

## UNIQUE IDENTIFICATION SYSTEM IN INDIA: A BIG CHALLENGE

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**Abstract:** Government of India has launched a new large project after successful launching of Voter Card project. This is the largest project of the world which will handle millions of data. Unique Identification Number is a new concept for India like developing country but on the other hand it is working smoothly in developed country like USA, UK, Aus and other European countries. But there are many differences between other developed countries, where it is running, and India. These are many factors which may cause problem in success of this of this project like huge population, area, density of population, literacy rate, per capita income, budget problem etc. But on the other hand it will provide many benefits to Indian citizens as well as government and private organizations like single identity of a person, helpful in Government schemes like PDS, NERAGA, Health, Education, Income Tax department, Police department to solve of different types of cases, Finance Industries like banks, Finance & Insurance companies, Defence department and Industries, Census department. The unique number given to citizen of India will be called Aadhar and it will be of 12 digits long and will be based on two types of data collected from the citizen, one is demographic data and other is biometric data. It is a difficult task to manage biometric data and verification process. UID is using multimodal biometric system which is very complicated. There are many benefits and loopholes in implementing UID system in India. Overall it is a big challenge for India to make it success.

**Keywords:** UID, Aadhar, Biometric, verification, multimodal, citizen

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### 1. INTRODUCTION

Unique Identification Number project in India is a forthcoming and large project of the world. Now only USA has largest database about 26 Crores people's data but India will have to handle about 1.2 billion people's data. This project is started by Govt of India under a agency UIDAI (Unique Identification Authority of India) under the leadership of Mr Nandan Nilekani, Minister of State who was the chairman of Infosys. Apart from being a globally respected business leader and visionary, Nilekani is known to be passionate about the UID concept and the need to implement it as soon as possible in India. In fact, in the Dataquest Awards 2007, where he headed the jury that decided the Dataquest IT Person of the year, his entire speech was on the need to implement unique ID system for India. Once the project is rolled out, each Indian citizen will have one unique identification number that will identify him/her. [6] This will not just help the government track down individuals as is highlighted by the media, but will make life far easier for citizens as they will not have to submit so many documents each time they want to avail a new service private or government. This will be the equivalent of the social security number in the US. Interestingly, many of the ideas like pension and social security would also be easier to roll out. If used properly, this will also channelize the government subsidies to the right recipients. It may be

recalled that an Empowered Group of Ministers (EGOM) headed by the then External Affairs Minister, Pranab Mukherji, had approved the establishment of a Unique Identity Authority for all residents of the country in November 2008. The UID Authority would be under the Planning Commission. The Home Minister and ministers for IT and Communications, Law and Panchayati Raj were members of the EGOM while the Deputy Chairman, Planning Commission, was a standing invitee. The proposed system envisages collaboration among several government agencies backed by intensive use of information technology.

At that time, the UPA government had said that unique identity (UID) number of each individual would remain a permanent identifier right from birth to death of the individual. It would obviate the need for a person to produce multiple documentary proofs of his identity for availing of any government service, or private services like opening of a bank account etc.

This would end needless harassment that people face for availing of basic government services like issuance of passports, driving licenses, Electoral Identity Cards, etc. The government had said that it would extensively use technology something that Nilekani understands thoroughly to facilitate easy verification of a person's identity and enable a single communication to trigger address changes in all relevant agencies records.

It would also serve as the basis for many e-governance services incorporating online verification of a person's identity. UID would enable the government to ensure that benefits under various welfare programs reach the intended

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beneficiaries, prevent cornering of benefits by a few people and minimize frauds. It would enable financial institutions to exchange information regarding defaulters and encourage responsible borrower behaviour.

The scheme envisages that at the inception, the UID number will be assigned to all voters by building on current electoral roll data and progressively adding other persons including persons below 18 years of age who are not a part of the voters list in the country. Over a period of time, through fail safe procedures backed by intensive use of technology and with the help of multiple government agencies, the currency and comprehensiveness of the database.

The scheme is designed to leverage intensive usage of the UID for multiple purposes to provide an efficient and convenient mechanism to update information. [8] Photographs and biometric data will be added progressively to make the identification foolproof. Easy registration and information change procedures are envisaged for the benefit of the people.

The UID Authority, the government had said at that time, will be responsible for creating and maintaining the core database and to lay down all necessary procedures for issuance and usage of UID including arrangements for collection, validation and authentication of information, proper security of data, rules for sharing and access to information, safeguards to ensure adequate protection of privacy and all aspects related to all of these issues. Any agency, public or private, which deals with individuals and incorporates the UID number of each such individual in its databases, will be able to share information with other agencies which do likewise. The government had said that the UID would become available to an initial set of users by early 2010.

