



Information Centralization for Improving the Efficiency of Traffic Interceptor Vehicle

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Abstract: *Design and condition of roads and vehicles coupled with road users' capacity and conduct are the major factors behind road accidents. Certain accidents occur despite best precautions because of defective roads and difficult driving conditions or hostile environment. However, a substantial majority of accidents occur due to human factors both on the part of driver and other road users. The traffic interceptor vehicle is used to control the violations in order to reduce the number of accidents. Efforts are being made to manage the traffic and to automate the working of traffic interceptor vehicle. In order to automating the functioning of traffic interceptor vehicle, some Govt. Departments, Organizations and Pvt. Agencies involved in traffic enforcement should be integrated with through common central database. This research paper will discuss various details used by the traffic interceptor vehicle in order to issue challan to the violators using the information collected from the above said bodies.*

Keywords: TIV, MCRB, ERER.

1. INTRODUCTION

Mobility with safety has to be the guiding principle for any Traffic manager. To achieve this, the Traffic unit needs to build its action plan on the four pillars of Education, Regulation, Enforcement and Road Engineering (ERER) – all well known facets of traffic management. The mantra of ERER, however, needs to become a vision shared by all traffic personnel so that they do not remain moribund and freely contribute newer ideas to enhance mobility with safety. India has a road network of 4.3 million kilometers. National highways constitute about 1.7 per cent of that. However, this 1.7 per cent carries approximately 40 per cent of India's vehicle traffic and is growing rapidly. With this expansion in the highway network, vehicle traffic has come with an equally large increase in road accidents [1].

Initiated in 1995, IRTE (Institute of Road Traffic Education) [2] developed the state of the art traffic enforcement technology vehicle called "Interceptor". The vehicle is known as Traffic Interceptor Vehicle (T.I.V.). This technology was recognized by the Government of India at the National Republic Day Parade in 1996 and implemented successfully in 2001. Designed for practical use by police in capturing video based moving violations including speeds of vehicles, the interceptor is a comprehensive enforcement and education system. The system comprises of suitably customized vehicle platform, enforcement equipment, software, hardware and a data analysis centre. Various objectives of traffic enforcement vehicle [2] are: (i) evidence based traffic law enforcement, (ii) enforcement on a mobile platform, (iii) road traffic education, (iv) primary first aid and rescue, (v) road and infrastructure surveys, (vi) road accident deterrence, and (vii) road safety audit.

Now, the traditional interceptor vehicle needs to be updated and a model is proposed to make the functioning of traffic interceptor vehicle automatic which will include integration of some Govt. and Non-Govt. organizations. According to the model various organizations are

- i. National Crime Record Bureau / Police Departments.
- ii. Vehicle Selling Agencies and Dealers.
- iii. Vehicle Insurance Agencies.
- iv. Vehicle Registration Authorities.
- v. Traffic Police Department.

2. RELATED WORK

The primary role and objective of a traffic enforcement system should be the reduction of fatal and serious injury road crashes, while the secondary considerations would be to ensure the free flow of traffic. In developed countries the enforcement agencies are supported by the road authorities in order to efficiently perform their secondary role of road traffic engineering which forms the basis of efficiency and safety of the movement of traffic. In developing countries like India, the traffic police unfortunately have to play the primary role for traffic engineering, and enforcement for road safety as the secondary one.

Ashok et. al. proposed a model [3] to enhance efficiency of traffic enforcement system [4]. In general, the traffic police issues challans for people who violate the traffic rules. The violators have the choice of either paying the prescribed fine on the spot or go to the court at the prescribed date and time. But now, there is a need to modify the working of Traffic Enforcement System. This paper presents a model for enhancing the efficiency of road traffic enforcement system. In this proposed model, we have used three concepts i.e. locating/identifying the violator (vehicle), Identifying the violence activity and violation enforcement. The violator's vehicle is identified by the traffic enforcement system and also classified based upon various characteristics like length, height, shape etc. After identification of violator's vehicle, it will take snapshot of driver's face and the vehicle's registration number plate, so that these can be used to issue fine ticket to the violator. The violator is informed for the fine ticket with the help of a customized message which will tell about the violence activity, fine amount and last date to deposit the fine. Also, violator has a choice of paying the fine at any court irrespective of the place of issue of fine ticket.

Ashok et al. proposed a model [4] to automate the functioning of traffic interceptor vehicle. The model proposes that some Govt. Departments, Organizations and Pvt. Agencies involved in traffic enforcement should be integrated and a central database is developed which is further used by the traffic interceptor vehicle. The model proposes a database which is to be updated with the help of the above said bodies. Also, it include GPS based map which will provide many services like indication of parking areas, accident prone areas, location of another traffic interceptor vehicles. The model includes a communication system which is integrated with traffic interceptor vehicle for better communication between interceptor vehicles so as to overcome traffic enforcement problems easily and efficiently.

Traffic Management Streamlining Technologies[5] highlights all the available technologies for traffic management in India and abroad like demand and supply side management, supply management techniques, signaling technologies, incident reduction techniques, techniques for better passenger driver information system, technologies for overcoming parking problems and improved road safety related technologies.

P. S. Kharola et. al. presented a case study [6] of Bangalore, India on Traffic Safety and City Public Transport System. The study shows that Vehicle crashes are a major concern in rapidly growing urban agglomerations. They also have attracted the attention of researchers, academicians, and policy makers. A large body of research literature exists that throws light on the magnitude of this problem and also indicates the interventions required. In a vast majority of Indian cities, buses are the main mode of public transport. This research has attempted to find patterns in the crashes involving public buses. While some of the findings fortify the existing understanding of the causes of crashes, the study has, nonetheless, provided empirical evidence for it.

