Wireless Notice Board

Prathmesh Shendge[1], Dinesh Takale[2], Rohit J. Yadav[3], Dr. D.R. Ingle[4]

[1, 2, 3] Dept of Computer Engineering
[4] Prof. & HOD, Dept of Computer Engineering
[1, 2, 3, 4] Bharati Vidyapeeth's College of Engineering, Navi Mumbai, Maharashtra, India

Abstract- *This document deals with an innovative rather interesting manner of intimating the message to the people using a wireless electronic display board which is synchronized using the Bluetooth technology. This will help us in passing any message almost immediately without any delay just by sending an SMS which is better and more reliable than the old traditional way of passing the message on the notice board. This proposed technology can be used in colleges, many public places, malls or big buildings to enhance the security system and make awareness of emergency situations and avoid many dangers. Using Bluetooth module displays the message onto the display board.*

Keywords- Bluetooth module, Arduino, 2x6 matrix display, multi-terminal

I. INTRODUCTION

In this world., Mobile Phones and related technologies are becoming more and more prevalent. Various technical arenas in the field of Telecommunication and Embedded Systems are becoming omnipresent in the people. The use of cell phones has rapidly increased over the last decade and a half Upgradation in networking technologies has encouraged the development and growth of very dense networks. Nowadays the general mass prefers communicating while on the move, therefore, landlines usage has been drastically reduced. Notice boards are one of the widely used ones ranging from primary schools to major organizations to convey messages at large. A lot of paper is been used and which is later wasted bythe organizations. This, in turn, leads to a lot of deforestation thus leading to global warming. Small innovative steps in making use of technology for regular purposes would have an adverse effect on the environmental issues which we are presently concerned about. The main aim of this paper is to design an SMS driven automatic display Board which can replace the currently used programmable electronic display and conventional notice boards. It is proposed to design to receive the message in display toolkit which can be used from an authorized mobile phone. The whole process can be described from the transmitter and receiver section. The BLUETOOTH module receives a message from the authorized mobile phone and the message is extracted by the microcontroller from the BLUETOOTH module and is displayed on the LCD display is used. This proposed system in this paper has many upcoming applications in educational institutions and organizations, crime prevention, traffic management, railways, advertisements, etc. Been user-friendly, long range and faster means of conveying information are major bolsters for this application. By using this proposed methodology, we can enhance the security system and make awareness of emergency situations and avoid manydangers.

II. LITERATUREREVIEW

Known previous work on Wireless Electronic Notice Board involved the use of different wireless technologies to send messages remotely to a screen. Some of these works are discussed below.

2.1 RF Based Wireless Notice Board

Zohedi used a short-range 433.92MHz FM-TX1 (transmitter) and FM-RX1 (receiver) RF wireless technology and MC68HC11 microcontroller to design a wireless notice board. Although the work met the basic objectives of a Wireless Electronic Notice Board which sends and receives messages wirelessly, it had some practical limitations.

One of the limitations of Zohedi's work was that transmission between the sender and the receiving module was only possible within a 200m range in the open and 25-30m range when there are obstacles. The range is also affected by the type of antenna used in the receiver and transmitter system as well as the environment inside buildings or structures, obstacles within the buildings could further reduce the transmission range to a mere line of sight. The larger the antenna, the better the reception was. This limitation restricts the application of the notice board to use within buildings. The system also had the limitation of having the message entered through a customized transmitter keypad module. Using a customized input module has certain disadvantages; if the module were to become faulty or damaged, the entire system would be rendered inoperable until a spare module is produced, unlike a GSM phone, which can easily have its SIM card swapped out into another phone.

2.2 ZIGBEE based wireless notice board

The ZigBee used is based on PAN (Personal Area Network) technology, which can form a mesh network between nodes. Meshing is a type of daisy chaining from one device to another. This technique allows the short range of an individual node to be expanded and multiplied; covering a much larger area than the RF-based design. A ZigBee based wireless notice board displays messages sent from PC within a certain range [3]. For this purpose, an XBee explorer was used which receives and retrieve data from the PC and sends it to the microcontroller, which then displays it on the LCD. The range of around 300-400m can be obtained. This ZigBee based design increased the range of transmission, reduced cost, and circuit complexity as compared to the RF-based design, but still had some limitations. An operator has to be physically present within the vicinity of the transmitter to change or update the message on the screen because he/she will need to connect a PC to the transmitter module to key in the text. There was also no backup power source as was the case with the RF-based design.

2.3 BLUETOOTH based wireless notice board

Here a wireless notice board displays notifications when the message is sent from the user's mobile phone or any Bluetooth enabled device. When the user sends a message from the device, it is received and retrieved by the Bluetooth device at the display unit. The Bluetooth access password will only be known by the user. Though the range of transmission was about 100m, the design achieved portability since messages can be updated with portable devices like mobile phones and tablets.

