

## PATIENT MONITORING USING NFC THROUGH CLOUD

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**Abstract-** Near Field Communication (NFC) is a standard based, short range wireless communication technology which validates two-way interaction between electronic devices allowing contactless transactions and provides an ease to connect devices with a single touch. NFC allows exchange of information between devices within 10 cm range. NFC technology is also available in form of tags. These NFC tags can store some information in it with a unique identification number. This feature of NFC tag can be used in many real time applications. In today's world with rapid development in mobile technology mobiles can be used in many applications. Now a day most of the mobiles are NFC enabled. The use NFC for unique identification of patients in hospital then it will be a great step towards automation of healthcare. Use of NFC based identification will surely reduce mistakes of giving wrong treatment to patients in highly populated hospitals. NFC is the wireless communication technology that is very easy to use and technical as well as non-technical persons like doctors, nurses can use them efficiently. So NFC based healthcare can be employed for not only providing automation and accuracy in healthcare as well as to lower down cost of healthcare in developing countries.

**Keywords-** Near Field Communication (NFC), NFC tags, E-healthcare

### I. INTRODUCTION

In the current digital era, technology is ruling mankind. A little contribution of one, will take world to a higher level of living which makes them afford almost everything at ease. The world is at its extremes in upgrading itself to present technologies and innovations. Earlier it was difficult for people to afford a better education, transportation, occupation, a better reliable medical care because it costs high and heavy man power. Now, the evolution of technology comforts all classes of people to access many such services almost within no time and with less man power. To provide a better medical care to all categories of people, medical field is also in its path towards up gradation. An online medical service would enable people to the available quick, better, safe and secured medical treatment. The services helps doctors and receptionists to record day-to-day services provided to the people which would be stored for many years, that in turn helps people in cases of emergency . NFC stands for Near Field Communication which is a standards-based, short range wireless technology, which allows performing contactless transactions and provides an ease to connect devices with a single touch. NFC is a technology which allows exchange of information between devices which are in a 10 cm range. NFC is nothing but an offshoot of radiofrequency identification (RFID) which combines interface of a smartcard and a reader into a single device.

As per Role Based Access Control Models for E-Healthcare Systems, E-healthcare is the use of web-based systems to share and deliver information across the internet. With this ability, privacy and security must be maintained according to the Health Insurance Portability and Accountability Act (HIPAA) standards.

