Aadhaar Smart Meter: A Real-Time Bill Generator

Ramaneek Kalra[1*], Vijay Rohilla[2*]

[1*]*Computer Science Department, IEEE Member, HMRITM, New Delhi, India*
[2*]*Assistant Professor EEE Department, HMRITM, New Delhi, India*
kalraramneek@ieee.org, vijay1402rohilla@gmail.com

Abstract- In present scenario, humans are at outskirts of changing technology i.e. really helping oneself to explore new things going around and get familiar in short time and giving much output. In these days, Indian Government is at extent to convert all money in digital banks/ wallets like BHIM App, UPI Payment etc.

With that, the technology of smart meters is emerging in every street of Indian Societies/Colonies. Perhaps this change initially is little bit unfamiliar since citizens are facing problems in getting details correctly in their hands. So, there's comes a need of developing and inventing such innovative way that government should become completely transparent to public and long queues for submitting electricity bills.

For this kind of problem approach, we are here to introduce a new way to interact with all governmental services like one we discuss above. So, here introducing "Aadhaar Smart Meter: A Real-Time Bill Generator" (ASM). This new way of connecting government services brings Aadhaar server to come in existence and customer connectivity with Smart Meter via Electricity Department's Server. The whole scenario is discussed in coming parts.

Keywords: Database, Smart Meter, Aadhaar Database, Cloud, Gateway.

I. INTRODUCTION

A Smart Meter is a Digital Meter for analyzing the Power Factor, Units Used, Power Used to be displayed on a LCD screen with connectivity to both Electricity Department's Server as well to Customer Database stored in Cloud Database with respect to customer's provided details like: Aadhaar_Number, Customer_Name, Customer_Address, Customer_Region etc. But nowadays government has implemented Smart Meters for just displaying Power Factor, Units Consumed with little bit of information of days from installation. Due to this less transparency between government's Database and Customer's need we are hereby proposing idea of "Aadhaar Smart Meter" which is nothing but the live example of details discussed in above section. This idea is purely made upon the Database Connectivity and SMS Service provided to Customer for particular Smart Meter they owned with. The complete exploration of ASM will be discussed in coming Methodology. But, for now instant let's discuss coming scenario which Indian Government is trying to establish under these needs.

Actually, since all governmental services are now tending to connect with Aadhaar Database (The huge Biometric Database in world). But, due to some insecurity issue public is not ready to share their personal Aadhaar Credentials with Government because many are thinking of leaking of details in some wrong hands.

For that, we have solved this issue just by connecting Server's database with simple mobile number and if Aadhaar Database is provided then the mobile number and respective details can be retrieved easily and quickly irrespective of huge database connectivity.

II. PROPOSED IDEA

Before digging in the actual methodology let's have a look on the basic architecture of ASM which can be used to manipulate the required electrical factors and to calculate the bill as month wise and set to count zero.

Actually, smart meter consists of the readings available for providing real-time sensors, power outage notification and power quality monitoring. Due to availability of these extra features, the simple Automatic meter Reading differs in greater extent. With that, the following symbolic block diagram can

clear much things about ASM and how's the working and functioning occurs.
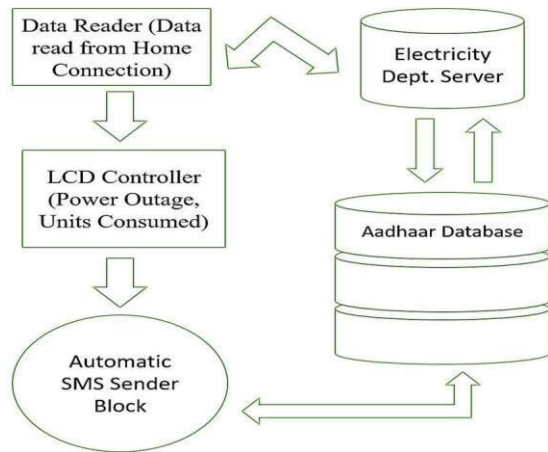

Fig 1: Symbolic Block Diagram of Smart Meter

Here, Fig 1 makes clear of important parts that plays crucial role in making smart meter liable and beneficial for home connection. This consists of following components as follows:

- Data Reader: This is the initial point where the functioning of a simple meter reading starts which helps to store and get the data like power outage, power units consumed which it passes to LCD Controller. Also, the Home Connection is connected wirelessly to Electricity Department Server which helps to fetch electricity account no. stored as Elect_Acc_No (say) and corresponding customer's account details which indirectly fetched from connected Aadhaar Database.

