Exploring WAP Capability in Transmitting Traffic Offences in Malaysia

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Abstract: - Collection of fines relating to traffic offences has always been a problem in Malaysia and the world in general. There is huge amount of revenue leakage due to improper checks and balances in the mechanism put in place. It is estimated that less than 50% of traffic fines are not collected by Malaysian Government and of particular concern is traffic offences committed by the internationals coming into Malaysia. For instance, many Singaporeans come into Malaysia and break traffic laws and go back without being fined due to the fact that the current system which is referred to as Automatic Vehicle Scanning System (AVSS) is not real time. It takes some couple of hours for any offence to be updated and hence offenders can exit the country within few hours without being noticed. Therefore, this study develops a prototype application that integrates the Mobile and Web application which transmits data to the road traffic agency and updates in a real time. The application will minimize the loss of revenue and will equip the law enforcement agent with a tool to apprehend offenders. It will also give assurances that offences are easily reported even at peak periods when other traffic detection devices will not stand the congestion.

Key-Words: - WAP Application; Web Application, Software Engineering; Mobile Device; Systems;

1 Introduction

Traffic offences are mostly attributed to road users such as cars or motorcycles than it is with the pedestrians. A study conducted on the behavior of road-users by [1] have shown that at traffic signals and pedestrian crossings in a number of third world cities, that road users are more liable to recklessness than pedestrians in United Kingdom. A similar observation has shown in Pakistan that drivers crossing a ‘no-overtaking lines’ has reached about (15%) whereas (52%) do not stop at the non-stop which suggest that road safety measures that are not enforced in totality. Therefore, unless road signs and markings are fully enforced in roads, no meaningful achievement will be recorded in terms of road safety. This has to be integrated with publicity campaign. Road user behavior exhibited by drivers in developing and emerging countries may be due to their lack of knowledge about roads and safety rules and regulation or their general attitudes towards road safety matters.

According to World Health Organization [2] in advanced countries, mobile are frequently used to alert the emergency departments about road accidents due to the tremendous traffic and flexibility of the mobile devices. For this reason, countries have decided to public an emergency number in case of any emergency. Although the
number varies from country to country, moves have been underway for an internationally agreed number. According to a report on Hong Kong road accident [3] which says that the number of prosecutions for Traffic light red light violations has increased significantly from 22,590 cases in 2003 to 42,916 in 2006 which has lead to the installation of automated traffic enforcement camera system throughout Hong Kong.

In Malaysia, Road Traffic Injuries have been identified as the leading killer of Malaysians [4]. It is also rank as the third leading cause of death in 2002. Whereas the probability in advanced countries of getting drivers apprehended for traffic violations is between 95% to 100% unlike in Malaysia where it is only between 16% to 25% and increases to 55% during festive periods due to the involvement of all personnel in enforcement programmes and thereby contributing significantly to reduction of fatalities.

A number of issues have been attributed to reasons for accidents, some of this issues include over speeding by many motorist. Therefore, introducing speed limits and road layout markings with good information provision for road users have drastically reduced road offences [5].

In Malaysia, the road transport department known as JPJ (Jabatan Pengangkutan Jalan Malaysia) is a government department under the Malaysian Ministry of Transport that is responsible for issuing Malaysian number plates and its established under the Road Transport Act 1987 and Commercial Vehicles Licensing Board Act 1987 which empowers Road Transport Department Officer, traffic police and other authorities such as local councils to serve summons notices as provided by Section 53 & 115 RTA 1987 and Section 45A VLBA 1987. The major challenge of this department is the fact that road offenders especially internationals often go free without paying fines. This is attributed to the fact that the current system which is referred to as Automatic Vehicle Scanning System (AVSS) is not real time system since it takes some couple of hours for any offence to be updated and hence offenders can get out of the country within few hours without being noticed. Therefore, this study is aimed at bridging the gap that existed in the current system by integrating WAP and web application which will avail the Law Enforcement Agency with that flexibility of reporting cases of offence at the point of committing it thereby reducing the revenue leakage. It will further create an avenue that will reduce traffic offences since no one is allow to go free without being punished. It will also reduce traffic accidents, human suffering, insurance premiums, manpower and financial loss caused by such breach of law.

