IOT Based Milk Collecting System

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Abstract- *This is a user-friendly application that handles all the buying and selling milks and also provides the IOT platform to calculate the milk quality in liters with the help of LAN with Wi-fi. Customer will get fresh milk through this system. It serves as a means for eliminating inefficiencies from back office operations and paper work.This system covers activities from Farmer to consumer. Admin handles all the farmers, customers and stock details. In order to prevent the fraud system also contains IOT which connected with the Wi-fi which calculates the milk measurement with the water content and provides the good quality of milk. This application reduces a lot of paper work and saves time for the board.*

Keywords- IOT, Android App, Web site

I. INTRODUCTION

Milk being an extremely nutritional drink of our daily life should be consumed within time. Milk spoilage is an indefinite term and difficult to measure with accuracy. The ideal pH value of milk is 6.7and higher or lower pH values degrade the quality of milk. Milk consumption is one of the most basic need for the human, so as to transport with minimum monitoring which may result in milk getting spoiled before its use specially during transportation at any point of time which causes vendors to know about milk spoilage only after the milk has been spoiled completely and in order to fulfil the basic human need is quite challenging task. In the earlier stages bicycles and carts wereused to transport milk, as the technology advanced motor-vehicles were introduced but as the population increased exponentially the need to transport milk with utter precision became one of the most challenging for the milk industry. To avoid spoilage and preserve good quality milk various technological procedures were used. In traditional times, milk cartons used to be delivered from milk vehicles to the customers but it had no supervision and often milk used to be wasted as vendors came to know about the spoilage much later.

II. LITERATURE SURVEY

Milk consumption is one of the most basic need for the human, so as to transport milk in order to fulfil the basic human need is quite challenging task. In the earlier stages bicycles and carts were used to transport milk, as the technology advanced motor-vehicles were introduced but as the population increased exponentially the need to transport milk with utter precision became one of the most challenging for the milk industry. To avoid spoilage and preserve good quality milk various technological procedures were used.
New methods have been researched with the purpose of developing more accurate and efficient means of detecting milk spoilage which includes pH and temperature monitoring.

[1] A proof of concept application using Information and Communication Technology (ICT) in the dairy sector was developed by the Centre for Electronics Governance at the Indian Institute of Management, Ahmedabad (CEGIIMA).The application uses Personal Computers at the milk collection Centers of the Dairy Cooperative Societies (DCS) having connectivity to an Internet Service Provider (ISP). The application includes two components - a Dairy Portal (DP) and a Dairy Information Services Kiosk (DISK).

[2] Another researcher, after having seen the old and implemented technologies and the current “newer technology” in dairy sciences, came up with a completely new method for measuring the milk parameters. The researcher proposed, to calculate the quality of a milk sample they need at the least two variables in the form of the specific gravity of the sample and its fat content. But the greatest problem that they would face would be the actual measurement of the CLR of the sample.

[3] "Milk Transport Security and Traceability System" - The objective was to develop a Milk Transport Security System (MTSS)that would provide affirmation that the milk, milk samples, and milk/security data are securely transported between the dairy farm and dairy processor. It required a demonstration of the security system at two dairy processors and multiple dairy farms, and delivery of the technology to the national circle through collaborations, technical conferences, publications and standards. Both the milk and security data are transmitted by the handled device using cell phone communication to a data server where access is only provided for authorized data users. The use of Electromagnetic wave cavity work presents an innovative approach of milk quality

testing by applying electromagnetic wave sensing for various categories of milk products.

[4] "Online Monitoring of Milk Quality using Electromagnetic Wave Sensors" - This work gave optimistic results in order to lay a foundation for a cost-effective, real-time, in situation, easy-to-use method for milk quality control that can be applied within and outside the premises of laboratory restrictions. Electromagnetic wave cavity was used as a microwave sensing device to establish the experimental lab setup in conjunction with Vector Network Analyzer. The drawback of this system was that the setup cost and it did not provide much accuracy. With help of wireless passive sensor for remote in vivo, milk pH measurement could be done. The sensor consisted of a planar spiral inductor connected in parallel to a varactor forming a LC resonant circuit. A pH combination electrode made of an iridium/iridium oxide sensing electrode and a silver/silver chloride reference electrode, is connected in parallel to the varactor.

