# INTEGRATION OF PERSONAL HEALTH RECORDS BETWEEN MULTIPLE HOSPITALS
## (Integration of personal health records between multiple hospitals)

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***ABSTRACT-One of the world's largest and fastest growing industries, consuming over 10 percent of gross domestic product (GDP) of most developed nations, and has a major impact on any country's economy is the Healthcare Industry. The major issue that a healthcare industry comes across with is the exchange of Health Information. The major aim of interoperability is the ability of one healthcare organization task to be "visible" in another healthcare organization. Integration of the medical details of a patient into a single document is the major concern. PHR system enables the distribution of the integrated document that contains all the information of a patient over various hospitals. To delegate access rights and other search functions over their records certain privacy rules are included to the users. Since diagnosis becomes more expensive, by integrating documents in the cloud, repetition of medical tests are not required frequently. This enables the physicians and patients to obtain the details as and when required. Face recognition system is introduced in this system to enable patients and other user's safety and privacy.***

***KEYWORDS: Interoperability, Cloud, PHR, Face Recognition.***

## I INTRODUCTION

The healthcare applications simplify the various healthcare processes. They include administration, appointments, management of healthcare records and billing. These applications are referred to as Electronic Healthcare Record's (EHR's). For efficient implementation of an EHR system these factors should be taken into consideration. Certain changes should be made in the workflow, privacy and security, handling duplicate records and exchange of information.

The collection of different health information of a single person which is converted into a single document is known as Electronic Health Record. These records are created to prevent errors, which can be achieved in a computerized manner. It will help a patient to create, to monitor, to authenticate, to share his own health information in a hospital or multi hospitals. Only after an authentication is received from the patient his medical history can be shared with multiple hospitals. When the patient cannot be treated in a particular hospital for further treatment the documents are shared in other hospitals. For example, if a patient admitted in a rural area is in need of a organ transplant his details can be shared with certain experienced doctors in advance using this EHR which will be useful for both patient and the doctor.

## II BACKGROUND STUDY

In this section we explain the key concepts that are used in this paper.

1. Personal Health Record (PHR) - Wikipedia describes A Personal Health Record or PHR is a health record where health data and information related to the care of patient is maintained by the patient.
2. Electronic Health Record (EHR) – Wikipedia describes An Electronic Health Record is a digital version of a patient's paper chart. EHR's are real time, patient centred records that make information available instantly and securely to authorized users.

## III SURVEY ON COUNTRIES IMPLEMENTING PHR

According to a survey report, the top countries that have adopted EHR are listed below. Here India has only 7% of its share in EHR adoption.

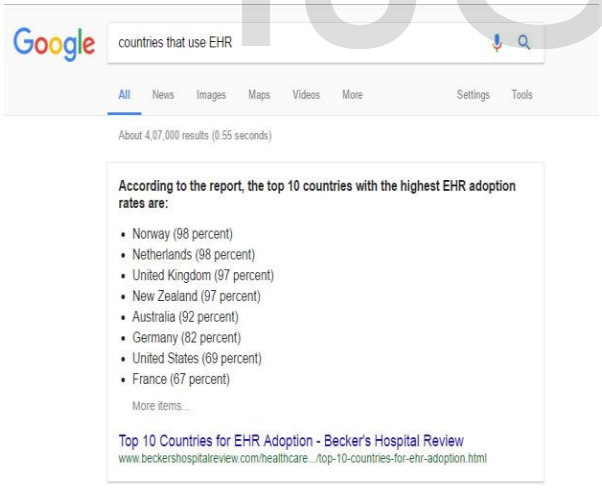


Fig. 1 Survey list

## IV EXISTING SYSTEM

In the existing system only doctor has the full access rights and the patient access to various modules is minimized, such as the doctor will be able to create, update and view a CDA document whereas the patient can only view the CDA document. Also the various technicians such as nurse, pharmacists etc.., involved in the healthcare management do not have a role to play in the existing system.

## V DISADVANTAGES

1) Integration of different medical documents varies from one hospital to another.
2) Access to different operations performed in a system varies from one platform to another
3) The existing system does not integrate multiple CDA documents into a single document.

## VI PROPOSED SYSTEM

The disadvantage proposed in the existing system has been overcome in the proposed system. We propose the following ideas:
1) A single platform can be created where each and every person involved in a hospital management can have access or entry in the system.
2) Multiple EHR documents of various patients from different hospitals are integrated into a single domain.