## 2. BACKGROUND

The concept of national identity scheme is not very new for India as the Government had been evaluating various alternatives for an identity scheme since a couple of decades. The Government of India (GoI) undertook an effort to provide a clear identity to residents first in 1993, with the issue of photo identity cards by the Election Commission and subsequently in 2003, when it approved the Multipurpose National Identity Card (MNIC). In fact, the original project to issue unique ID cards to Indian citizens was initiated by the right-wing National Democratic Alliance (NDA) government that was in power in between 1999 and 2004. The first step to issue unique ID cards began with the controversial report of the Kargil review committee in 1999, appointed in the wake of the Kargil War between India and Pakistan. In the report submitted in 2000, this committee had noted that immediate steps were needed to issue ID cards to villages in border districts, pending its extension to other parts of the country. The Unique

Identification Authority of India (UIDAI) was established in January 2009, as an attached office to the Planning Commission. The purpose of UIDAI is to issue a unique identification number (UID) to all Indian residents that is (a) robust enough to eliminate duplicate and fake identities, and (b) can be verified and authenticated in an easy, cost-effective way (UIDAI, 2010b). The Prime Minister of India, as an exemplary step, has nominated Nandan Nilekani from Infosys to head the Unique ID Authority, positing him with a rank of a Cabinet Minister. The UIDAI authority has decided to provide a unique identification number to each resident of India. The process of generating this identification number will start with getting the biometrics of each resident of the country along with certain demographic details, as would be needed for any business (like a bank or a telecom operator) or government organization (like that of the Ministry of Rural Development) to identify a particular Indian resident. Biometrics of all ten fingers, along with the iris scan of both the eyes and the photo of the face has been decided to be taken as identifiers of all residents. The project has been named as *Aadhaar*, meaning foundation.

## 3. AADHAAR

Aadhaar is a 12 digit identification number issued by the Unique Identification Authority of India on behalf of the Government of India. This number will serve as a proof of identity and address, anywhere in India. Any individual, irrespective of age and gender, who is resident in India and satisfies the verification process laid down by the UIDAI can enroll for Aadhaar. Each individual needs to enroll only once which is free of cost. Each Aadhaar number will help individual to provide access to services like banking, mobile phone connection, Gas connection and other Govt and Non-Govt services in due course.

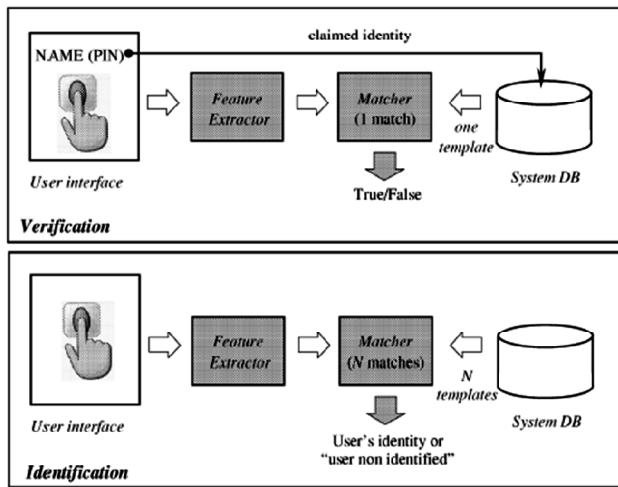
### 3.1 Some Other Information About Aadhaar

Aadhaar will be:

- Easily verifiable in an online, cost-effective way
- Unique and robust enough to eliminate the large number of duplicate and fake identities in government and private databases
- A random number generated, devoid of any classification based on caste, creed, religion and geography
- UIDAI will give a “Yes” and “No” response for any identification authentication queries.

A *biometric system used by UIDAI* is essentially a pattern recognition system that operates by acquiring biometric data from an individual, extracting a feature set from the acquired data, and comparing this feature set against the template set

in the database. [7] Depending on the application context, a biometric system may operate either in *verification* mode or *identification* mode (Figure 1.1). In the verification mode, the system validates a person’s identity by comparing the captured biometric data with his own biometric template(s) stored in the system database. [4] In such a system, an individual who desires to be recognized claims an identity, usually via a personal identification number (PIN), a user name, or a smart card, and the system conducts a one-to-one comparison to determine whether the claim is true or not. Identity verification is typically used for *positive recognition*, where the aim is to prevent multiple people from using the same identity.



**Figure 1: Verification and Identification Tasks of a Biometric System**

In the identification mode, the system recognizes an individual by searching the templates of all the users in the database for a match. Therefore, the system conducts a one-to-many comparison to establish an individual’s identity. Identification is a critical component in *negative recognition* applications where the system establishes whether the person is who he denies to be. The purpose of negative recognition is to prevent a single person from using multiple identities. The UID uses only verification tasks. UIDAI will give a “Yes” or “No” response for any identification authentication queries.

**4. UID DATA STANDARDS**

Government schemes like PDS, NERAGA, Health, Education, Income Tax department, Police department to solve of different types of cases, Finance Industries like banks, Finance & Insurance companies, Defence department and Industries, Census department

**Data Used in UID**

- A) Demographics Data
- B) Biometrics Data

**4.1 Demographic Data Standards**

In order to fulfill its purpose, the UIDAI should stay focused on its goals and ensure standardization [1]. Therefore, it is important that the KYR data is kept to a usable minimum so as to support purpose of UIDAI and to avoid other profiling and transactional fields.

