



## **SECURITY OF VEHICULAR MOBILITY IN AN ORGANIZATION**

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### **ABSTRACT**

*Major problems encountered by transport companies includes car insecurity, illegal diversion of products and unassigned route other than the prescribe route. Due to the inefficiency in conventional car security alarm system, the possibility of the car being diverted or blocked in the security system is high. Surveillance was specified to car operating system and the immediate feedback of data to the owner of the vehicle using SMS when the alarm is triggered. This paper is focused on the need to curb truck theft in an organization and illegal diversion of consignments as haulage business is one of the sources of economic revenue to individual, industry and nation. The audible distance limitation of the alarm is of critical concern but, a means of transmitting the alarm to the vehicle owner that was not limited to the audible distance through line of sight is an option to vehicle owners. However, this option through GPS is costly and because of maintenance monthly. The system was upgraded and the process was achieved with hybridized GPS, SMS and google map as a good choice of the communication to replace the conventional alarm system with little cost. This paper also employs the use of job order and MATLAB 2019Ra to gather information and interface with the map and flowchart showing mobility and tracking of the vehicles. The result shows graphically plotted maps of the truck and the user on the Google maps getting real time location of the truck.*

**Keywords:** *Mobility, Insecurity, Surveillance, Organization.*

### **INTRODUCTION**

Mobility by vehicular means is an imperative infrastructure of any nation. The bottleneck about transportation is the uncertainty of time wastage due to traffic jams and any other unforeseen circumstances that are inimical to progress. The safety of private, public vehicles, and trucks is a major concern, so global

position system fleet tracking system ensures their safety while travelling. In the existing system, different tracking techniques are used which are integration with Google maps for route allocation, automatic transit directions or real time tracking and arrival time prediction. Radio Frequency Identification is wireless identification technology that has been used in many fields including solid state monitoring, human beings, inanimate objects and animals. The implementation of RFID in any identification and monitoring system can improve the monitoring and improve the overall performance of system with low cost. Alerting system uses GSM or GPRS for sending information, GSM is mostly used as compared to the GPRS. GSM is used to inform the user about exact location of vehicle [1].

Design and Implementation of Vehicle Tracking System Using GPS” shows how important it is to curb car theft in the country, Surveillance is specified to car alarm system and the means of sending the data to the owner of the vehicle using SMS when the alarm is triggered [2],. Due to inefficient conventional car security system, the possibility of the car to be stolen is high. Somehow if there is another means of transmitting the alarm to the car owner tracking the vehicle knowing the exactly that the car is been stole at the same time that is not limited to the audible and line of sight, the system can be upgraded to replace the conventional alarm system [2]. [3] “GPS-GSM Integration for Enhancing Public Transportation Management Services” shows that non-availability of prior information about the buses arrival schedule, people have to wait longer on bus stops especially in the morning when they have to reach the offices in time.

This paper proposes a solution for enhancing public transportation management services based on GPS, GSM, Google-map and MATLAB software parameters like location of the bus, traffic density, no of passengers inside the bus is shown to the user in their mobile phone [2]. “Hybrid GPS-GSM Localization of Automobile Tracking System” An integrated GPS-GSM system is proposed to track vehicles using Google Earth application [4]. The received GPS coordinates are filtered using a Kalman filter to enhance the accuracy of measured position. After data processing, Google Earth application was used to view the current location and status of each vehicle whose goal was to manage fleet, police automobiles distribution and car theft cautions [4]. [5] “RFID and

communication technologies for an intelligent bus monitoring and management system” which highlights the implementation of an intelligent bus monitoring system based on current challenges and problems. In this system, radio frequency identification and integrated sensing technologies, such as a global positioning system, general packet radio service, and geographic information system are used to monitor the movement of bus.

A new theoretical framework and ruled-based decision algorithms are developed for the system. An experimental setup was developed for the prototype implementation. The results show that the choice of integrated technologies used in the system is suitable to monitor and manage a vehicle transportation system [6]. There are many alternatives to prevent car theft, common car alarm system which nearly all cars have the system installed [7]. And also Global Positioning System (GPS) where the whereabouts of the car can be traced.

