

Technology Innovation for Vendors using IOT

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Abstract

The Third Generation Partnership Project (3GPP) has been chipping away at creating determinations on Wireless Communications Technology (WCT) and on developing Internet of Things (IOT) bringing the light into related help and system necessities. This paper presents the unique type of WCT and IOT correspondence, where one specialized gadget consequently speaks with other gadget through IOT. The underlying endeavors towards the purported mix of remote correspondence and web of things and the details depend on bunch interchanges and on vicinity administration highlights, both initially created for strategic correspondences. Such normalization endeavors are improved and furthermore coordinated in the new help model empowered by the gated network, with the customary merchants being one of the significant players. This paper gives the complete investigation explaining the present gauges for empowering business of merchants considering the conjunction if 3GPP, WCT and IOT, while breaking down potential open difficulties

Key Terms—3GPP, WCT, IoT

1. Introduction

Survival in today's metro areas of any part of the world cannot be imagined without right use of technology. Technology is a part and parcel of one's individual life. One such approach of technology is the usage of communicating devices like GPS (Global Positioning system), GSM (Global System for Mobile Communication) and RFID (Radio Frequency Identification). Considering above common technicalities we end up with a design of supporting the need. However, considering technology, any catastrophic situation can be take care by identifying location. Thus there may be continually a pressing need to arrange appropriate measures to the growth of livelihood, security as well as monitor the community to improve their economy, thereby increasing the country economy. It might help us the situations which includes:

- Tracking the vendor's automobile.
- Allowing the registered participants to locate the place of the vendor.
- Useful for locating the time of arrival of the seller to a particular destination.

2. Related Technology

A. GPS TECHNOLOGY:

Worldwide Positioning Satellites (GPS) persistently communicate signs to earth. A GPS gadget situated inside a vehicle gets these signs. The gadget at that point decides its area dependent on geometric figurings from the approaching satellite signs. The GPS utilizes the heavenly body somewhere in the range of 24 and 32 Medium Earth Orbit Satellites that transmit the microwave flags that empower the GPS recipients to decide their area, speed, course and time. The GPS satellites transmit signs to a GPS recipient. These collectors latently get satellite signs; they don't transmit and require an unhindered perspective on the sky, so they must be utilized adequately outside. Every gp transmits information

alongside its area and the present time. A GPS beneficiary gets the sign from at any rate three satellites to figure the separation and utilizations a strategy to be specific triangulation to process its measurements like apogee and perigee position and incase on the off chance that it gets the sign from four satellites it registers all the three position. Consequently GPS is the key innovation for giving gadget its position. The parameter and particular alongside picture of GPS are given beneath



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 an extraordinary sort of modem which permits a SIM Card, and works over a membership to a cell administrator, much the same as a mobile phone. GSM (Global System for Mobile) utilizes a technique called circuit exchanging where complete data transmission is involved between two hubs. This discussion approach permits a course to arrangement among gadgets utilized. When the two gadgets are associated, a consistent move of realities that is in virtual design is transferred. GSM systems incorporate three primary frameworks as the Switching Systems (SS), the Base Station System (BSS) and the Mobile Station System (MSS).

- The Switching System might be usable gadget, in which numerous basic activities are directed, which holds five insights base inside it which performs unique abilities. The fundamental task of Switching Station contraction vis that it performs call preparing and endorser related abilities.
- The Base Station System have urgent situation in many voice trade. BSS are essentially outside units which worked on iron poles and are commonly exorbitant on period. It will take in-control for interfacing supporters of cell systems. All the voice trade is made in the radio recurrence transmission. The base station unit likewise isolated into structures. These structures are BTS and BSC. Here BTS handles voice trade and BSC handles network among the supporters and BTS and furthermore controls different capacities.

- Mobile station includes a versatile unit and an astute card which is additionally alluded as a SIM card. This card is fixed with GSM modem and gives the customer with the non-open versatility.

The GSM utilized in this gadget is SIM 900L. The parameters and particulars alongside picture of our GSM modem is given underneath.