2.4 GSM-based wireless notice board

In recent times, GSM-based design of a wireless notice board utilizing ATMEL microcontroller (AT89C51 and AT89C52) or ARDUINO, and a GSM MODEM are very common. In these designs, notifications are sent to the system remotely from anywhere there is a GSM network. Hence a user does not have to be near the transmitter to update the message on the screen. Thus, overcoming the short range of transmission problem, but there were no provisions for the back-up power source. The design adopted in this paper also utilizes the GSM wireless technology but was optimized to overcome the limitations of all the previous designs with additional features.

III. METHODOLOGY

Components Used

Bluetooth module: Bluetooth module is a tiny wireless serial communication module which can be connected with Micro-Controller to receive and send data when connected with other Bluetooth devices.

Arduino-UNO: Arduino is an open-source prototyping platform which is based on easy-to-use hardware and software. Arduino consists of both physical programmable circuit board and software or IDE (Integrated Development Environment) that runs on your computer which is used to write and upload computer-code to the physical board.

LIQUID CRYSTALDISPLAY(LCD):

LCD (Liquid Crystal Display) screen is an electronic display module and finds a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in the 5x7 pixel matrix. This LCD has two registers, namely, Command andData. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it,clearing itsscreen, setting the cursor position, controlling display, etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

10K Potentiometer:

Potentiometers are also known as POT, are nothing but variable resistors. They can provide a variable resistance by simply varying the knob on top of its head. A potentiometer is used to adjust the brightness of the LCD Screen.
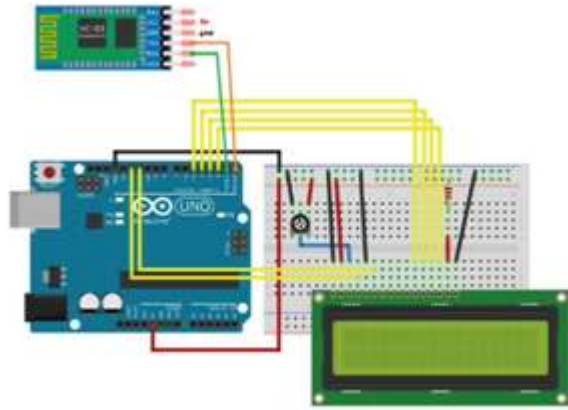
Figure 1. Circuit diagram

Above circuit diagram speaks it all for the sake of this project. The LCD pins are connected to Arduino pin 12, 11,5, 4, 3, 2 as shown in the circuit diagram.

Now we are more than halfway mark. Connect the potentiometer to the shown pin of LCD to control the contrast. Now comes the Bluetooth module and which will have its Rx, Tx pin connected with Tx, Rx pin of Arduino respectively.

Actual View of the project
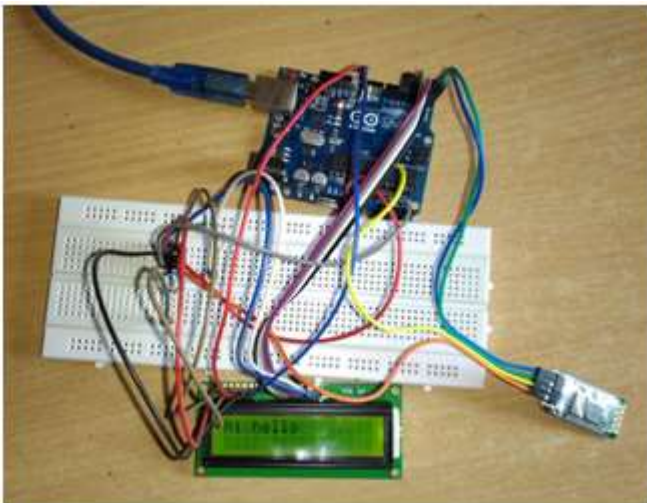
IV. CONCLUSION

The proposed system gives automation in all the processes like updating notices from Mobile Phone. By introducing the concept of wireless technology in the Field of communication, we can make our communication more efficient and faster, with greater efficiency. We can display the messages and with fewer errors and maintenance. This system can be used in college, school, offices, railway station and commercial as well as personal use. Rotational latency involved in the use of papers in displaying notices is avoided.

V. FUTURESCOPE

1. 16x2 LCD Display can be replaced by other LCDs which can display more characters according to the need.
2. Along with the notification messages, date and time; breaking news can be flashed timely.
3. Currently, only one message can be displayed at a time this can be overcome by using many LCDs to display different messages.
4. This system can also be made password protected

REFERENCES

[1] Neeraj Khera and Divya Shukla "Development of simple and low-cost Android-based wireless notice board" IEEE 2016.
[2] KruthikaSimha, Shreya and Chethan Kumar "Electronic notice board with multiple output display" IEEE 2017.
[3] S. Rubin Bose and J. Jasper Prem "Design and Implementation of Digital Notice Board Using IoT" IJRIER 2017.
[4] "The 8051 Microcontroller and Embedded Systems" by Muhammad Ali Mazidi and Janice GillispieMazidi, Pearson Education.
[5] www.wikipedia.com.
[6] www.engineergarage.com.
[7] www.8051project.info.
[8] www.fadooengineers.com
[9] www.nevonprojects.com