- LCD Controller: This is the second phase which consists of LCD Screen connected with Data Reader which provides the data like Power Factor, Units Consumed to the outside world. With that, the details at real time are getting updated over Database maintained under Electricity Department Server.

- Automatic SMS Sender Block: This is the block used for sending the data manipulated in 15 days and shown over database with calculated proposed bill amount to the user's registered mobile number so that for next 15 days, electricity can be consumed safely to ensure green environment and this facility will too help one to alert the late bill submission. Plus, after

one month the user gets online payment link over SMS Service and thus helps customer not to go electricity bill payment office to stand in long queue.

- With that, the real innovation comes when one month expires and now it's turn to pay the bill using payment portal via SMS service or using PayTm Different electricity department's portals. Plus, now how to generate manual bill that is officially sent by electricity department. This can also be resolved using Customer's android Device or if customer is not having then he/she can request government officials to come and generate bill using their official android device.

- Since, nowadays the trend of using android device is so much at high scale of popularity that every citizen is active online and has tremendous amount of data consumption. So, one can use this amazing trend as a use of government's service.

- The basic idea can be used to generate manual bill and clear out the reading shown on particular customer's meter and help to print that bill at same time.

- So, from Fig 2 one can understand the flow of information takes place when scanning of Meter LCD takes place to generate the required bill from Meter itself. The Functioning of each component is as follows:
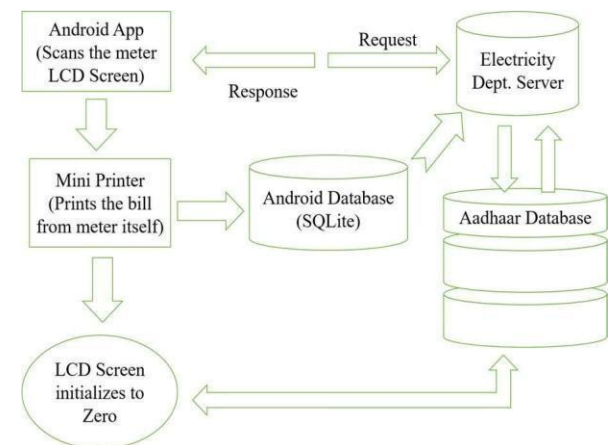

Fig 2: Depiction of Flow of Information

- Android Application: There will be an android

application that scans the meter LCD screen and thus fetches the information from electricity department server which initializes the value in database, that this particular meter for particular customer_id with corresponding to Customer_name taken from Aadhaar Database to status as true. Then, after turning status as true of scanning done the value of units consumed and rupees calculated inside server of electricity department.

- Mini Printer: There is one new feature in Smart Meter that includes mini printer which is attached inside the meter which is used to print the required bill which is requested by android app by electricity dept. server and the corresponding request is sent back by server to Mini Printer and thus do the task of printing bill which is sent officially by server automatically. Plus, the data calculated over manipulation with server is temporally stored over android app database which secures that if any transaction failed in between the changes will be rolled back.

- Aadhaar Database: Here, in this scenario we used Aadhaar database since after scanning if any customer wants to pay the bill amount at the same time can give request from android app to Server and thus the amount can be deduced using connected Bank Server which is connected to one's Aadhaar Database and indirectly to Electricity Department Server and after the transaction is done the receipt of payment status can be printed over mini printer.

Moreover, the applications over this proposed idea can be implemented easily under government's services which will definitely reduce the manual paper work and money exchange.

III. CONCLUSIONS

Therefore, this research idea if implemented by the Governmental Services can give the current Nation's Use of manual Electricity Bill payment to automatic payment and thus, eliminating the long queues. Moreover, the advantages that this proposed idea gives to particular Indian Citizen are as follows:

- Initialization of Paperless and Cashless Technology which will promote Digital India Movement initiated by Indian Government.

- Elimination of wrong data transmitted over Citizen's Electricity Bill.

- Will increase the transparency over Government's Functioning and Processing.

IV. FUTURE WORK

This research paper represents one of the applications that is applied but as there is still a huge number of applications to study which can be further be taken in contrast of study and analysis.

As this paper only includes the architectural point of view of Smart Meter.The same proposed idea can be studied for more enhancements/applications as follows:

- Can be used for large-scale level study in industrial application.

- Can be implemented by deploying the idea to real-world machine.

- Security measures can study and apply thoroughly to this study.

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