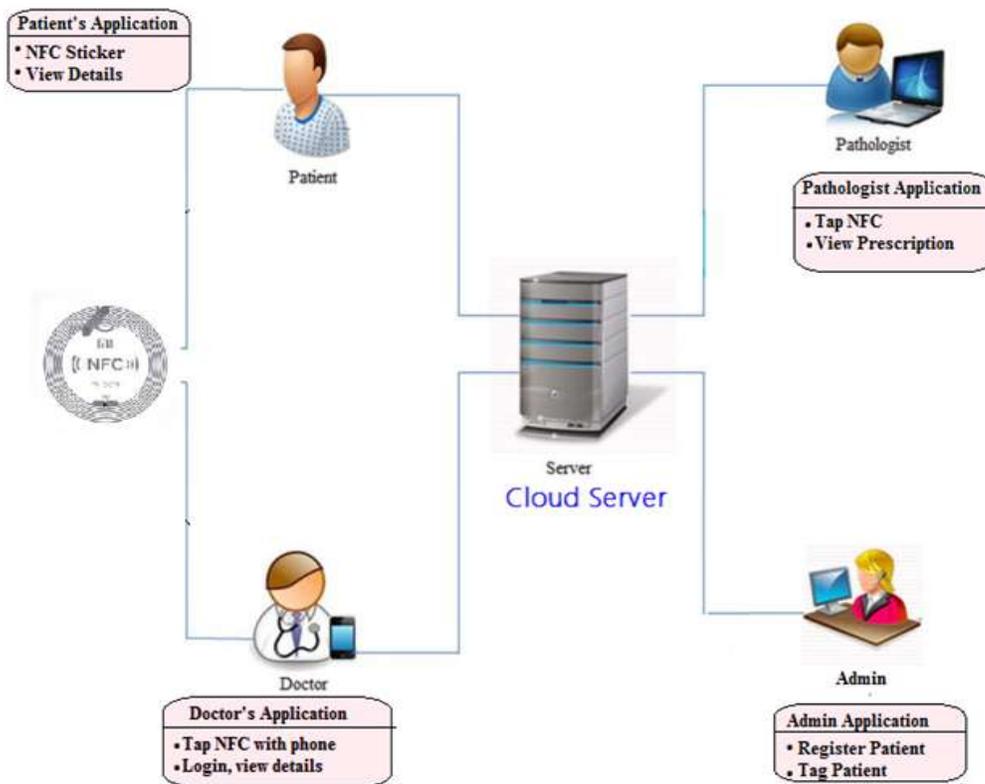
## II. SYSTEM DESIGN

System design is the process of defining the architecture, components, modules, interfaces and data for system to satisfy specified requirements. System design could see it as application of Systems theory to product development.

### A. ARCHITECTURE

Architectural design is the process of decomposing a large complex system into small subsystem. The Figure1 below represents a NFC system makes the entire process of patient record keeping easier, more accurate and comprehensive, and more efficient. With this system, doctors use specialized software that allows them to enter their patient records electronically. The software stores the patient information on a server and each patient's complete history is available instantly, including digitized copies of x-rays, lab results, prescriptions etc

When a patient is admitted/visited in hospital for the first time a unique id is provided to patient. NFC tag will be associated with every patient. Equipped with NFC enabled smart phones will be equipped to Doctors and other staff. There will be an NFC issue app which will be used to read the content from mobile to NFC tag. Administrator can write unique tag id and application link in NFC tag by using the NFC issue app



*Figure 1. Architecture diagram for monitoring using NFC*

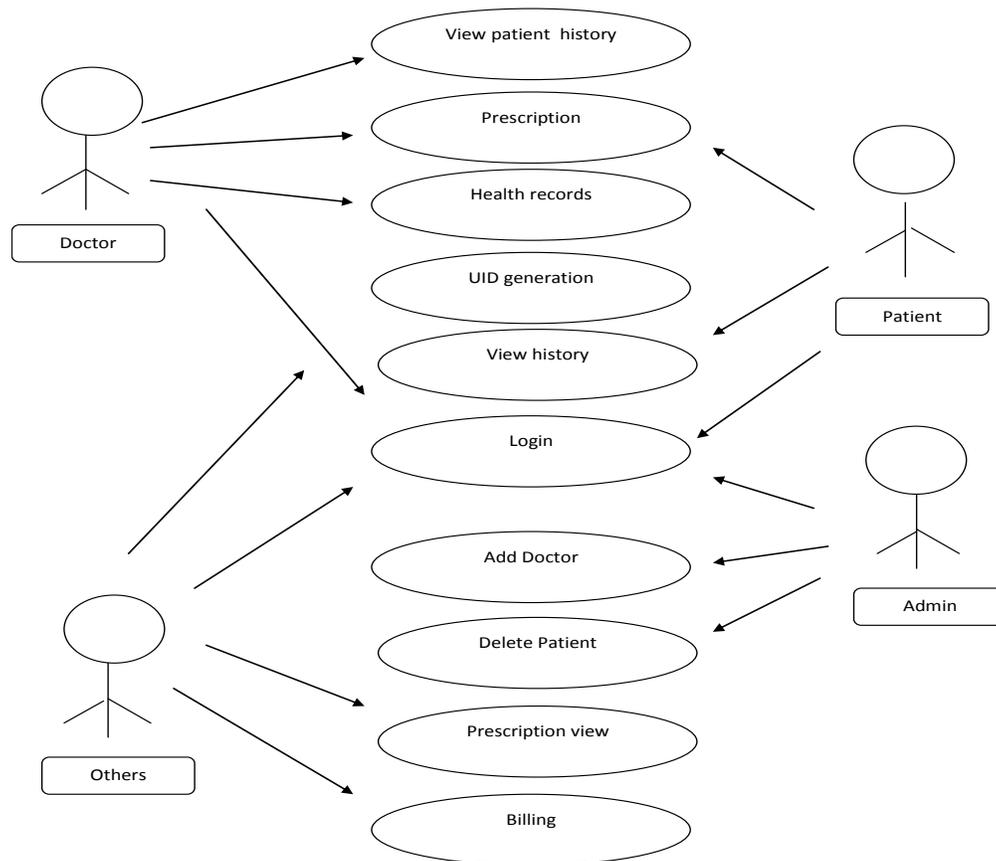
### B. MODULES OF THE SYSTEM

The application consists of the following modules.

