NFC Based Mobile Health Care System

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1.   ABSTRACT

With the recent increase in usage of mobile devices especially in developing countries,they can be used for anefficient healthcare management. In this work, we have proposeda novel architecture for improving healthcare system with the help of Android basedmobile devices with NFC and Bluetooth interfaces, smartcard technology on tamperresistant secure element (SE) for storing credentials and secure data, and a Health Secureservice on a hybrid cloud for security and health record management.The main contribution of this paper is proposal of applications for Secure Medical Tags forreducing medical errors and Secure Health card for storing Electronic Health Record (HER)based on Secure NFC Tags, mobile device using NFC P2P Mode or Card Emulation Mode. We have also briefly mentioned a basic security framework requirement for theapplications. Since NFC NDEF format is prone to security attacks, we have utilized lowlevel APIs on Android based mobile devices, to securely access NFC tags. Simple touch of NFC enabled mobile devices can benefit both the patient as well as themedical doctors by providing a robust and secure health flow. It can also provideportability of devices and usability for health management in emergency situation, overpopulated hospitals and remote locations.

2. KEYWORDS

NFC TAG, MSP430,TRF7970ABP,TIR SENSORS

3. INTRODUCTION

Robust healthcare is a requirement for both developed countries, where the cost of healthcare is high and security and privacy are critical issues and developing countries like India, where there is a mass population to handle in hospitals and robust healthcare procedures are required. Doctors should visit the patient regularly and check the status. Situation may occur like nurse make mistake while noting the report. the network connectivity, we have a tendency to introduce a brand new metric for potency called transmit delay think about our planned theme.In this system, we have a tendency to planned Associate in Nursing economical rule that chiefly focuses on 3 completely different network statuses like link quality between the nodes, energy and routing load at every node, that area unit combined to outline transmit delay. Thereby, a route repairing procedure is introduced against link failures. Our system uses NFC technology which comprises of read and write function. The stored information can be retrieve and modify the information using embedded NFC reader. The prescription information of the patients about the past medical treatment which helps the medical attendees to identify the medical history of the patients. And the Blood pressure and Glucose level provides the basic understanding for doctors about the patient condition. The NFC tags are cheaper and very thin so it can stick to patient consulting card itself in aneasier way.

4.PROPOSED METHODOLGY-

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5.System Requirements

The requirements of this proposed system may be broadly classified into two categories, namely:

- Hardware Implementation.
- Software Requirements.

5.1 Hardware Implementation

The following are the hardware specifications:

5.1.1 MSP430 Microcontroller

The MSP430 can be used for low powered embedded devices. The current drawn in idle mode can be less than 1 µA. The top CPU speed is 25 MHZ. It can be throttled back for lower power consumption. The MSP430 also uses six different low-power modes, which can disable unneeded clocks and CPU. Additionally, the MSP430 is capable of wake-up times below 1 microsecond, allowing the microcontroller to stay in sleep mode longer, minimizing its average current consumption. The device comes in a variety of configurations featuring the usual peripherals: internal oscillator, timer including PWM, watchdog, USART, SPI, I²C, 10/12/14/16/24-bit ADCs, and brownout reset circuitry. Some less usual peripheral options include comparators (that can be used with the timers to do simple ADC), on-chip op-amps for signal conditioning, 12-bit DAC, LCD driver, hardware multiplier, USB, and DMA for ADC results. Apart from some older EPROM (MSP430E3xx) and high volume mask ROM (MSP430Cxxx) versions, all of the devices are in-system programmable via JTAG (full four-wire or Spy-Bi-Wire) or a built in bootstrap loader (BSL) using UART such as RS232, or USB on devices

5.1.2 NFC

Near Field Communication or NFC is an emerging technology for electronic devices which allows them to communicate with each other by simply touching or bringing them very close to each other. This act of communication is called *'to tap and go'* or *'tap-in'*. Using NFC, communication could take place between two active devices such as cell phones or even between a NFC device and a passive (unpowered) *'tag'*. Currently, NFC has applications mostly in the field of contactlesselectronic payment.

5.1.3Blood Pressure / Glucose Sensor

Blood glucose monitors are used to measure the amount of glucose in blood, especially of patients with symptoms or a history of abnormally high or low blood glucose levels. Most commonly, they enable diabetic patients to administer appropriate insulin doses. The availability of home-use glucometers, as opposed to clinical-use equipment, has greatly improved the quality of life of such individuals. However, such monitors require a blood draw through finger pricks for each test, which causes pain and inconvenience. Each test also requires a new test-strip, contributing to the recurring cost of such a device.

