluetooth technology, there is no such type of interference happens and the cost is too low compare to Wifi, gives us the very flexibility. The deployment and maintenance cost of Wi-Fi-based system is much higher than the Bluetooth based systems.

## II. MOTIVATION

In urban hospitals, the facilities available for health caring are very limited. The poor hospital management enables issues and cheap devices which generate a frequency of radiation that may be harmful to the patients. Everyone should get the knowledge of own health as easy and as early as possible. Also, it should be worth for each. The recent medical report of The India Spend analysis of data says that around 5 lakhs doctors shortage in India. The system defines the standards for doctor-patient ratio will be 1:1000 which has been failed in India [2]. In developing countries, there is a need for resources and management to reach out to the problems. By motivating the situation, We came with an idea, which helps patients to put away from harmful cheap devices by adopting wireless Bluetooth technology with reducing the radio frequency. The system reduces time with safely handled equipment.

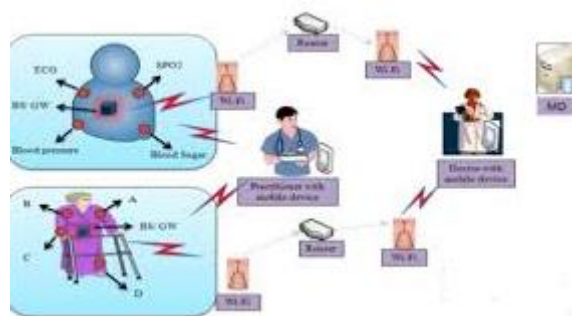


Fig 1: Wireless based HMS

### III.RELATED WORK

Modern HMS care system releases new technologies like robust devices or cloud of things. It provides very flexible in terms of recording of patients observer health data and sends it to medical stores through authenticated staff. For this purpose, there is a need for secure data transmission. Several related articles are discussed here. Bluetooth Interface to office PBX and dial-up networking and automatic email and use cell phones as office cordless phone .use of pc or PDA as hand free phone. Ananya Roy, Aparajita De, Abhranil Tan(2013): " Autonomous Hospital Management System using Bluetooth technology" [4]. It describes the detail of project development with Bluetooth. Yeo Symey, Suresh Sankaranarayanan, site Nurafifah binti said: "Application of smart technologies for mobile patient appointment system" describes the patient management system[5].

### IV.METHODOLOGY

Wireless based Bluetooth system describes the methodology framework to achieve. Radio Frequency ID (RFID) is another very popular wireless medium of the modern era. It has a very short range and it is competent of transferring the very small amount of data. In this article , we have proposed Bluetooth for the modern system as it has enough range as well as the data transfer rate and less battery consumption. But the radiated output power of Bluetooth devices vary from 1 to 100MW and can be operated continuously So that there will not be any damage to the patients.

By this even doctors can verify the particular state of the patients and nurses can upload all the information regarding health details of the patients and stock available in the medical shop can also be known. Bluetooth have a range of around short distance around 30 feet range. In other hands, the main strength is by deploying "cassia Hub" a device which extends the Bluetooth router and frequency range of connections up to 1000 feet or passes through the walls without many issues. Similar to the wifi router, it can also connect to 22separate Bluetooth devices at once. Instead of sending commands to Bluetooth devices directly, we can use the cassia hub's app to control everything connected to it.

