REAL TIME MONITORING AND LOGGING OF RATION SYSTEM WITH QR CODE SCANNER.

Mayuri Kumarrao Shirsat[1], Prof. Ajay S.Wadhawe[2]
Research Scholar (M.E.), Dept of ECE, SSIEMS, Parbhani, Maharashtra, India
Head, Dept. of Electrical, SSIEMS, Parbhani, Maharashtra, India

Abstract: Today's high degree need of poverty line people is cheapest grains availability and that too in minimal cost. To fulfill the demand of such greedy people government introduced fare price shops that is public distribution systems where in these poverty line people get ration card enlisting their details like name, amount of grains in kg or oils or kerosene quantity ,their residence address etc. We in this research introducing use of QR code printed on AADHAR card which is unique identity of each customer .This will help us to minimize fraudulence. The existing systems have drawback that we cannot monitor the distribution plus stock availability with each distributor. We will be tracking this through the application and status can be logged. Whole system would thus be automated in a way to minimize human intervention at maximum

IndexTerms - **LPC2148 ARM7 Development Board, GSM SIM 800 modem,android application,.net application,load cell,oil pump,Gsm800 module**

I. INTRODUCTION

India being the world's second most populated country, its natural to face resource scarcity in large. Its really tough jog to fulfill the demands of such huge population where majority fall in poverty basket. So identifying the needy and fulfilling the respective needy demands is quite difficult and this needs to be revised periodically. as the poverty basket composition changes time to time. this problem somehow solved through cheap selling goods at specially designed government outlets named as ration system or public distribution system. System came in reality for the sake of poor needy helpless orphan etc kind of public. who can available the facility of government and make like stable to a some extent. The basic purpose of PDS is violated by some self motivated distributors and officers lobby. the stock which is unsold or not reported is going to black market for self intrest.if 500 kg are allocated for particular village at large, distributor could declare it 400 kg only and remaining 100 kg to be undisclosed. Here we are proposing to involve government to overcome these issues and minimize corruption and black market selling. As current running system maintain ration register to be updated by the shopkeeper itself. There are chances for mistake and adulteration. These could be inaccurate quantity, different entity than the governments actual assigned item, giving to the favored people that is biased approach, creating induced scarcity etc.Since its manual any one can deviate the process.

So we are proposing the system in which we will be atomizing the whole process and eradicating the human intervention. In this conventional system running today we will replace all human work by automation and will be kept at Ration shop. here ration card named document will be given replacement by AADHAR card. Here the character recognition in the coded QR code which is printed on AADHAR card is done. Government is involved in the process, we can develop an application through which we can monitor distribution system and we can connect this through GSM module. Distribution section involves the human help to manually weigh each item then deliver it to individual, but here are the increased risk of adultration,false weights and in some personal clashes straightway deny for grains or oil or kerosene. As per government agency reports, it is estimated to be 54% approx loss that do not reach PDS, do not reach target. There are many other issues like huge queue outside the shop, time required to do each step manually. So we will automate this mechanical process as well.

We will have an automated rationing system. "IOT based Ration Storage and Distributing System " means distribution of essential commodities to a large number of people through a network on a recurring basis in an automated way. The Concept is to prevent adultration,corruption and Black marketing , Biased approach etc .The system designed would be cost effective ,power saver and time saver ,efficient.

in terms of feasibility ,this system is a vast concept and interesting tasks to perform and totally feasible in all aspects technical as well as other. Here, we are designing a system where a person displays his/her Aadhar card and our system gives the Ration to that user. Thus corruption is reduced.

I. LITEARTURE SURVEY

The user has to first be authenticated and after he comes to know the respective quota of the month and if there is balance then automation valve will open the grain distribution till his quota fulfills. and account is updated. same information is available to customer on his mobile via sms.here valve and weight sensors mechanism implemented. Many time it is being observed that shopkeepers doing malpractices in updating the stock register and giving the fake quota details. so Rajesh C. Pingle et.al. Suggested the "Automatic Rationing for Public Distribution System (PDS) using RFID and GSM Module to Prevent Irregularities" [4], in this

automated system ration card is replaced by smartcard having all the details about users including their AADHAR number for user authentication. If we involve government in the process by connecting the system at ration shop to a central database (provided by government.) via GSM and RS232. Hence it is possible to prevent the corruption and irregularities at ration shop. The existing PDS system causes overcrowding at ration shop due to manual work so S.Sukhumar et.al. Proposed the "Automatic Rationing System Using Embedded System Technology" [5], in this system they proposed the use of PLC for automation. Also they used the smart card and involved government via giving connection through GSM modules. this will give up to date information to government and update database.This paper proposes the use of ICT to avoid leakages in delivery system and successful application in automization of supply chain.