*Data Field in the UID*

1. Personal Detail
2. Address Detail
3. Parents Detail
4. Introducer Details
5. Contact Details

**Data Verification Process**

It is essential that key demographic data is verified properly so that the data within UID system can be used for authentication of identity by various systems. There are 3 distinct methods of verification:

- Based on supporting documents
- Based on introducer system
- Based on the NPR (National Population Register) process of public scrutiny

All the above forms of verification are acceptable for UID enrolment.

**4.2 Biometric Standards**

UIDAI has decided use multimodel biometric system to check the identity of a person For this authority has decided to store three different biometric data of each person [5]. These are

- All ten fingers fingerprints.
- Iris scan
- Face identification

A multimodal biometric system uses multiple applications to capture different types of biometrics. This allows the integration of two or more types of biometric recognition and verification systems in order to meet stringent performance requirements.

A multimodal system could be, for instance, a combination of fingerprint verification, face recognition, voice verification and smart card or any other combination of biometrics. This enhanced structure takes advantage of the proficiency of each individual biometric and can be used to overcome some of the limitations of a single biometric. UIDAI has decided to use the combination of three biometrics (i) All ten fingerprints (ii) Iris Scan (iii) Face

identification. A multimodal system can combine any number of independent biometrics and overcome some of the limitations presented by using just one biometric as your verification tool. For instance, it is estimated that 5% of the population does not have legible fingerprints, face recognition systems are susceptible to changes in ambient light and the pose of the subject. A multimodal system, which combines the conclusions made by a number of unrelated biometrics indicators, can overcome many of these restrictions.

## 5. BENEFITS AND CHALLENGES IN IMPLEMENTATION OF UID

The benefits, scope and challenges like socio, economic and technological in implementation of Unique identification Number (Aadhaar) in India can be occurred for implementation this heroic project in India like country whose 1.21 billion population spread over in only 3287263 sq Kms speaking 22 different scheduled languages and followers of many religions with only 74% literacy rate[3]. Some critics called it as miscalculated heroism but this is not totally true but if we see the reverse part of the mirror then there we see many benefits like this scheme is launched to for citizen of a country giving them the advantage of not submitting multiple documents to avail the services residents would no longer need to go to various government departments and prove their identity each time. This scheme is designed to leverage intensive usage of the UID for multipurpose to provide an efficient and convenient mechanism to update information. Photographs and biometric data are added to make the identification and authentication foolproof. The unique ID will require creation of a database that links an individual to unique identifier formed, based on a format code that remains constant over his life-span, like parentage, date and place of birth and automatically gets activated just like a voter ID card. The UID database is built by collecting data, storing and linking the existing Identity databases (voter ID, passports, ration cards, licenses, fishing permits, border area ID cards) into one centralized database from which the information can be accessed. The UID Authority will be responsible for creating and maintaining the core database and to lay down all necessary procedures for issuance and usage of UID including arrangements for collection, validation and authentication of information, proper security of data, rules for sharing and access to information, safeguards to ensure adequate protection of privacy.

### 5.1 Benefits of UID

UID will helpful in India in different fields like

- Government schemes like PDS, NERAGA, Health, Education etc

- Income Tax department
- Police department to solve of different types of cases
- Finance Industries like banks,
- Finance & Insurance companies
- Defence department and Industries
- Census department
- Keeping Record of Employees of an organization
- Manufacturing Industries
- Aircraft & Aerospace
- Recognition / Plaque & Award

### 5.2 Challenges in Implementation of UID

- Huge Database(over 6K terabyte)
- Cost of project(more than 15 Lakh Crore)
- Performance of online authentication
- Security
- Guarantee of not misusing of personal data
- Performance and authentic issue of Biometric
- Problem of duplication

The benefits and challenges in issuing Unique Identification Number by UIDAI by which has issuing of card, its format, design, online authentication, data privacy and data security, fraud detection, helpful in Govt. running schemes like NERAGA, PDS etc, attendance of employees, finance based firms and this project is differ from others countries like USA, UK, Aus and other European countries on the basis of technology, cost, heavy database, security and scanning process. Through this paper I try to describe the impact of technology, socio, economic, managerial on Indian society. But there are many challenges like handling of large database, it may be over 6000 terabyte, cost of project over 15 lakh crore, performance of online authentication, security & performance issue of Aadhar card.

## 6. CONCLUSION

The UID project is a very critical initiative for India and in all possibilities, we would need to make sure that the project neither faces the same fate as similar other large scale exercises in the country nor like the national ID initiatives of some other countries. Hence, it becomes critical to analyze the areas of concerns coming up from whatever has been done so far in this initiative. The criticisms of the UID project think that it is a very tough job like handling of large database, it may be over 6000 terabyte, cost of project over 15 lakh crore, performance of online authentication,

security & performance issue of biometric. But on the other part there are many opportunities looks in this project are it will be helpful in Govt. running schemes like NERAGA, PDS etc, attendance of employees, finance based firms and how this project is differ from others countries like USA, UK, Aus and other European countries on the basis of technology, cost, heavy database, security and scanning process. The success of this UID project will be able to give answers to the critics who thinks that this project is a miscalculated heroism or day dream.

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