5.2 Software Requirements

The tools required are:

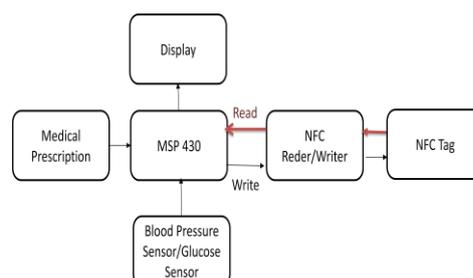- UNI FLASH
- NFC Player
- Energia

6.BLOCK DIAGRAM

Figure 1: Block diagram of proposed system

Data is sent to MSP 430 from Blood Pressue and Glucose Sensor and Medical Prescription and data is shown in Display and there is NFC Reader and Writer it has both read and write option and when NFC Tag is placed on NFC Reader it send the information which is present in NFC Tag to Display and for Writing Data to Tag Data is sended to NFC Read/Write it will write information to NFC Tag
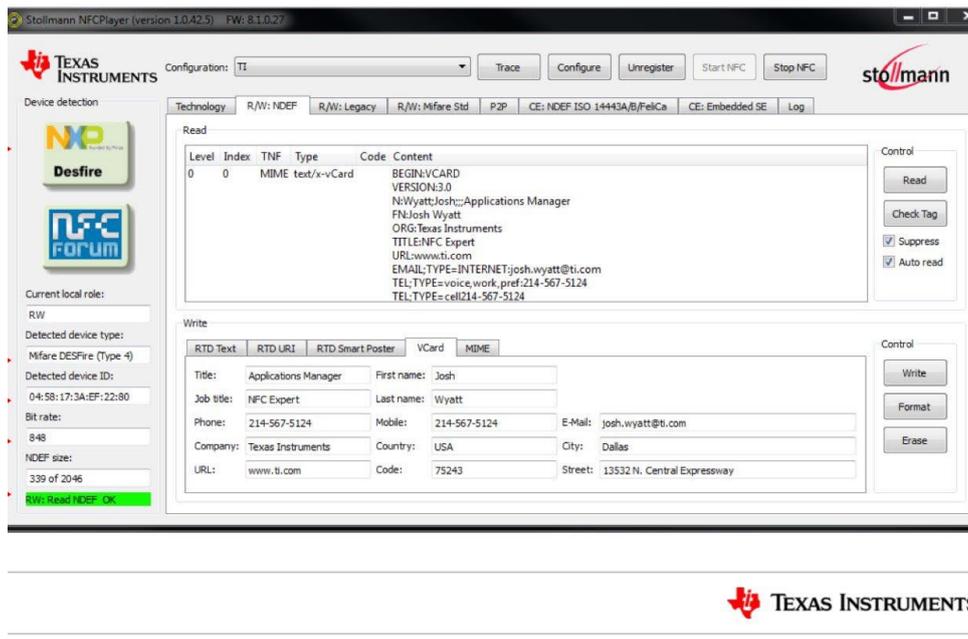
7.FINAL OUTCOME

Figure 2: NFC Player Output

When is Tag is Placed on NFC Read/Write the information which is present in the tag is Read and shown on screen and when we press write information is sended to tag and this whole process takes place in NFC Player.

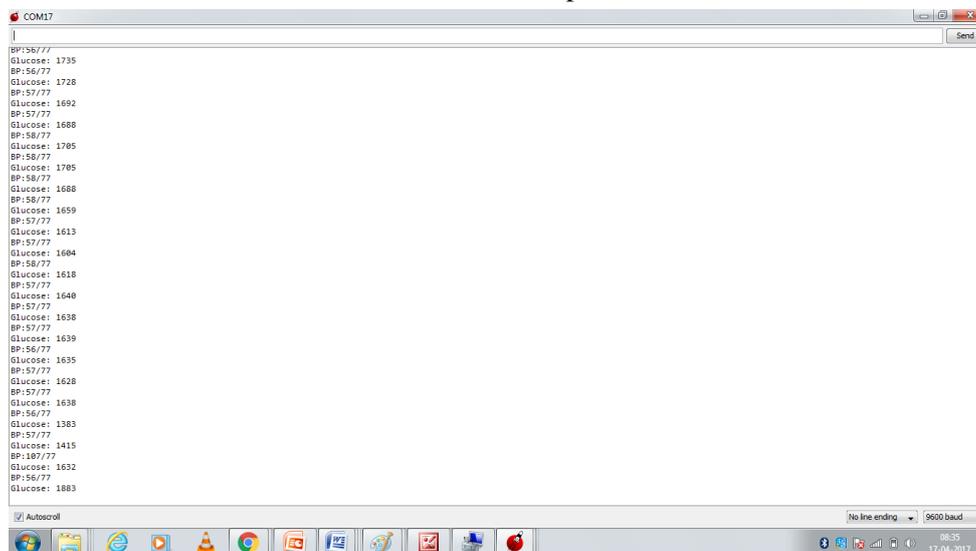This is Blood Pressure / Glucose Sensor values this is the output of the sensors

Figure 3: Blood Pressure / Glucose Sensor Outputs

8.CONCLUSION

To provide wireless data transfer support for e health monitoring using NFC tags and readers.Our system uses NFC technology which comprises of read and write function. The stored information can be retrieve and modify the information using embedded NFC reader.The prescription information of the patients about the past medical treatment which helps the medical attendees to identify the medical history of the patients. And the Blood pressure and Glucose level provides the basic understanding for doctors about the patients condition. Storing and retrieving post medicinal information and basic vital information's like blood pressure and glucose level of the patients using NFC Technology We Design NFC Card in which we can Read and Write NFC Card is used to store and retrieve the past medical history of the patient It Increases Drug Control Using NFC Data

9.FUTURE SCOPE

We can develop this into App which can directly read the data which is present in the tag and write the data at the same time so that it will be user friendly. We are using Type 1 NFC Tag which store until 96 bytes and there are many other tags which can store more information Type 3 and Type 4 and store Blood Pressure Sensor Glucose Sensor we can give this information directly to them through app

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