II. PROPOSED SYSTEM

A.Distribution station

The block diagram of a Real Time monitoring and logging of Ration system with QR code scanner is shown in the Fig.1 this system consists of various parts such as GSM, LPC2148 ARM7 microcontroller, mechanical assembley, liquid pumps ,LCD, load cell and android Application for scanning and .net application.

The Features of the proposed system are

- Highest Security since Aadhar Card Based System
- Very reliable system
- Unique ID for each user
- Easy to maintain database of various ration cards eg below poverty line, white ration card etc.
- Easy inclusion & removal of user in the database.
- Powerful GUI

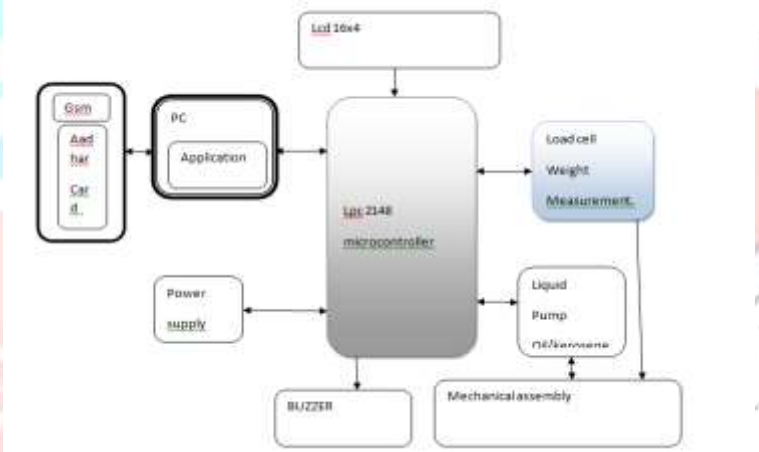

Fig 1.Block Diagram. Of a Real Time monitoring and logging of Ration system with QR code scanner.

It is the PC application developed in VB to update the Agency stock at each transaction of grains delivered.,which will substract the amount of grains data given to custmer each time and this information is recived through the SMS sent via GSM module.It has customer name,Quantity,grain type and status buttons on it.it can add user or remove also.we can show the next issue date as well.Meanwhile this process can be logged as well,to keep real time tracking of data distribution to avoid adultration and mal practice of the stock.this will achive the greater involvemt of government as this will be stored at Government site,where in officer can monitor individuals agency wise progress.

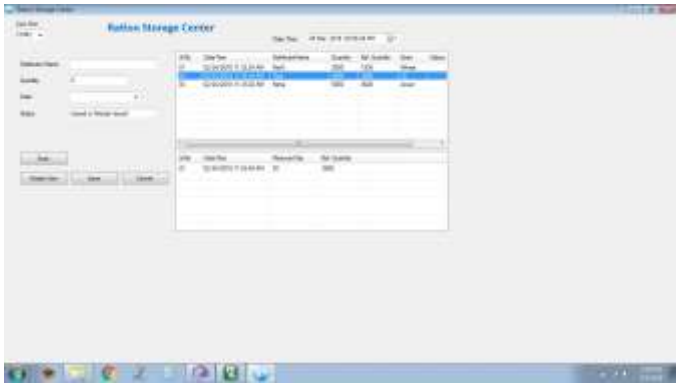

Fig 2.Pc based application

B. Mobile Application for Scanning QR Code

This is the mobile based application developed in android system which on pressing the scan key it will automatically open the mobile camera and scan the QR code printed on AADHAR card. it will fetch the AADHAR no and customer name. will send this message to controller for further processing.

Fig 3. Mobile Application for Scanning QR Code

III. HARDWARE DESCRIPTION

A. Power Supply Circuit Diagram

The power supply is most important for electronic circuits, which provide the essential power to microcontroller and other electronics devices. The power supply circuit diagram is shown in the Fig. 4.