This paper researched for additional features in car alarm system [8]. The device can be added to the present car theft, illegal diversion, illegal haulage and vandalization of trucks. The supporting device SIM CARD and the network subscribers are used to control the operation of the fleet [9]. The control unit can modify this concept such that the fleet owner also can lock the vehicle from his centralized control system [10]. The device will connect position to supervise the whole movement of the fleet along the route.

## **MATERIALS AND METHODS**

Android Smartphone consists of GPS system, which is used for the tracking location of current position of the transit trucks and the consignments. GPS system in the Smart phones can easily be used with appropriate security permissions. The applications of android are user friendly which makes it very popular. Android provides a lot of documented help for new developers, Matrix Laboratory (Mat-lab) 2016Ra was used for the simulation of the research interfacing and controlling of different devices like the earth Google Map so that co-ordinates can be located in the Google map. Map page consists of two drop down lists for selection of truck or cab number, embedded in Google map, route type. Through this page of application, users and truck drivers can view truck on map. By selecting route type date and truck or cab number location

will be presented. For stationary tracking allocations in the track table corresponding to the truck number, route and date will be displayed on the map using colored markers and the lines connecting the markers from the start position to the last position. Whereas for the simulated, tracking markers are added one by one at a time gap, say after 2 seconds of duration.

### **Job Order**

The job order is a form in which the truck driver purchase and taken to the fleet officer, the truck coordinator or truck manager to fill before any truck related issues or problems can be absorb by the workshop department. Once the workshop team receive the already filled job order from the truck driver, the job order is entered into reception booklet which will be later upload into the workshop sap before a mechanic will be assign to carry out the job.

### **HOW TO FILL THE JOB ORDER FORM BY FLEET OFFICER/ TRUCK OFFICER**

**To Liaison:** Workshop, **from:** Operation Unit, **Truck No:** Fill The Registration No. Of The Truck, **Cab No:** Fill The Assign Number Of The Designated By The Company, **Driver's Name:** Fill In The Driver Bio Data Name, **Driver's I.D No.:** Fill The Driver Payroll Number, **Fleet Number:** Fill The Driver Fleet Number, **Trailer No.:** Fill The Truck Trailer Number, **Phone No:** Fill The Driver Cell Phone Number, **Time In:** Fill The Time The Truck Enter Workshop, **Time Out:** Fill The Time The Job Is Completed. Figure 1: Shows the Flowchart for Trucks mobility and tracking.

### **JOB ORDER FORM**

TO LIASON UNIT: \_\_\_\_\_ FROM \_\_\_\_\_  
TRUCK NO: \_\_\_\_\_ CAB NO: \_\_\_\_\_  
DRIVER'S NAME: \_\_\_\_\_ FLEET NO: \_\_\_\_\_  
DRIVER'S I.D CARD: \_\_\_\_\_ DATE: \_\_\_\_\_  
TRAILER NO: \_\_\_\_\_ PHONE NO: \_\_\_\_\_  
TIME OUT: \_\_\_\_\_ WORKSHOP TIME IN: \_\_\_\_\_

GENERAL SERVICES

MINOR REPAIRS

MAJOR REPAIRS

**Please arrange and attend to repairs of the above mentioned Truck/ Trailer with following defect (s).**

S/NO	FAULTS	DESCRIPTION OF FAULT
1	<b>ENGINE</b>	
2	<b>ELECTRICAL SYSTEM</b>	
3	<b>TRANSMISSION SYSTEM</b>	
4	<b>BREAKING SYSTEM</b>	
5	<b>STEERING SYSTEM</b>	
6	<b>SUSPENSION SYSTEM</b>	
7.	<b>TRACTOR CHASIS</b>	
8	<b>TRAILER/BODY</b>	
9	<b>CABIN</b>	
10	<b>WHEELS/TYERS HUB</b>	