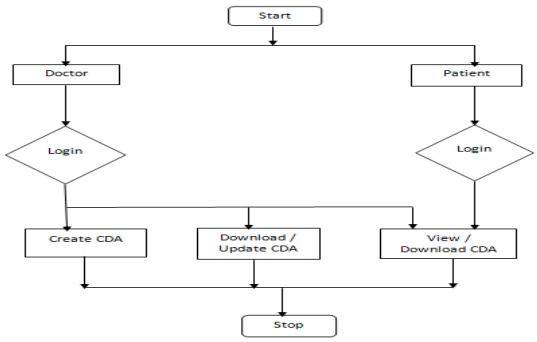


Fig. 2 Flow Diagram for existing system

## VII ADVANTAGES

The usage of this system would bring the following advantages in the healthcare system:

1) Individually Hospitals do not have to purchase EHR software to generate and integrate CDA documents.
2) Cost of the software is not needed to be paid by the hospital management.
3) The document generation system produces the document in such a way that is approved by the National Institute of Standards and Technology (NIST).

## VIII MODULE

**Patient Registration:**
The patient registration details are mainly used by admin because they collect all the information about patient, they give individual password to every user and finally we can store the information in cloud database.
**Doctor Registration:**
The doctor registration details are mainly used by admin because they collect all the information about doctors and finally we can store the information in database.
**Workers Registration:**
The worker registration details are collected by the admin where workers such as nurse, lab technicians can register themselves and their access is limited within certain parameters.
**Doctor Details:**
The admin maintain all the doctors' information because any emergency of patient side we can easily find out the doctor's information so doctors can fix appointment to particular patient in case of emergency.
**Entry Details:**
The admin maintain all the patient entry information because how many patient entry in hospital and they maintain accounts details of the hospital and we can finally store the information in database.
**View Form:**
The view form is mainly used to admin side because user can come to after 1 year they can easily identified the patient report
**Patient Report:**
The Patient report is mainly maintained to admin because every patient having unique id so easily send to the mail so easily view report to patient side and finally we can take report by print out.

## IX FACE RECOGNITION

The given figure explains how an automatic face recognition system works. If a registered person reaches the login form, it will automatically open the webcam and take a photo and compares the photo with the updated photo in the registration form, otherwise it will never log in. Biometric facial properties are used for designing this system. This provides a secured access and better assistance for all the users involved in the hospital management. The major challenge for biometrics and computational intelligence is to recognize different faces and develop a face recognization system accordingly. Biometrics is one of the major applications used in security enhancement. Challenges faced during facial detection for the purpose of authentication include different surroundings environments, occlusion and disguise, minor changes, and last but not least, robust Training and open set testing.