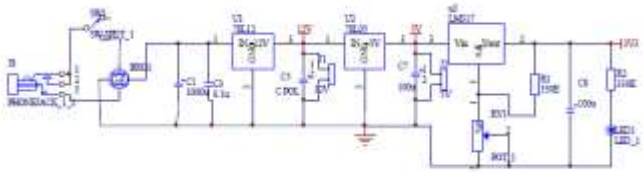

Fig 4 : Power Supply

PSU is an important and essential part of very many items of electronics equipment. Any electronic equipment moreover based on power supply. It has to supply the exact or near exact voltage at the required wattage to all of the circuitry inside the system.
The processor/controller and memory are particularly sensitive part and require an exact supply or as near as possible to one. The A.C. mains power supply is 230v and 50Hz, commonly it takes A.C. power from mains supply and delivers a dc voltage to the item requiring power. power supplies are widely used in a variety of forms - some large supplying high levels of current, other power supplies, much smaller providing lower levels of power.

B. Microcontroller unit

Microcontroller LPC2148, programming of this microcontroller is very easy. It is used to interface with all interfaces as per our requirement.

- ARM 7 TDMI core of 32 bit capacity
- Two IO ports for peripheral, more input output pins, so more scope for peripherals.
- 14 channel built in 10 bit ADC

- Static RAM on chip is 32Kb
- Flash ROM with ISP and IAP is 512Kb
- Interrupt controller is vectored
- Watchdog timer,PWM unit, and 32bit two timers
- 60 MHz, CPU clock , On-chip crystal oscillator and On-chip PLL.
- 128 bit wide interface enables high speed 60MHz operation

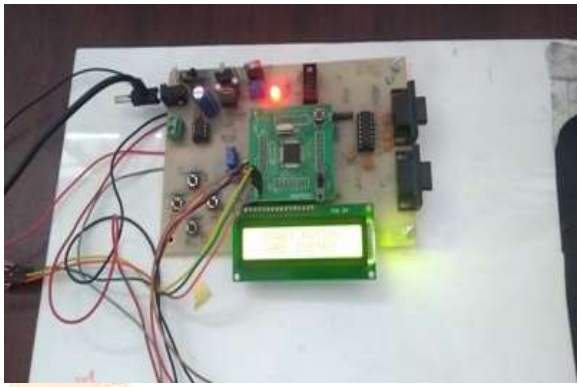

Fig 5: Microcontroller Circuit.

C. Communication Protocol RS 232

RS 232 is a serial communication cable used in the system. Here, the RS 232 provides the serial communication between the microcontroller and the outside world such as display, PC or Mobile etc. So it is a media used to communicate between microcontroller and PC.

D. Load Cell

Strain-gauge load cells convert the load acting on them into electrical signals. The measuring is done with very small resistor patterns called strain gauges - effectively small, flexible circuit boards. The gauges are bonded onto a beam or structural member that deforms when weight is applied, in turn deforming the strain-gauge. As the strain gauge is deformed, it's electrical resistance changes in proportion to the load. By matching the expansion rate of the strain gauge to the expansion rate of the metal it's mounted on, undue strain on the gauges can be avoided as the load cell warms up and cools down. The most important method of temperature compensation involves using multiple strain gauges, which all respond to the change in temperature with the same change in resistance. Some load cell designs use gauges which are never subjected to any force, but only serve to counterbalance the temperature effects on the gauges that measuring force. Most designs use 4 strain gauges, some in compression, some under tension, which maximizes the sensitivity of the load cell, and automatically cancels the effect of temperature.

Fig.6 load cell

E. GSM SIM800

GSM (Global System for Mobile communication) is a digital mobile telephony system. With the help of GSM module interfaced, We can send the grains quantity that need to be updated at government side ,this sms will be comprising the details of customer and his purchased value and that amount is subtracted from Ration Storage utility. GSM module is provided by SIM800 module, uses the mobile service provider and sends SMS to the respective authorities .as per programmed instructions. There are no specified range

limits. GSM uses a variation of time division multiple access (TDMA) and is widely used of the three digital wireless telephony technologies (TDMA, GSM, and CDMA). GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot. Operates at either the 900 MHz or 1800 MHz frequency band. he GSM modem communicates with any MCU through its serial port. For connecting to internet we can use GPRS mode. We can access sim with AT commands for sms and call services.

