

# Instant Medical Insurance Claims Through Aadhaar Based Authentication

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**Abstract**— A novel method to use medical insurance instantly, in India is proposed. The method uses the Aadhaar card based authentication. Aadhaar card is the national identity card in India. Systems to store complete history of medical records of all Indian citizens in state based centralized servers have been already proposed. This paper extends that proposal to incorporate insurance claims instantly. The proposed system appends the information about the insurance provider's identity to the state based server. Once a client requests medical service, his identity is authenticated using Aadhaar. Then, not only is his/her medical record, fetched from the state based server, the insurance provider's identity is also fetched in a single stretch. If the client does not have any insurance then a null record is sent by the state server. After fetching the insurance provider's identity, the health center's server communicates directly to the insurance provider's server to find the eligibility and claim limits of the client. If the client is eligible for insurance claim, then a message is sent to debit the charges for providing health service, and then service is provided. After finger print scanning, the complete process is computerized and hence, contacting the insurance provider and availing the claims is transparent to the client and is automatic. Major advantage of the proposed systems is instant access to insurance facility.

**Index Terms**— Medical Insurance, E-Health, UIDAI, Aadhaar Card, Medical Records, Health Service.

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## I. INTRODUCTION

Health services include all services dealing with the diagnosis and treatment of disease, or the promotion, maintenance and restoration of health. They include personal and non-personal health services [1]. Health services are the most visible functions of any health system, both to users and the general public. Service provision refers to the way inputs such as money, staff, equipment and drugs are combined to allow the delivery of health interventions [1]. Improving access, coverage and quality of services depends on these key resources being available; and how services are organized and managed. Equity in health outcome is the ultimate aim [1].

Health system service delivery is people- centric and integrated health services are critical for reaching universal health coverage [2]. People-centric care is care that is focused and organized around the health needs and expectations of people and communities, rather than on diseases [2].

e-Health is the use of information and communication technologies (ICT) for health. The e-Health unit works with partners at the global, regional and country level to

promote and strengthen the use of ICT in health development, from applications in the field to global governance [3]. E-Health helps to deliver health system services to the public in a more reliable method.

The Unique Identification Authority of India (UIDAI) is a statutory authority established under the provisions of the Aadhaar Act, 2016 by the Government of India, under the Ministry of Electronics and Information Technology (MeitY) [4]. UIDAI was created with the objective to issue Unique Identification numbers (UID), named as "Aadhaar", to all residents of India that is robust enough to eliminate duplicate and fake identities, and can be verified and authenticated in an easy, cost-effective way [4]. Front and back of a sample Aadhaar card is shown in Figure 1 and 2 respectively. As seen in Figure 1, the front of the Aadhaar card has the holder's picture, name, date of birth, sex (gender) and the Aadhaar card number. The back of the Aadhaar card has just the address and card number (Figure 2). The Aadhaar card holder's finger prints are stored in the UIDAI database that can be accessed by permitted authorities to fetch the finger prints any time



**Fig.1. Sample Aadhaar Card – Front**

Health insurance is insurance that covers the whole or a part of the risk of a person incurring medical expenses, spreading the risk over a large number of persons [5]. Major companies that offer health insurances are United Health Group [6], Cigna Health Group [7], etc. [8] proposes a model to store all the past and present medical records of all Indians in a State level database.



**Fig.2. Sample Aadhaar Card – Back**

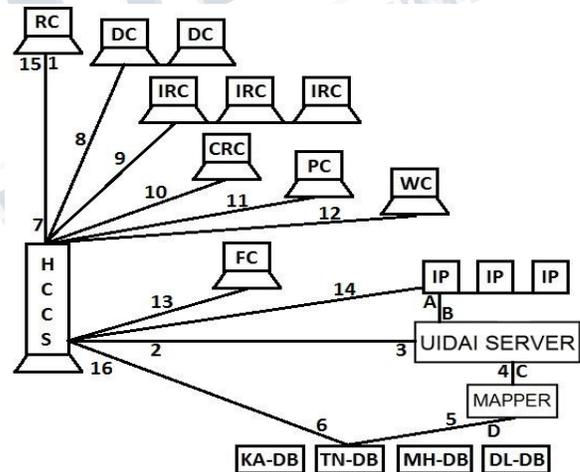
This paper introduces a novel system to instantly process insurance claims automatically even without a health insurance card, just by scanning the finger print and authenticating with the Aadhaar UIDAI server. Section 2 explains the proposed system’s network of computing resources. Section 3 provides details of the information exchanges between the various computers. Section 4 discusses the implementation issues of the proposed system. Section 5 debates the advantages of the proposed system. Final section concludes the paper.

**II. PROPOSED SYSTEM’S NETWORK OF COMPUTERS**

Figure 3 illustrates the network of computing resources that will be used in the proposed system. This is similar to the system in [8], with addition of Insurance Provider’s Computer and Finance Center’s Computer. The expansions of various short forms of resources in Figure 3 are in Table 1.

