

TECHNOLOGY INNOVATION FOR VENDORS USING IOT

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Abstract: The Third Generation Partnership Project (3GPP) has been working on developing specifications on Wireless Communications Technology (WCT) and on emerging Internet of Things(IOT) bringing the light into associated service and network requirements. This paper presents the special form of WCT and IOT communication, where one communication device automatically communicates with other device through IOT. The initial efforts towards the so called combination of wireless communication and internet of things and the specifications are based on group communications and on proximity service features, both originally developed for mission critical communications. Such standardization efforts are enhanced and also integrated in the new service model enabled by the gated community, with the ordinary vendors being one of the major players. This paper provides the comprehensive study elaborating the current standards for enabling livelihood of vendors considering the co-existence if 3GPP, WCT and IOT, while analyzing potential open challenges

Keywords: 3GPP, WCT, IOT.

I. INTRODUCTION

Survival in today's urban world cannot be imagined without proper means of Technology. Technology is not only crucial but also has become necessity in one's life. One such means of Technology is the use of communicating devices like GPS and RFID. Owning a technology today is not merely a symbol of luxury but has become a necessity. However, considering technology, any catastrophic situation can take place. Thus there is always an urgent need to arrange appropriate measures to increase the livelihood, security as well as monitor the community to improve the livelihood. It would help us in the situations such as:

- Locating the vendor's vehicle.
- Allowing the registered members to detect the location of the vendor.
- Useful for finding the time of arrival of the vendor to a particular destination.

II. RELATED TECHNOLOGY

A. GPS TECHNOLOGY:

The Global Positioning System (GPS) is the only fully functional Global Navigation System(GNSS). The GPS uses the constellation between 24 and 32 Medium Earth Orbit Satellites that transmit the microwave signals that enable the GPS receivers to determine their location, speed, direction and time. A GPS receiver receives the signal from at least three satellites to calculate the distance and uses a triangulation technique to compute its dimensions like latitude and longitude position and incase if it receives the signal from four satellites it computes all the three latitude, longitude and altitude position. Thus GPS is the key technology for giving device its position. GPS was developed by United States, Department of Defense. The official name of GPS is NAVSTAR-GPS. It was first originally used in military services but later it is being used as a free civilian use as a common good. The parameter and specification along with image of GPS are given below.



Figure 1: GPS Module

Table 1: Parameter and Specification of GPS

GPS module	Receiver type	20 Channels ‘All in view’
	Protocol format	NMEA-0183
	Accuracy of Position	10 meters, 2D RMS
	Power requirement	3.3~5.5VDC 50mA
	Working Temperature	-10°C to +60°C

B. GSM TECHNOLOGY:

A GSM modem is a specialized type of modem which accepts a SIM Card, and operates over a subscription to a mobile operator, just like a mobile phone. GSM (Global System for Mobile) uses a process called circuit switching. This communication method allows a path to establish between two devices. Once the two devices are connected, a constant stream of data which is in digital format is relayed. GSM networks consist of three major systems the Switching System(SS), the Base Station(BSS) and the Mobile Station(MS).

- The Switching System is very operative system, where many crucial operations are conducted, which holds five data base within it which performs different functions. The major task of SS system is that it performs call processing and subscriber related functions.
- The Base Station System

The base Station System have very important role in mobile communication. BSS are basically outdoor units which consists of iron rods and are usually high on length. It is responsible for connecting subscribers(MS) to mobile networks. All the communication is made in radio transmission. The base station system is further divided into two systems. These two systems, they are BTS and BSC. BTS (Base Transceiver Station) handles communication using radio transmission with mobile station and BSC (Base Station Controller) creates a physical link between subscriber and BTS, then manage and controls functions of it.

- Mobile Station(Subscriber)

MS consist of a mobile unit and a smart card which is also referred as a Subscriber Identity Module(SIM) card. This card fitted with the GSM modem and gives the user with the personal mobility. The equipment itself is identified by a unique number known as International Equipment Identity(IMEI)

The GSM modem used in this device is SIM 900L.The parameters and specifications along with image of our GSM modem is given below.



Figure 2: GSM SIM800L

Table 2: Parameter and specification of GSM MODEM

Gsm modem	Frequency band	Quad band 850/900/1800/1900
	Transmission power	2W@850/900MHz 1W@800/1900MHz
	Baud rate	9600
	Power Supply	12V,1A
	Operating Temperature	-40° C to 85°C

C. RFID READER AND TAGS:

RFID is an acronym for “radio frequency identification” and refers to a technology whereby digital data encoded in the RFID tags are captured by reader via radio waves. RFID is similar to bar coding in that data from a tag are captured by the device that stores the data in the database. RFID, however, has several advantages over systems that use barcode asset tracking software. The most notable is that RFID tag data can be read outside the line of sight, whereas barcodes must be aligned with an optical scanner. Although the RFID technology has been in use since world war II, the demand for RFID equipment is increasing rapidly. In addition, RFID tags are not susceptible to the damages that may be incurred by barcode labels like ripping and smearing.



Figure 3: RFID Reader and Tags

D. ESP8266:

A primary section heading is enumerated by a Roman numeral followed by a period and is centered above the text. A primary heading should be in capital letters.

A secondary section heading is enumerated by a capital letter followed by a period and is flush left above the section. The first letter of each important word is capitalized and the heading is italicized. A tertiary section heading is enumerated by an Arabic numeral followed by a parenthesis. It is indented and is followed by a colon. The first letter of each important word is capitalized and the heading is italicized. A quaternary section heading is rarely necessary, but is perfectly acceptable if required. It is enumerated by a lowercase letter followed by a parenthesis. It is indented and is followed by a colon. Only the first letter of the heading is capitalized and the heading is italicized.



Figure 4: ESP8266 -12E

III. EXISTING WORK

The existing system is used for tracking and position of any vehicle by using GPS and GSM. In this device AT89C51 microcontroller is used for interfacing to various hardware peripherals. The current design is an embedded application, which will continuously monitor a moving vehicle and report the status of the vehicle on demand. For doing so an AT89C51 microcontroller is interfaced serially to a GSM modem and the GPS receiver. A modem is used to send the position of the vehicle from a remote place. The GPS modem will continuously give the data i.e. the latitude and longitude indicating the position of the vehicle. The GPS modem will give many parameters as output but only NMEA

data coming out and sent to the mobile at the other end from where the position of the vehicle is demanded. When request by the user the system automatically sends a return reply to that mobile indicating the position of the vehicle in terms of latitude and longitude.

IV. PROPOSED WORK

The proposed work consists of two modules where one module is given to the vendor and the other module is fixed at the gated community. The 1st module consist of GPS connected with ESP8266 -12E Mod, from where the current location of the vendor will be tracked and that location will be published in the MQTT server. From the server the module ESP8266 at the gate subscribes the MQTT server and compares the distance of vendor and the community. Once the vendor reaches the particular location, an intimation will be given to the registered numbers that the vendor will arrive in few minutes. When the vendor reached the community and when his RFID is also matched then the message will be popped to all the mobile numbers that the particular vendor is arrived with the respective commodity or the goods using the GSM modem (from figure 5,6)

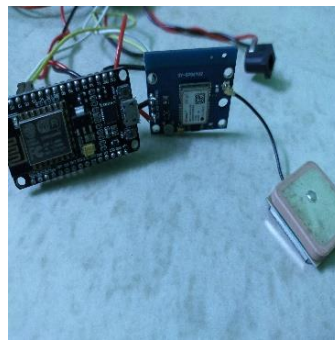


Figure 5: Vendor Side Module

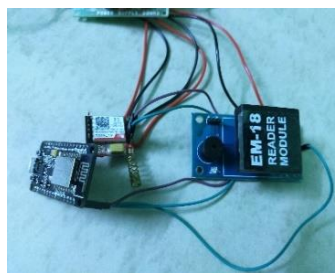


Figure 6: Module at Gate

V. BLOCK DIAGRAM



Figure 7: System Overview

From the Figure:7, the GPS data of the vendor is collected and published in the MQTT server via ESP8266 module. Once the latitude and longitude of the vendor matched with the latitude and longitude of the gated community the an intimation will be sent automatically. When the RFID of the vendor is also matched then the message that the particular vendor is arrived to the respective community will be popped to all the registered mobile numbers using GSM modem

VI. CONCLUSION

This project is mainly involved in improving the vendor livelihood with GSM, RFID, GPS., it also indicates the quantity of the commodities or the goods used by the normal vendor. Thus the livelihood of the vendor will be improved with the help of this proposed module.

VII. FUTURE SCOPE

Further two-way communication will be established to communicate between the vendor and the customer. Moreover, the centralized application will be developed for further enhancement of the normal vendors.

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