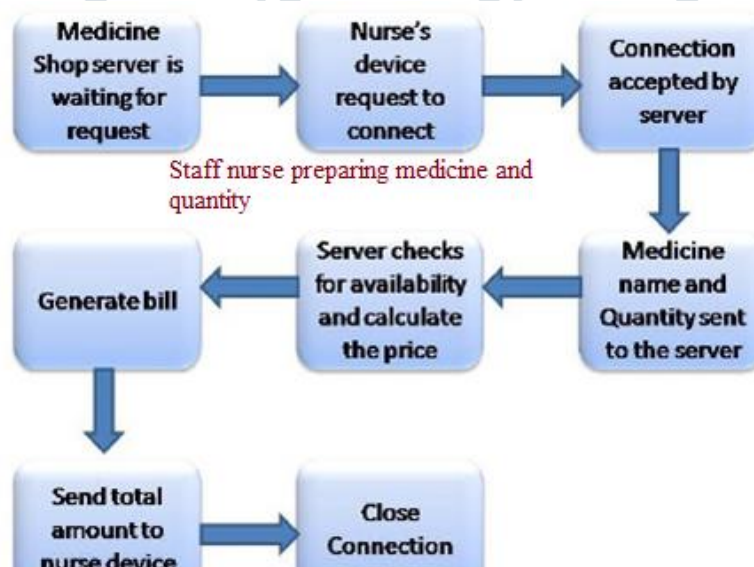


Fig 2: Medicine orders through the device

This module gives information regarding how the authenticated user like nurse will order medicine from Bluetooth device to the medical shop server along with patient ID and referred, doctor ID for security reason. We should understand, how the medical shop server generates a bill for referred medicines and quantity. If the nurse wants to order the required medicine list for the patient then, they should log in to the server for authentication. If the authentication is a success then a connection will be established among the medical shop server and handy device. The nurse will send medicine name, quantity along with patient ID for the future reference of that particular patient, the server checks for required medicine and also checks the credentials of a doctor, whether the ordered medicine has written on the prescription by the doctor or not. The medical shop server checks for validity of doctor's ID and availability of medicine and then it generates the bill.

#### Nurse authenticated to medical store server and updating patients' Information:

In this module, we come up with how staff nurse is authenticated to the medical store with their respective permission and updating patient details time to time into the data storage server. After validating the credential of nurse Id and password will be able to update the patient details onto the server. If anyone wants to access the server then they must validate their ID and password for security purpose. If the authentication of the nurse is the success they will log in to the server in which options will be displayed which should be updated by the nurse(like pathological lab test details, injection date details, patient medical information, patient last update details). The data which is in the server will be accessible only to the authorized users so that

security will be provided an unauthorized user cannot modify the patient details. If any unauthorized person is using the server to display patient details a warning pop-up will be displayed on the screen. The connection will be closed between the nurse's Bluetooth device and server.

#### Authenticated Doctors fetches patients profile from Server:

If doctors want to access the patient's information which are present in the server. They must be authenticated by providing their ID and password. Server checks credential of the user, who is logging into the server. If fails, the system will not allow the people to interactive it and warning pop-up arise and inform the user to provide valid details and disconnect the Bluetooth devices.

The reason for choosing Bluetooth technology rather than wifi is that health impact for the patient is less in Bluetooth compared to wifi, .even small hospitals can also use this Bluetooth technology with affordable investment, this below table shows as the comparison between Bluetooth and wifi.

Basis for comparison	Bluetooth	Wi-fi
Frequency	2.4 GHz	2.4,3.6,5 GHz
Cost	low	High
Health impact	low	High
Power consumption	low	High
Ease of use	Fairly simple to use	More complex
Latency	200ms	150ms
Installation	easy	Complex
Connection establishment	A device would require	Devices require wireless adaptor and router
Security	Secured	Less secured than Bluetooth

#### V.CONCLUSION:

In this paper, we provide fundamental information about wireless technology over wifi. To implement this, we simply need a Bluetooth device as its electromagnetic frequency is less when compared to Wi-fi so that it will not affect the life of the patients. As Bluetooth is easy to handle and very low in cost, any person can access and apply. The nurse updates each and every detail of patients regularly to the main server so that by the help of Bluetooth connection. This system makes users very comfortable and more flexible and reduces time. Finally, it will help, to reduce the manpower and efficient management of the hospital.

#### REFERENCE:

- [1] Gejibo S., Mancini F., Mughal K. A., Valvik R. and Klungsoyr J. (2012). "Challenges in implementing an end-to-end secure protocol", G. Barthe, Livshits B. and Scandariato R. (Eds): ESSoS 2012, LNCS 7159, Springer-Verlag, Berlin, pp. 38-45.
- [2]The Active Badge Location system by Roy Want, Andy Hopper, Veronica Falcao and Jonathan Gibbons Olivetti Research Ltd.Cambridge, England.
- [3].python official website www.python.org
- [4].Ananya Roy, Aparajita De, Abranil Tah volume 3, Issue 8, ISSN:2250-3153
- [5].Yeo Symey,suresh Sankaranarayana,siti Nurafifah binti Sait(2013): volume 2, No.4,ISSN:2278-3091
- [6].Godphey G.Kyambille,khamisi,kalegele,volume 13, No.11,ISSN :2278-3091
- [7]. Bahr P.Padmanabhan V.N.RADAR an in-building RF-based user location and tracking system 2000 in Proceedings of IEEE INFOCOM, Tel Arir(2009)