- Module 1: Registration- All the Users Must Register and create an account in order to use the app. The account allows the Admin to keep track on the App Usage.
- Module 2: Login- Login Activity is Allow the user(doctor, patient etc) to sign in with Name and Unique

Password. The user can stay signed in for faster access of the service next time.

- Module 3: Doctor's view- Whenever doctor logged in he can add health record, prescription, view patient history.
- Module 4: Patient's view: Whenever patient logged in he can view doctor details, hospital details, prescription, and health record.
- Module 5: Pathologist's view: He can view medicine prescribed by the doctor by logging in using patient id and password.
- Module 6: Monitor the Usage- The admin is allowed to monitor the app usage data in order to prevent invalid or misuse of the application. Admin can take necessary action on such type of behavior. Modules of this system are shown below.



*Figure 2. Modules of Patient Monitoring*

### III. IMPLEMENTATION METHODOLOGY

#### A. HARDWARE REQUIREMENT

- Hard Disk: 10GB and above.
- RAM: 512MB and above.
- Processor: Pentium III and above.

#### B. SOFTWARE REQUIREMENTS

- **Web Browser-Internet Explorer:** A web browser (commonly referred to as a browser) is a software application for retrieving, presenting and traversing information resources on

the World Wide Web. An information source is identified by a Uniform Resource Identifier (URI/URL) that may be a web page, image, video or other piece of content.<sup>[1]</sup> Hyperlinks present in resources enable users easily to navigate their browsers to related resources. Although browsers are primarily intended to use the World Wide Web, they can also be used to access information provided by web servers in private networks or files in systems.

The most popular web browsers are GoogleChrome, MicrosoftEdge (precededby InternetExplorer), Safari, Opera and Firefox.

- **Microsoft Visual studio 2010:** It is an integrated development environment (IDE) from Microsoft. Visual Studio supports different programming languages and allows the code editor and debugger to support nearby any programming languages, provided a language specific service exists. Built in languages C, C++, (via visual C++), VB, and NET (via visual basic.NET), C# (via visual C#) and F# (as of visual studio 2010).
- **MySQL5.0:** MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius' daughter, and "SQL", the abbreviation for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNUGeneralPublicLicense,aswellasunderavarietyof proprietary agreements TYPO3, MODx, Joomla, WordPress phpBB, MyBB, and Drupal, are the applications that use the MySQL database. Also it can be even run on cloud computing platforms MySQL is also used in many high-profile, large-scale websites, including Google<sup>1</sup> (though not for searches), Facebook, Twitter, Flickr,and YouTube

#### IV. RESULTS



Figure 3. Login page for users



Figure 4. Working model

#### V. ADVANTAGES

- Provide a better medical care to all categories of people,
- To improve patients identification by eliminating paper based documents.
- Time Consumption.
- Fast treatment in case of emergency.
- Increase efficiency & Decrease manpower.

#### VI. FUTURE SCOPE

Our e-healthcare system currently focuses on the relationships between patients, physicians, pharmacists and others. We can extend the features of our websites by adding options like Book

8Appointment Online, Online Consultation, Online Payment. The project with these enhancements allow people to use the e-healthcare system conveniently across the nation

### REFERENCES

- [1] E-healthcare: an analysis of key themes in research by Avinandan Mukherjee, John McGinnis –International Journal of Pharmaceutical and Healthcare Marketing 2007.
- [2] Role Based Access Control Models for E-Healthcare Systems by Jarrod Williams Florida A&M University - Department of Computer and Information Sciences.
- [3] Implementing Web-based e-Health Portal Systems Shuo Lu, Yuan Hong and Qian Liu and Lingyu Wang and RachidaDssouli Department of Computer Science and CIISE, Concordia University