TECHNOLOGY ARCHITECTURE FOR CHILD SAFETY AND MONITORING SYSTEM

The concept of traceability is closely related to the objective of achieving greater security in the society in which we live. Today we are all subject to a kind of indirect traceability. Just think how a person's movements can be recorded in a fairly accurate way thanks to the spread of mobile phones, credit cards, automatic payment methods and GPS receivers. There are many situations where you might need to know where someone is in a given time, especially when we talk about children in extremely large and crowded places. To this aim, the architecture here proposed could lead enormous relief to all those families who want to spend free time in shopping centers in total relax. It consists of an architecture based on RFID technology combined with a wireless sensor network (WSN). The architecture provides to equip the child of an RFID bracelet TG900 Secure Wristband (Figure 2) created just for locating people in safety applications.

The AT89S52 is a low-power, high-performance CMOS 8-bitmicrocontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density non volatile memory technology and is compatible with the industry-standard 80C51instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non volatile memory programmer By combining a versatile 8-bit CPU within-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89S52 provides the following standard features: 8Kbytes of Flash, 256bytes of RAM, 32I/O lines, Watchdogtimer, two data pointers, three 16-bittimer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM

contents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset.

The RF module, as the name suggests, operates at Radio Frequency. The corresponding frequency range varies between 30 kHz & 300 GHz. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. This kind of modulation is known as Amplitude Shift Keying (ASK) Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-ofsight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. Next, RF transmission is more strong and reliable than IR transmission. RF communication uses a specific frequency unlike IR signals which are affected by other IR emitting sources. This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (Tx/Rx) pair operates at a frequency of 434 MHz. An RF transmitter receives serial data and transmits it wirelessly through RF through it is antenna connected at pin4. The transmission occurs at the rate of 1Kbps - 10Kbps.The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter. The RF module is often used along with a pair of encoder/decoder. The encoder is used for encoding parallel data for transmission feed while reception is decoded by a decoder. HT12E-HT12D, HT640-HT648, etc. are some commonly used encoder/decoder pair ICs.

Database
Server

Internet

SMS