Fig 7.GSM SIM800.

IV. SOFTWARE IMPLEMENTATION

Required software for the system is development is in embedded c using Keil, then code is compiled and embedded in LPC2148.

ALGORITHM:

1. Power ON
2. Peripheral initialization
3. Sensor initialization
4. Mobile connection through OTG
5. Press scan key
6. Scan QR code.
7. Send information from mobile to controller
8. Display customer details on display
9. Control system converts A to D value getting Weight
10. Display the weight given.
11. Start pump for oil or kerosene.
12. Press weighing done key
13. Press SMS key for message sending command from controller to mobile
14. Send message
15. Update ration storage utility using received message Command via GSM at PC
16. Log the data of transaction.
17. Stop

V. HARDWARE IMPLEMENTATION

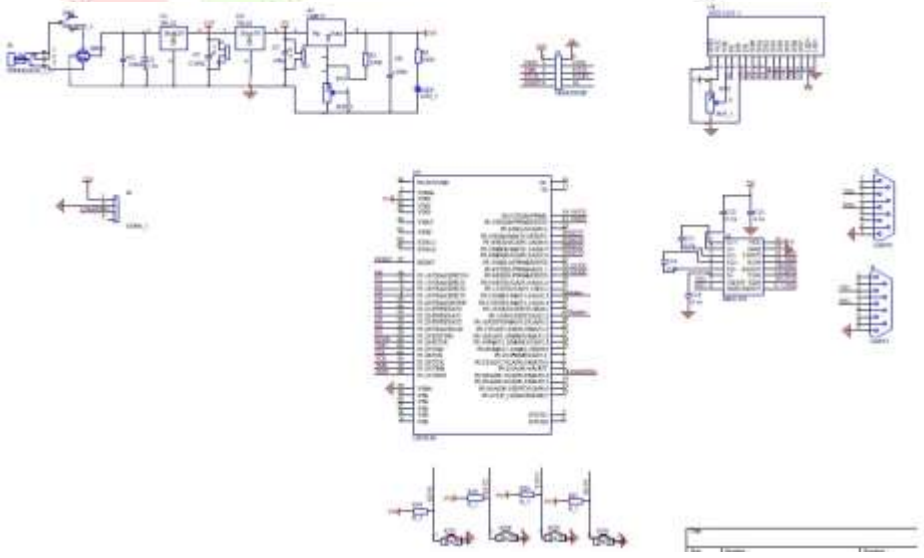

Fig 8.Circuit Diagram.

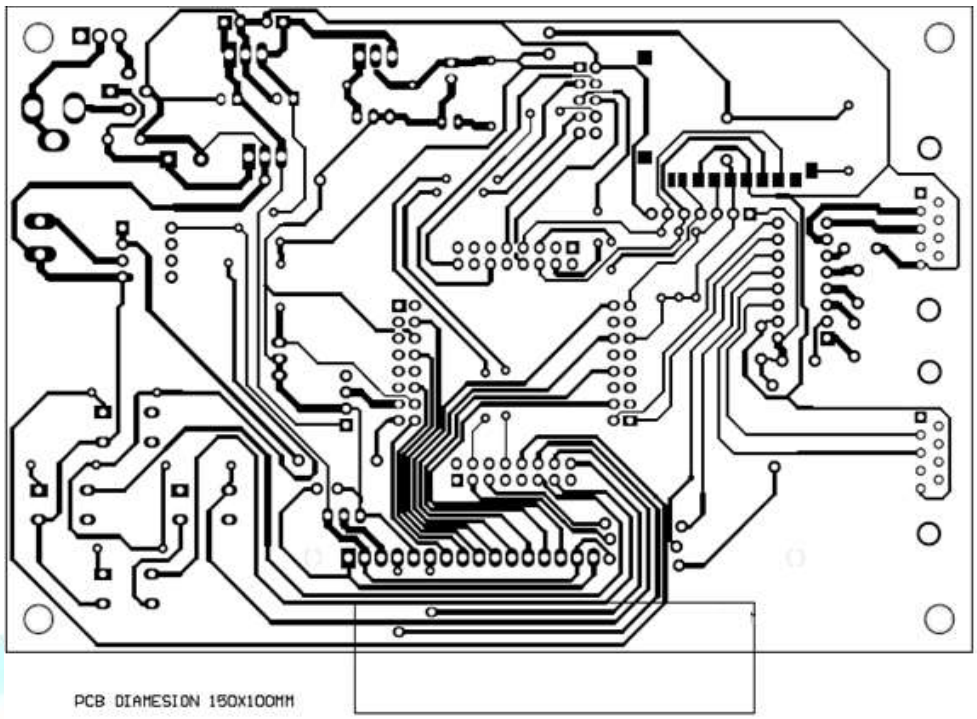

Fig 9.PCB layout

Protel 98 PCB design tool is used for circuit diagram design and layout making.

VI.**Flow Chart**

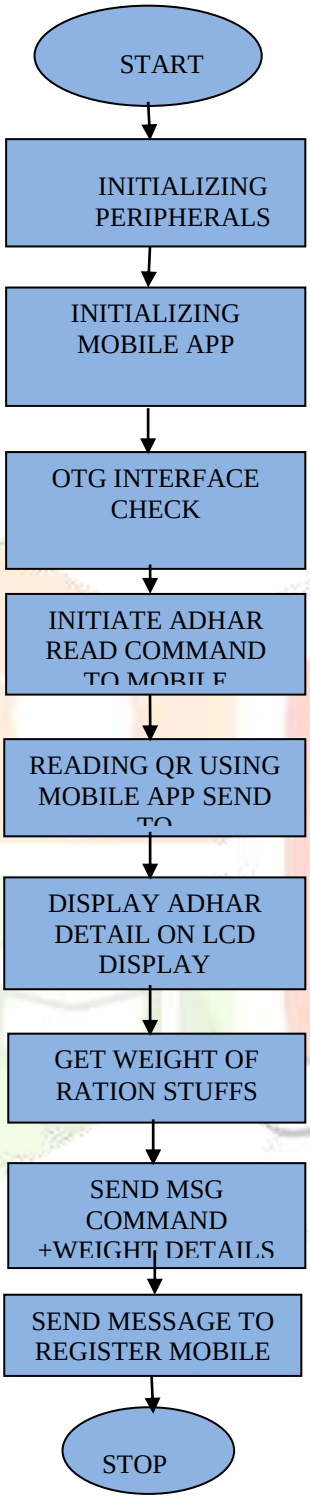

Fig10.trasmitter flow chart

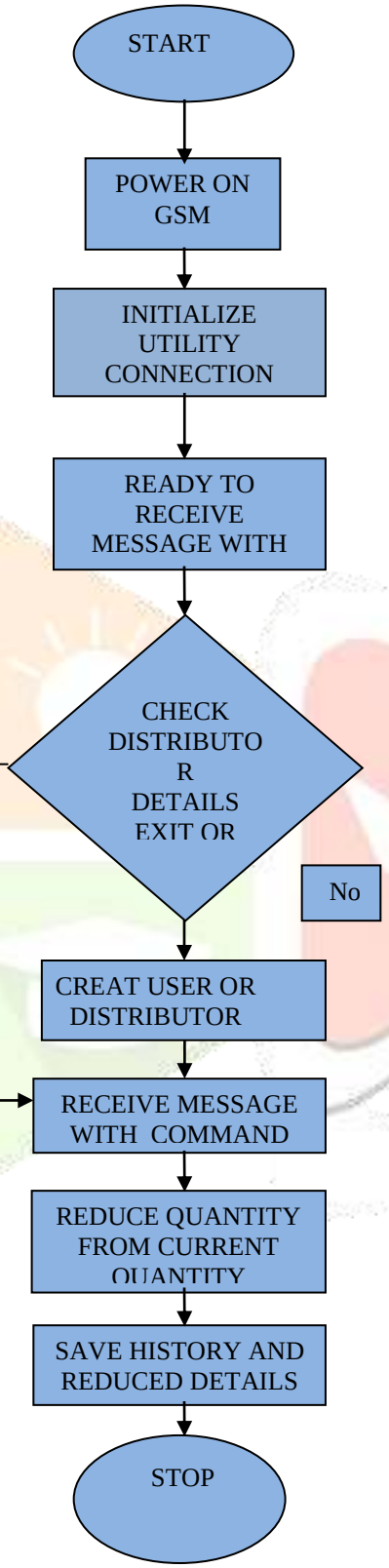

Fig11Receiver flow chart

VII RESULT AND DISCUSSION

We will be getting the results that will be discussed here in this section. The proposed Real time monitoring and data logging ration system with QR code scanner has got the following results as shown in fig below. Here microcontroller along with mobile application