[5] "A Wireless Passive pH Sensor for Real-Time In Vivo Milk Quality Monitoring" - As the milk pH changes during spoilage, the voltage across the electrodes varies, shifting the resonant frequency of the sensor. For in vivo monitoring the sensor is sandwiched between dielectric spacers for encapsulation, and to reduce parasitic capacitive coupling and eddy current loss. The resonant frequency of the sensor is tracked remotely by an interrogator coil coupled to the sensor inductor. The limitation of this approach was that the LC coil and circuit setup cost and did not provide accurate results. As the key technologies like GPS, GPRS and RFID were applied and STM32F103 Single-chip was adopted to fulfil the hardware design of system.

[6] "Design of Real-Time Monitoring System on Raw Milk Transport Process" - Real-time collection and storage of the information on transport vehicle location and milk box temperatures well as real-time monitoring on raw milk transport process could be conducted to achieve the visualization of the whole process from livestock farm/milk station to processing factory, thus the transparency of raw milk in transportation could be ensured, which provided guarantees for raw milk quality and safety and was of great significance for the healthy development of the dairy products business in our country

Therefore, in this project, we developed a system which gives faster and more accurate result. Due to system user get exact amount as per the quality and quantity of milk. Use of ID makes the system more secure for user and management Data will be stored and can be easily access.

III. RESULT

The Android Application is developed in Android Studio and the web site in the HTML. This is a user-friendly application that handles all the buying and selling milks and also provides the IOT platform to calculate the milk quality in liters with the help of LAN with Wi-Fi. Customer will get fresh milk through this system. It serves as a means for eliminating inefficiencies from back office operations and paper work.

Also, another major objective of the application is minimising the time and paper work in diary and check the good quality of milk through IOT. The admin can update the milk rate and he control the diary in each location. Member can directly check total amount of milk sold and total price also. This requirement document includes the requirements definition and the requirement specification. The software specification document satisfies external system behaviours, specifies constraints on the implementation, it serves as a reference tool for system maintainers.This system contains selling and buying of milk. It stores all the information about Milk collection and delivery details through online. Admin create manager for each location and he add farmers of that location in this system who can sell their milk. The amount of milk selling / buying in litres can be calculated by a tank which contain LAN connection with Wi-Fi. In that we can update its details also. Customer get notification message when manager updates the daily report of milk details of the customers.Fresh milk production through IoT,the consumer will buy good milk through diary. The IOT will check the real milk and water milk in diary through Wi-Fi.Farmer will get real price and Farmer can easy to register in diary with help of manager in order to avoid the manual paper work.

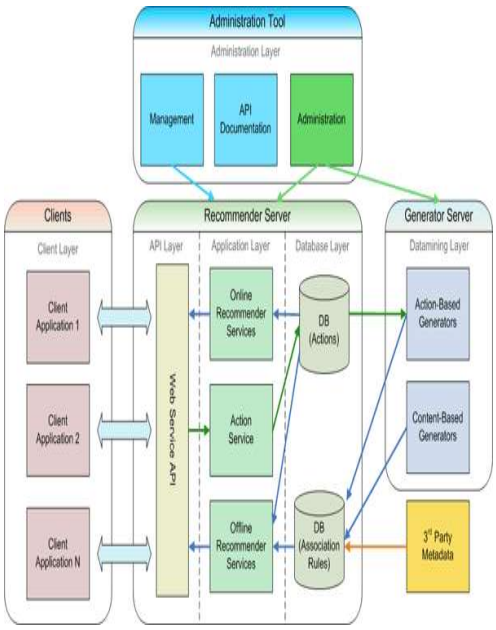

Fig1: Web Application Architecture

IV. CONCLUSION

IOT Based Milk Collecting System has emerged with a new goody compared to the past experience where every activity concerning milk diaries/Depots is wait in queue and wastage of paper work. The nature of functions and how these functions are achieved has been reshaped by the power of internet. The farmers can easily sell their milk to diary and farmer will get real milk price. IOT Based Milk Collecting System has offered an advantage to farmers can sell their milk fast and manager will get real milk.This system has the capability to reduce milk spoilage significantly and if used worldwide then would produce in tons of data that will help to improve not only milk transportation but also customer satisfaction. The ultimate goal of the project is to benefit the milk production industry and the end consumer of the dairy products.

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