EXPECTED DATE OF COMPLETION \_\_\_\_\_

PREPARED BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_

FLEET ANALYST \_\_\_\_\_ FLEET WORKSHOP COORDINATOR \_\_\_\_\_

DATE ADMITTED: \_\_\_\_\_ TIME ADMITTED \_\_\_\_\_

KILOMETRE ADMITTED: \_\_\_\_\_ NOTIFICATION NO: \_\_\_\_\_

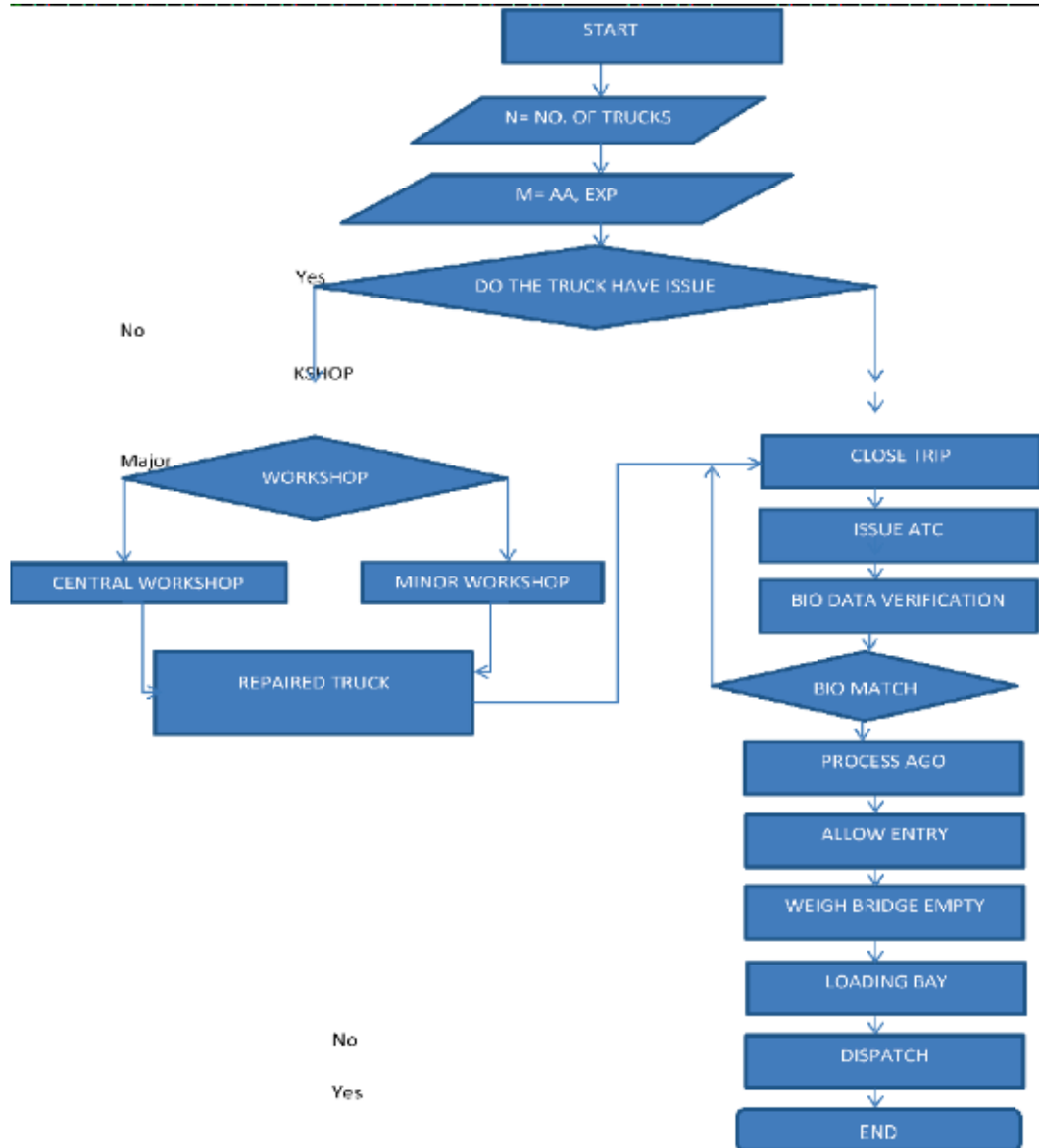
NAME OF MECHANIC: \_\_\_\_\_ RESERVATION NO: \_\_\_\_\_

### **PARTS UTILISED**

S/N	PATH	NOMENCLATURE	UoM	QTY	REQUISITION
	NO/SAP NO				NO
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

13  
14  
15

**TEAM LEADER SIGNATURE**



**RESULT AND DISCUSSION**

The system has been proposed for Urban Cities, in Nigeria. Truck tracking system using Android application uses the inbuilt GPS service provided by the Smartphone. Smartphone is mounted on each truck and to get its GPS coordinates. These coordinates are transferred to the central server. Users can retrieve information through android application where users select the truck or cab number, route number and, receive the arrival time of the bus with respect to the user's current location instead of the truck destination. Maps are also used to graphically plot the truck and the user on the Google maps getting real time location of the truck has become very easy with the rapid increase in the use of programmable smart phones with built in GPS facility. The massive influx in the use of android has made the system very user friendly. It has been observed that by using android phones the acceptance to the system has increased enormously. Location based system are used by android to get the real time location of the trucks. This is the android application that is installed on the Smartphone that is placed on the truck that is to be tracked. This application provides the programmer with where driver load from and the destination to deliver the consignments, tracking by selecting the truck registration or cab number, route number and clicks on "BEGIN TRACKING". With this, web service gets to know that the truck with that truck or cab number and route number has begun its journey. Once the initiation is completed truck tracking system sends the location data (GPS coordinates) of the truck to the web service periodically after some seconds these frequent submissions web service is able to plot the truck on the maps correctly on the mobile application or the web application. The results are displayed on various graphs below.

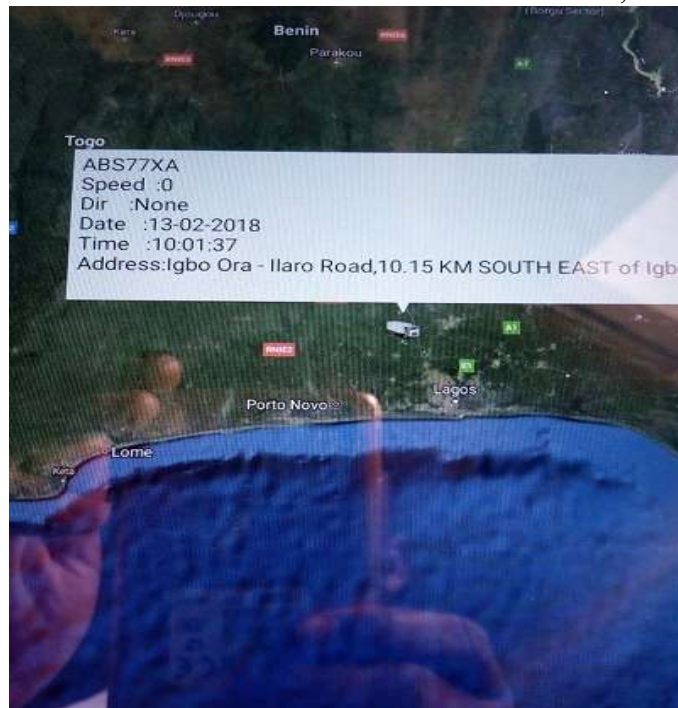


Fig. 2: The above truck ABS77XA is park loaded for a period less than 12hrs.  
Table 1: showing Average ATC

ATC ISSUANCE	ATC BALANCE
25	4
27	3
30	2
27	2
30	1
21	2

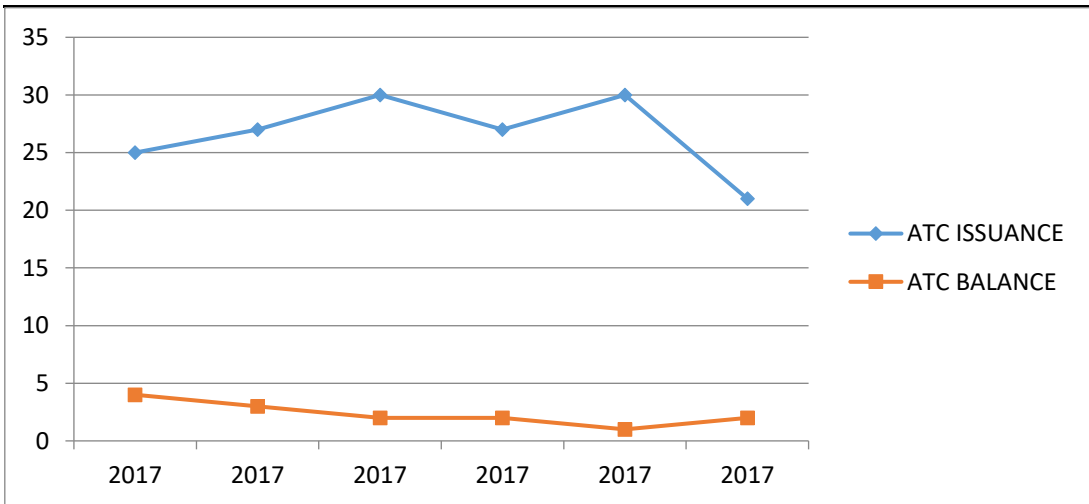


Fig. 3: The graph above shows the average dispatch for 2017

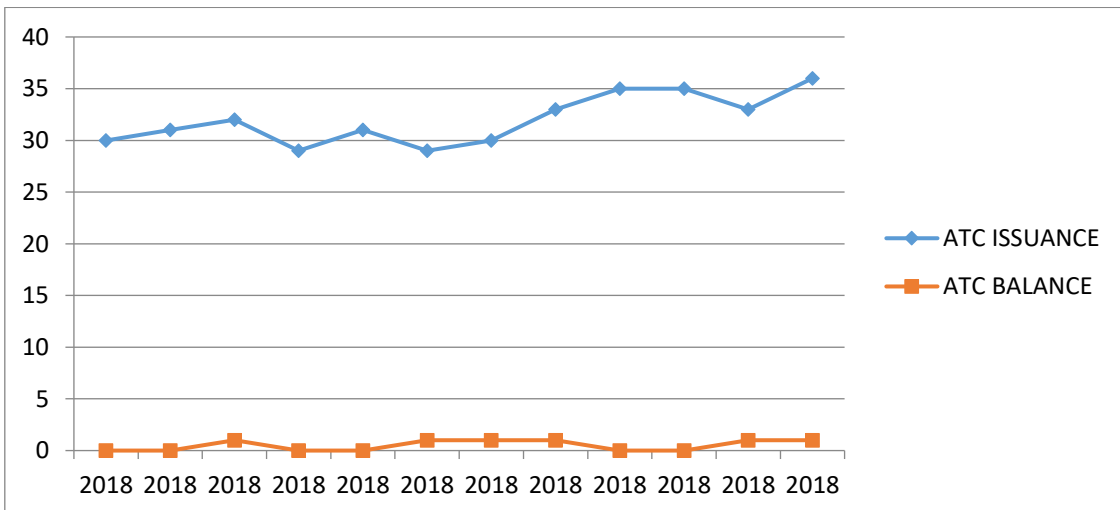


Fig. 4: The above graph shows an improvement in the dispatch from the previous years

**CONCLUSION**



Truck insecurity, illegal haulage, diversion of consignment and accidents in the transportation company has caused significant loss of lives, properties, waste of energy and loss in productivity. To reduce and improve the truck theft, safety, security and efficiency of the transportation systems to enable new mobile services and applications for on time delivery of consignment immediately, this paper has addressed its mitigation. With the application of rapidly emerging information technologies in trucks and transportation infrastructures, has provided an efficient, robust, cheaper, and reliable system for security outlook.

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