and .net application will continuously monitoring the shopkeepers for their transactions and this could be logged in a text file showing the details of each transaction, timing and amount deducted from the total database and will display the final available quantity left with the dealer. We do not need to send any particular messages to the customer as we will be logging their transaction. This utility update and logged files are shown below.

Fig 12. LPC2148 interfaced with peripheral devices along with Application results.

A. Android Application:

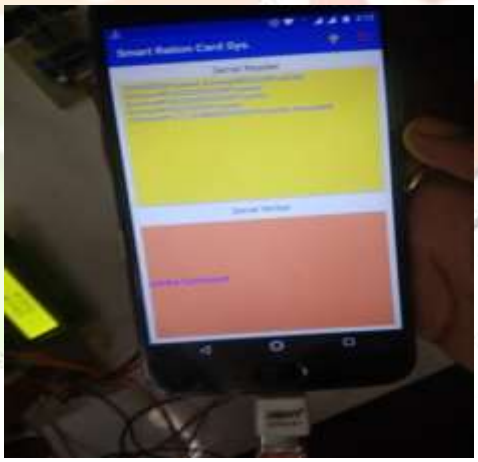

Fig13. Aadhar name and id read by QR code

B. First Distributor Added.

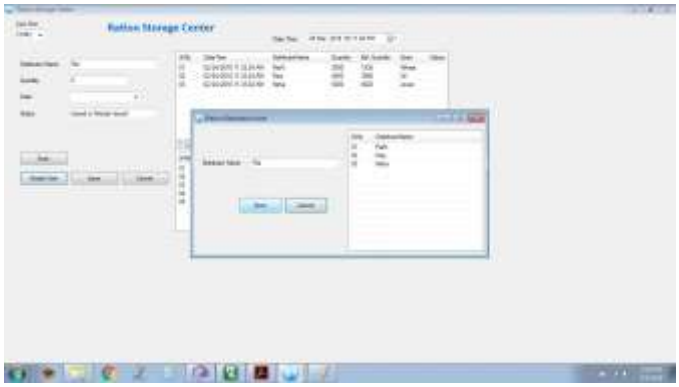

Fig 14. First Distributor Added

C.Distributor Balance Remain

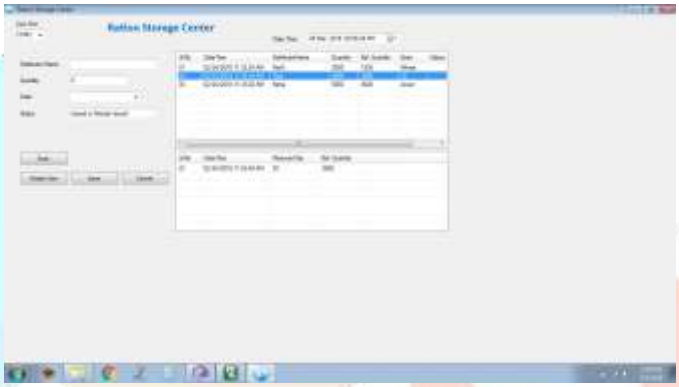

Fig 15. *Distributor Balance Remain*

From above logged data files we can come to know that dealer has given particular amount is deducted from the initial value. And time and date of the transaction is listed. Thus we can keep the tracking of ongoing transactions. No repeat customer is allowed.

VIII.CONCLUSION

Through this system we can monitor the dealer for his every transaction, grains assigned and logging will be done same time. Also since we tried to automate the supply chain so adulteration due to false weights or poor quality supply,or denial of the grains stock availability will be reported at government end through Ration storage utility. User will only get his quota after the one month of the current purchase date. thus the process has got multiple checks so as to avoid and minimize the corruption at maximum possible levels and make it user friendly to satisfy the needs of common people at large.

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