**Table 1. Expansions of short forms in Figure 3**

Short Form	Expansion
HCCS	Health Center’s Central Server
IP	Insurance Provider’s Server
KA-DB	Karnataka Database
TN-DB	Tamil Nadu Database
MH-DB	Maharashtra Database
DL-DB	Delhi Database
RC	Reception’s Computer
DC	Doctor’s Computer
IRC	Investigation Room’s Computer
CRC	Clinical Room’s Computer
PC	Pharmacy’s Computer
WC	Ward’s Computer
FC	Finance Section’s Computer



**Fig.3. Network of Computing Resources in Proposed System**

**III. DETAILS OF INFORMATION EXCHANGE BETWEEN VARIOUS COMPUTING RESOURCES**

The proposed system is divided in to two sequences of events (Insurance Enrollment and Insurance Claiming). Both the sequences of events are explained below

### **3.1 Insurance Enrollment Process**

- Initially a Client approaches insurance provider and requests to enroll in an Insurance scheme
- The Insurance Provider, scans the Finger print, Aadhaar ID and request for Personal information from the Client
- The Insurance Provider sends the Finger print, Aadhaar ID and his ID (Insurance Provider's ID[IP-ID]) to the UIDAI Server (A in Fig. 3)
- The UIDAI server checks for correctness of Information and Responds with OK or NOT-OK to the IP (B in Fig. 3)
- If the information is correct, the UIDAI server, forwards the Aadhaar ID and IP-ID to the MAPPER (C in Fig. 3)
- The MAPPER locates the Database holding the records based on Aadhaar ID and sends the Aadhaar number and IP-ID to the Specific State Database (TN-DB in this case, D in Fig. 3)
- The TN-DB receives the information and sets the Insurance provider ID for that specific Aadhaar ID to IP-ID, meaning that person with Aadhaar ID has insured with IP-ID.

### **3.2 Insurance Claim Process**

- A patient approaches the reception of a health center and requests service. The receptionist requests for the patients Aadhaar card. Then scans the patient's finger print and sends the finger print to the health center's high end server (Number 1 in Fig. 3).
- The health center's high end server forwards the finger print to the UIDAI Server (Number 2 in Fig. 3).
- The UIDAI Server compares the received finger print in its database. If a match is found then, personal details such as picture, name, date of birth, sex (gender) and address of corresponding finger print is sent back to the requester (Number 3 in Fig. 3). Using this information the receptionist can confirm the identity of the patient.
- Unfortunately if the finger print is not found in the UIDAI database, then an Error message is send back to the requester (Number 3 in Fig. 3) and the

receptionist denies health care service to patient since he/she is not registered.

- If the UIDAI server finds a fingerprint match (apart from sending to the requester, it also) sends a message to the MAPPER (Number 4 in Fig. 3). This message contains the ID of the health center and the Aadhaar number of patient.
- The MAPPER receives the message. Based on the Aadhaar ID the MAPPER locates the State Level Server that has the medical records of the patient. For example, in Fig. 3 four State data bases are shown (KA-DB Karnataka Database, TN-DB Tamil Nadu Database, MH-DB Maharashtra Database, DL-DB Delhi Database). Assume that out patient is from Tamil Nadu, the MAPPER determines that his medical records are in the Tamil Nadu Database server and sends a message to the Tamil Nadu Database (Number 5 in Fig. 3). This message also contains the ID of the health center and the Aadhaar number of patient.
- The Tamil Nadu database server receives the Aadhaar number of the patient and sends the complete record and information about the patient to the Health center, Including IP-ID (Number 6 in Fig. 3) based on the health center ID received from MAPPER.
- Now the patient's records and IP-ID are present in the health center's high end server. Since the high end server is connected to the computers in Reception, Doctor's room, Investigation room, Clinical room, Pharmacy, Finance and Ward. The patient is now free to move around the health center and his records can be accessed and modified in any location within the health center.
- This information also reaches the Reception (Number 7 in Fig. 3). The receptionist can verify if there are any consultancy charges that can be covered by Insurance.
- Similarly for any financial oriented service in Doctor, Investigation Room, Clinical Room, Pharmacy, or Ward, there is a bidirectional exchange of Information. (Numbers 8, 9, 10, 11 and 12 in Fig. 3)
- The finances about a Client are stored in FC. For

any financial requirements for service in 8, 9, 10, 11 and 12, the FC receives that info (Number 13 in Fig. 3) and sends a message to the IP through HCCS (Number 14 in Fig. 4). The IP responds with approvals or denials (Number 14 in Fig. 4).

- If the insurance limits are approved, then service is provided, such as, Doctor's investigation, performing tests, admission in hospital, supplying medicines, etc.
- After the service is provided, message is sent from FC to IP to indicate that Medical Service for a particular amount has been provide and that amount can be assumed to be claimed by the Client (Number 14 in Fig 3).
- Once the patient has completed receiving the health service, he approaches the reception for checking out of the health center. At this instant the receptionist sends a message to the health center's High end server indicating that the patient is checking out (Number 15 in Fig. 3).
- The health center's high end server sends the Aadhaar number and the updated patient records (for that Aadhaar number) to the corresponding State Level Server from which the original record was fetched (Number 16 in Fig. 3).
- As a final step, The State level medical database server receives Aadhaar number of the patient along with the updated medical records and then updates it database so that the Medical records are latest.

#### **IV. IMPLEMENTATION ISSUES**

Apart from the Implementation issues discusses in [8], the only additional work needed is permission to Interface Insurance Provider's Servers to the UIDAI server.

#### **V. ADVANTAGES**

There are several advantages of the Proposed system. They are

- Insurance Claim is Instantaneous (Since Computerized)
- No Separate Insurance card is needed (Since Aadhaar Based)
- Cannot cheat on limits or cover types (Since Computer Fetches the correct information)

- Insurance can be claimed even if the Client is unconscious due to accident and has lost all his belongings (Including Insurance Card, Aadhaar Card, ID Card), Just a finger print scanning is enough.

#### **VI. CONCLUSION**

An e-Health system for India based on Aadhar authentication was already proposed. This paper extended it to incorporate Instant Medical Insurance Claims by adding information about the Insurance Provider in the State level database. The complete list of procedure to implement the system was explained. The difficulties and advantages of the system were also discussed.

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