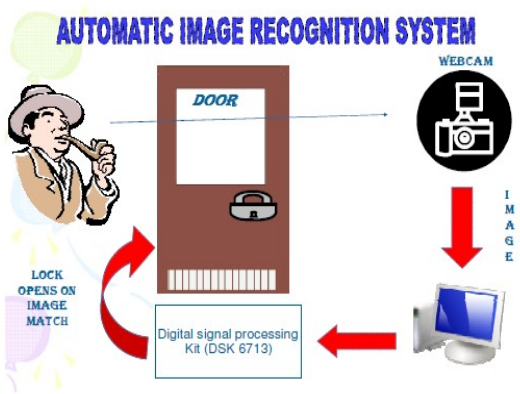


Fig. 3 Face Recognition System

## X RESULTS AND OUTPUT

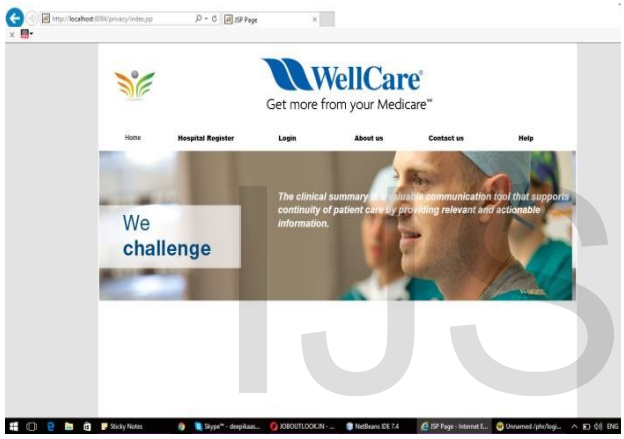


Fig. 4 Home Page

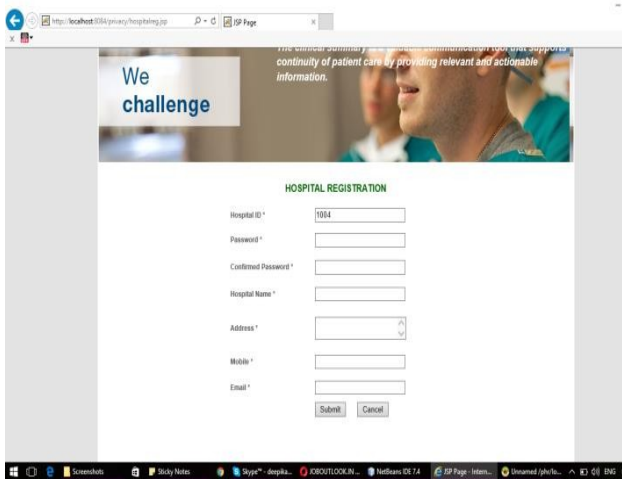


Fig. 5 Hospital Registration

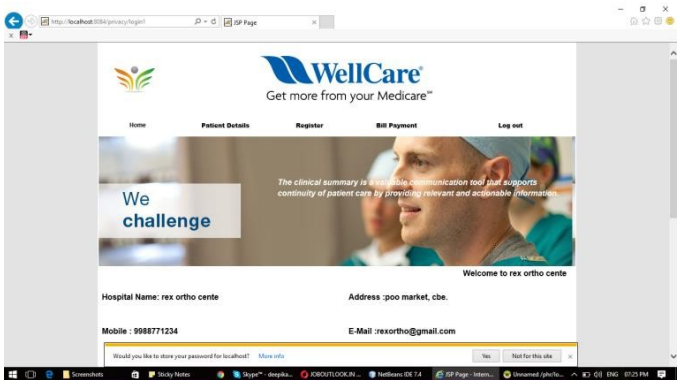


Fig. 6 Hospital Details

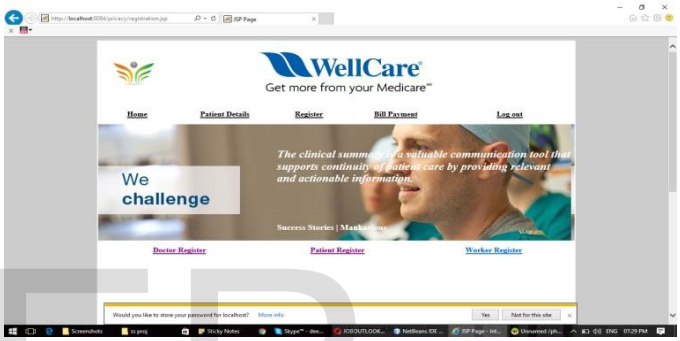


Fig. 7 Who can register inside a hospital

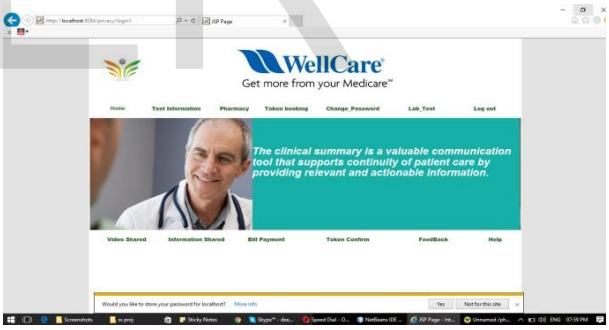


Fig. 8 Patients options

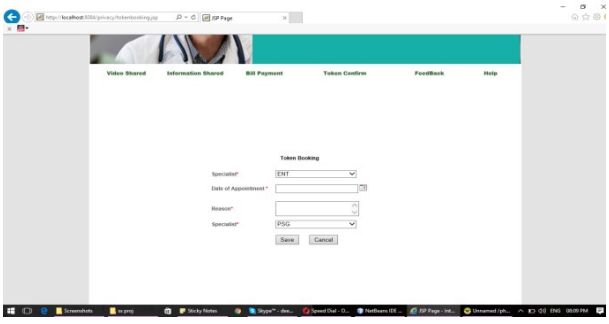


Fig. 9 Token Booking

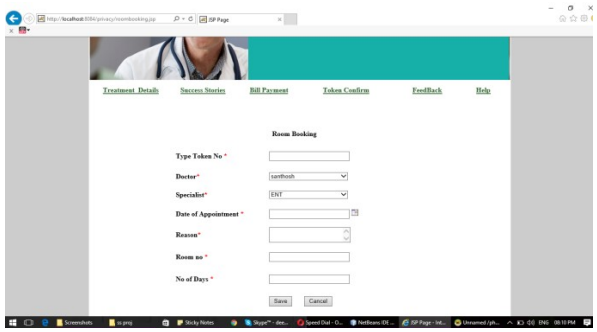


Fig. 10 Room Booking

Fig. 11 Video shared from doctor viewed by patient

## XI CONCLUSION

This paper is written to demonstrate the idea that exchange of EHR documents between multiple hospitals could be made possible along with improved security measures. Here we provide different login account for each user namely doctor, nurse, patient, lab technician where everyone has access to information that is necessary for each one of them, and other informations are hided automatically to maintain the privacy of the users.

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