Dinesh Mohan et. al. published a report [7] for road safety in India which is designed to analyze the traffic safety situation in India and to identify counter measures for areas in which the total harm caused by crashes can be substantially and readily reduced. The report focuses on two aspects of traffic safety in India: challenges and opportunities. The first part provides a comprehensive analysis of current traffic safety situation in India. The second part of report outlines several promising counter measures for different areas like, pedestrian or non motorist, motorist, small car etc.

3. PROPOSED APPROACH

This section presents the information provided to the traffic interceptor vehicle in order to catch the violator. This section will discuss about the various entries which can be collected from the various organizations involved in traffic enforcement. This information can be stored/ updated in the database of traffic interceptor vehicle and the main database present at head quarter simultaneously.

The entries from various organizations are as follows:

1. NCRB/Police Department

This department can give details about the theft vehicles and the vehicles involved in criminal activities. Information given by this department includes:

- i. Vehicle Number.
- ii. Registered Owner.
- iii. Date of First Information Report.
- iv. Place of Incident.

Also, on detection of such vehicle, the T.I.V. present on road side can send the following information to the NCRB/Police Department the following details:

- i. Vehicle Registration Number.
- ii. Place of Detection.
- iii. Time.

2. Vehicle Selling Agencies/Dealers

On selling a new vehicle, the vehicle selling agencies can send the following information:

- i. Vehicle Owner Name.
- ii. Date of Purchase.
- iii. Vehicle Temporary Number.
- iv. Address with Contact Number.
- v. Vehicle Type and Model.

3. Vehicle Insurance Companies

These companies provide details about the vehicle which is insured by them. The information provided by these companies is:

- i. Registered Owner/ Care of.
- ii. Vehicle Registration Number.
- iii. Date of Insurance.
- iv. Expiry Date of Insurance.

4. Vehicle Registration Authorities

Vehicles are generally registered at E-Disha centers opened by the Govt. at Mini Sectriates. The authorities provide the following information:

- i. Registered Owner.
- ii. Full Address.
- iii. Nationality.
- iv. Name and Address of Dealer.
- v. Class of Vehicle.
- vi. Registration Number Allotted.
- vii. Date of Registration.

5. Traffic Police Department

The traffic police provide details about the previously fined violators and the last date for submitting the fine. The interceptor vehicle will keep track of last late for fine submission and if the violator exceeds the last date then the interceptor vehicle send the entry to defaulter list. The information used is:

- i. Registration Number.
- ii. Date of Issue of Fine.
- iii. Amount of Fine.
- iv. Last Date for Submission.

These Entries will be stored in the database and updated time to time by the respective organization. At last on integration, the traffic interceptor vehicle will have the following information which is stored in database and is shown in Fig. 1.

- i. Owner of Vehicle/Registered User.
- ii. Vehicle Registration Number.
- iii. Date of Registration.
- iv. Vehicle Pending Issues/Notices.
- v. Vehicle Temporary Number.
- vi. Vehicle Criminal Record.
- vii. Owner's Address and Contact.
- viii. Vehicle Class, Type and Model.
- ix. Vehicle Insurance Details.
- x. Name and Address of Dealer.

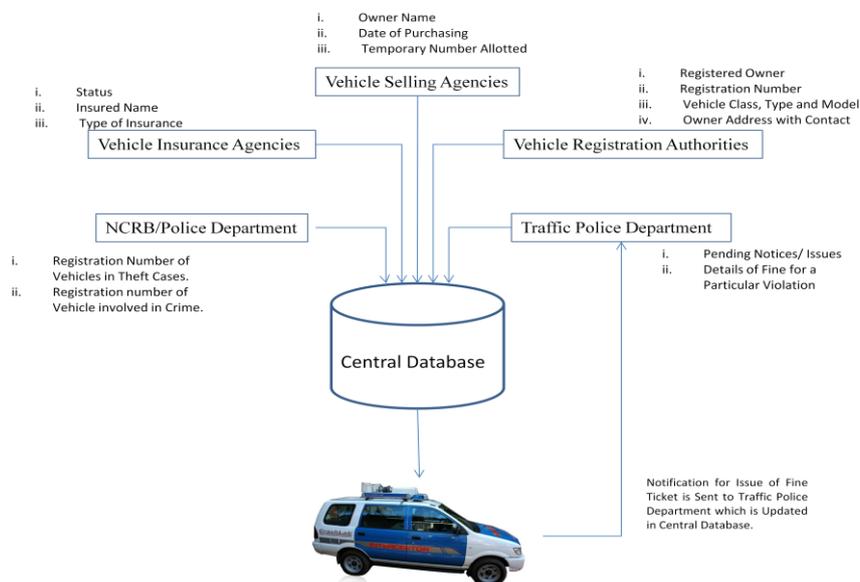


Fig.1. Information Types used by the Traffic Interceptor Vehicle.

4. Conclusion

After logical integration of the organizations, the information provided by the organizations is accessible to the traffic interceptor vehicle. The traffic interceptor vehicle will use this information for issuing tickets to the violators and hence traffic can be managed in efficient way. The information is collected and stored in the central database. With increase in number of registered user and violators, the database will increase in size. To handle this large data, a suitable database management technique should be used and also attention should be paid to its security.

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