2 Relevant Work

Road traffic related accident is causing the life of over ten million people worldwide. Although mechanisms such as post-license training have been put in place to educate drivers on rules and regulations of the road, the effectiveness is yet to be ascertained [6].

Broughton [7] examines the link between traffic offences and criminal offences in Great Britain statistically by linking offence data from two national sources: the Driving and Vehicle Licensing Agency (DVLA) and the Home Office. He selected a stratified sample of over 52,000 drivers from DVLA records and matched with the Home Office Offenders Index. Hence, a comparison between the numbers of motoring and non-motoring offences committed drivers between 1999 and 2003. The result shows that there is absolute relationship between the number of motoring and non-motoring offences committed. Also shown in the outcome of the result is decrease in the number of offences when the speeding limit is decreased.

Concerning the applications used for reporting traffic offences on the roads, [8] proposed a supervisory traffic decision support system that connects with real-time traffic control system which serves the Nottingham city. They based their design on Distributed computers Memory Environment DIME where real-time traffic data are send in a fast manner to a centrally control database. They introduce a decision support system that reports results acquired in the process of building the prototype. The system also using variety of approaches such as Short Message Service (SMS), Wireless Application Protocol (WAP) and TCP/IP connection, is design in such a way that the GIS subsystem and the telecommunication subsystem can transmit on-line passenger data to mobile devices.

Zhenjiang [9] developed an agent-based networked traffic control system that controls based on demand. In this system, a traffic signal controller becomes an agent host where different agents reside at different times in response to different traffic condition. The traffic signal is integrated with main
control module, lamp control module to achieve effective, reliable real-time traffic signal control operation. Based on the review of the various use of mobile devices, it is of numerous advantage to derive a WAP application that will handle the transmission of traffic offences to an integrated database or system such that at peak periods when other traffic detection devices will not stand the congestion or the law enforcement officer has detected an offence, it will suffice for quick transmission using the WAP application. Other importance include guarantees that offences committed by violators will be fined and law enforcement can have an easy access to reporting offences.

3 Method
The study uses a sample data set from Malaysian Road Transport Department known as JPJ (Jabatan Pengangkutan Jalan Malaysia). The data comprises of information concerning JPJ staff that were charged with the responsibility of transmitting offences, the type of road traffic offences, information of vehicle owners, information on the vehicle and offences linked to the vehicles. This therefore forms the basics of thousands of records created in the database. Figure 1 is an architectural representation of the design used.

The prototype of the system is developed in a web based environment using ASP.Net and a simulation of the system is done as shown in the result and discussion section.

4 RESULTS AND DISCUSSION
This section highlights the result of the prototype. The JPJ staff is expected to login using a valid user name and password as a system security against an unauthorized user. The system provides for vehicle number to be inserted as shown in figure 2 which on pressing the search button, will login into the JPJ database and retrieve information on the vehicle.

Furthermore the system retrieves the particulars of the vehicle owner and makes provision for an offence to be registered against the owner as shown in figure 3.
Figure 3: Registering offence

Once the information about the offences and vehicle identification is transmitted, the system indicates to the user with a message “offence successfully added” as shown in figure 4.

Figure 4: Successful Registration of offences

Furthermore, the web interface has the ability to access the list of offences committed by a vehicle either sent through the WAP application as in this case or via other means like cameras etc base on the vehicle number as shown in figure 5.

Figure 5: Vehicle Offences listed

An employee can also select among the offences which an owner wants to settle and update as shown in figure 6.

Figure 6: Offence settlement

It is observed that the system is design is integrating the WAP and web application such that there is
precision to update records extracted onsite which will expedite tracking of road offenders before they go away without being notices.

5 Conclusions

Apparently, the real time application for transmitting road offences in Malaysia is based on the integration of both WAP and web application for faster transmission of traffic offences to prevent offenders from getting away without paying fines. Therefore the system though a prototype will save Malaysian Government a huge amount of revenue leakage due to traffic offences. It also complements the tracking system installed at different points especially during peak periods. However, feature enhancement in area of coverage and the transmission channel is needed

References:


