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Implementing Different Technologies For Electricity Meter Reading

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ABSTRACT: *This paper discusses about the differences of existing system Electronics Meter Reading process and enhanced digital EMR process. The current process of Electronics Meter Reading is complex task as well as time consuming process. It consists lot of manually levels of Reading submission. So result generation gets slower as well as inaccurate reading sometime may be generated. So this paper discusses about the combination of different technologies which can be used to reduce time and human efforts. Because of input data that is image is stored into VPS (Virtual Private Server) cloud has large storage space which gives the security.*

Keywords : GSM, GPRS, OCR, VPS

INTRODUCTION Meter reading and billing are complex tasks of electricity. The current method of billing process uses manual process of meter reading. Manual tasks included in current procedure are writing the reading in a book, updating that reading into server. This process is extended and time consuming. Bill generation take more time. This kind of limitation overcome by simple involvement in this system. So this paper discussing about what are the different technology used before and whatever solution given by them . Before this solution another solution is proposed to improve current procedure, in which meter reader clicks image of the meters and submits all images to the administrator were after performing operation of text extraction from images on desktop computer bill has been generated. All data stored on centralized in digital format as well as bill can be generated automatically .Following figure shows normal procedure of existing meter reading system. In the above figure, it show the bill generation process. This whole process is consuming more time for collecting data i.e. meter snap then final bill generation. So that process can be altered to reduce time for Meter Reading process.

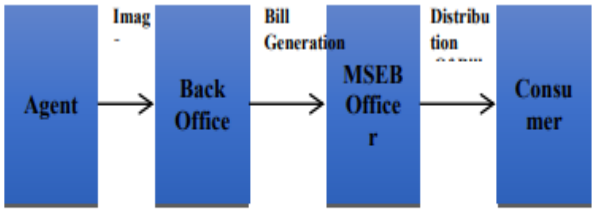

Figure No.1 Process of Traditional System

RELATED WORK This section contains the various techniques and methods described by the authors. Wessam Mesbah , Senior Member [1] Authors discuss the challenges of a novel

method for securing the reading of smart electricity meters against tampering or faulty. A Novel technique for detecting & correcting unreliable reading of smart meters is proposed. The technique is based on some modifications, on capable error-correcting block codes that are being used in communication system to protect the binary data communication. Damminda Alahakoon and Xinghuo Yu [2] Authors proposed, broad survey of smart electricity meters & their use focusing on key aspects of the metering process, the different stakeholder interests & the technologies used to satisfy stakeholder interest. Nayan Gupta, Deepali Shukla [3] Authors proposed , It provides a facility of recharging the energy meters remotely. Customers can pay bills of postpaid meters and can recharge the prepaid meters by sending a message to the service provider. The meter readings are sent to nearby located central station using RF link and from there to web server using GSM (Global System for Mobile). It also provides the facility of electricity tamper detection. Sneha Salunkhe , Dr.(Mrs.) S. S. Lokhande [4] The authors proposed an efficient method for billing & meter reading process. Author used contour algorithm for preprocessing the images & recognized the characters. Here processing flow will capture the image by using camera, captured image is pre-processed and characters are recognized by processor using contour algorithm, billing is done by taking difference between two readings of consecutive months and send it to the respective server for documentation using wireless technology. Kiran Mahale ,Shraddha Bansal [5] Authors makes the use of GSM network is for energy metering system incorporating the widely used GSM network. In many countries GSM network is popular because of its vast coverage area & cost effectiveness. Using GSM as the medium for metering system provides a cheap, wireless, seamlessly-connected, full duplex communication between utility company and energy metering system, the GSM based smart automatic energy meter sends information of service usage, power excellence and outage alert to service company, tampering finding to the service servers. Here, author propose use of GSM network to transmit message of bill to the server and generates a soft copy which will be send via short messaging services, Email. Jameer Kotwal, Jameer Kotwal,Snehal [6] Authors proposed the technology that comprises android application as well as web application to get reading, updating information into server and informing consumers about electricity consumption units and bill amount. To make meter reading task automatic android

application is used to get the readings from the meter by only capturing the image of the meter and then performing the OCR (Optical Character Recognition). Rohit Dayama, Anil Chatla [7] The authors proposed a technology that includes android application and web application to get reading, updating server and inform consumers about bill units and amount. Android application is used to get the readings from the meter automatically by simply capturing the image of the meter and then performing the OCR technique on the captured image in android app which is nothing but optical character recognition. The output of OCR is meter reading from image which is then send to the server. The customer will receive a mail regarding the bill as soon as the photo is been clicked. With the help of web application customer can view consumer bill and make payment online, customer can also lodge complaint if any. S.Arun, Dr.Sidappa Naidu [8] Authors proposed the design and implementation of a secure low cost AMR(Automatic Meter Reading System) that measures and transmits the total electrical energy consumption to main server using GPRS (General Packet Radio Service) technology provided by GSM networks. The proposed AMR system consists of three main parts: Accurate digital meter, a transmission facility and the billing server. To make inexpensive AMR system a low cost off the step materials are used. S.Arun , R.Krishnamoorthy [9] The authors proposed an automatic power meter reading system using GSM and ZigBee communication. Nowadays, the system will use ZigBee and GSM through GPRS system for communication protocol. GSM network with its vast coverage in most countries and also its competitive ever growing market, is becoming popular as a medium for machine to machine applications which utilize the GSM network to send its power usage reading using short message service back to the energy provider wirelessly. Alauddin Al-Omary, Wael El-Medany [10] Authors used ZigBee and GSM system for communication protocol. The ZigBee is used since the application don't need high speed data rate, need to be low powered and low cost. Presenting the remote wireless Electric Meter Reading System, this aims at resolving the shortcomings of the technology of the traditional Electric Meter Reading, combining the characteristics of the ZigBee technology and IEEE802.15.4 standard.

METHODOLOGY The Table No 1 shows what are the actual technologies used to develop their application. This table divided into several parameters like application type they are using algorithms, storage media & technology which

are used. As author discusses in this paper OCR,GPRS, Big Data, Cloud, Zigbee & IOT technology are used. OCR technology is used for character recognition & conert different types of documents, such as scanned paper documents, PDF files or images captured by a digital camera into editable & searchable data

ANALYSIS From the above mentioned Table No.1 discussed about the different technologies used for meter reading purpose.But in each technology,some limitation are found like,how security will given to data and storage capacity of data , and GUI interface of application with use of digitalization. In this survey paper the combination of various techniques can helps to reduce the time and human efforts with the reduction ratio of inappropriate meter readings,In most of all proposed system, android application is used for taking readings and for storage purpose server are used. But security and confidentiality to a data I.e. Meter reading is not possible so to overcome this limitation.VPS is best solution where the storage and security are overcome. Also OCR algorithm for Optical Character Reorganization techniques are used for character recognizing and Hash algorithm is also used for password encryption & also for security purpose.

Sr. No	Paper Title	Application Type	Algorithm Used	Storage	Technology	Description
1	Securing Smart Electricity Meters Against Customer Attacks	-	Reed-Muller	-	-	Challenges of a novel method for securing the readings of smart electricity meters
2	Smart Electricity Meter Data Intelligence for Future Energy Systems: A Survey	-	Core Analytics Building Blocks	-	IOT, Big Data Cloud Computing	Comprehensive survey 13 of smart electricity meters and their utilization focusing on key 14 aspects of the metering process
3	Design of Embedded based automatic meter reading system for real time processing	Web Application	-	Sever	GSM and LCD	It provides a facility of recharging the energy meters remotely.
4	A Review: Automatic energy meter reading using Image Processing,	Wireless communicati -n application	-	Sever	GSM	Send bill to sever & details send by sms

5	Design of GSM based smart automatic energy metering System	Wireless communicati -n application	-	Sever	GSM	GSM as the medium for metering system provides a cheap , wireless
6	Android App for Meter Reading	Android & Web application	OCR for character reorganiza tion	Sever	-	Bills mailing system
7	Android Based Meter Reading Using OCR	Android & Web application	OCR	Sever	-	Mailing & online billing payment
8	Hybrid Automatic Meter Reading System	Web application	-	-	GSM and ZigBee GPRS	power meter reading system using GSM and ZigBee communication.
9	Secure Low Cost AMR System Based on GPRS Technology	Web application	-	Sever	GPRS	Presenting the remote wireless Electric Meter Reading System
10	ZigBee Based Electric Meter Reading System, IJCSI ,2011	Wireless communicati -n application	-	-	ZigBee	used ZigBee and GSM system for communication protocol.

Table No.1 different Technologies used for Meter Reading

CONCLUSION As the analysis over all the proposed systems, the betterment solution found for the electricity meter reading with the alternative methods to reduce time and human effort with minimal process execution steps.android application is used for data Fetching and OCR and Hash algorithm for character recognising,VPS for data storage and also it gives security.all this reduces the process time with minimal number of steps.

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