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 abbreviation for "radio recurrence recognizable proof" and alludes to a time where in advanced realities encoded inside the RFID labels are caught by peruser by means of radio waves. RFID is much the same as a bar coding, in which the information from the tag are caught by means of the apparatus that stores the records in the database. RFID, be that as it may, has a few advantages over frameworks that utilization standardized identification resource following programming program. The most remarkable is that RFID label records may peruse outside the view, while standardized identifications ought to be lined up with an optical scanner. Moreover, RFID labels are not defenseless against the harms that might be acquired through standardized identification marks like tearing and spreading. The figure 3 shows the RFID tag and the peruser module.



Figure 2 RFID Reader and Tag

D. NODE MCU ESP8266:

It is a minimal effort open source IoT stage. Espressif Systems Smart Connectivity Platform is a lot of superior, high coordination remote SOCs, intended for space and force compelled versatile stage fashioners. It offers Wi-Fi arrangements between different frameworks or to work as an independent application, with ease and negligible space necessities. This gadget is an independent Wi-Fi arrangement; it very well may be utilized to have application or to offload Wi-Fi application. It has integrated store to build the exhibition of the framework in such applications. Then again it fills in as a Wi-Fi connector, remote web access can be added to any microcontroller based structure with availability (SPI/SDIO or I2C/UART interface). It is coordinated with 10-piece ADC, TCP/IP convention stack and furthermore underpins receiving wire assorted variety with STA/AP/STA+AP activity modes



Figure 3 NODEMCU ESP8266 12E

3. Existing Work

The current framework is utilized for recognize and current situation of any vehicle by utilizing GPS and GSM. In this gadget AT89C51 microcontroller is utilized for interfacing to different equipment peripherals. The ongoing day configuration is an implanted programming, as an approach to consistently screen a moving vehicle and document the notoriety of the vehicle accessible as needs be for. For doing so an AT89C51 microcontroller is interfaced sequentially to a GSM modem and a GPS beneficiary. A modem is utilized to dispatch the situation of the vehicle from a distant area. The GPS modem will continually give the data i.e., the scope of scope and longitude area of the vehicle. The GPS modem will give numerous parameters as yield anyway basically NMEA data jumping out and sent to cell at other stop wherein the position of the vehicle is requested.

4. 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 4,5)

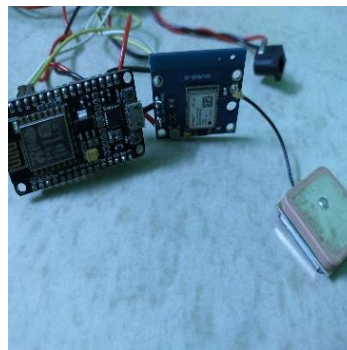


Figure 4 Vendor Side Module



Figure 5 Module at Gate

5. Block Diagram

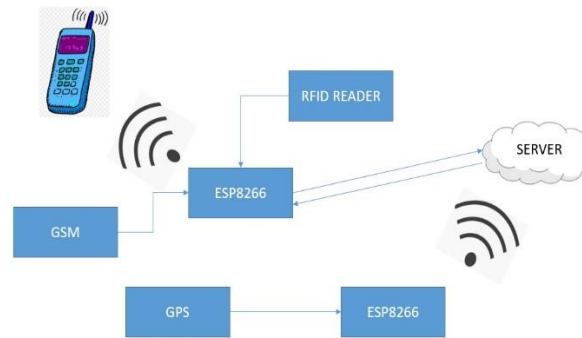


Figure 6 System Overview

From the Figure 6, 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 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

6. Conclusion

This work is mainly involved in improving the vendor livelihood with GSM, RFID, GPS, it also indicates the quantity of the commodities or the goods the normal vendor has. This prototype not only improves the livelihood of vendors but also improves the Social-Distancing where it will greatly be helpful for reducing the cause and spread of COVID-19.

7. Future Scope

Further two-way communication will be set-up to talk between the seller and the costumer. Moreover, the centralized software might be developed for further enhancement of the normal vendors.

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