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INTELLIGENT TRANSPORTATION SYSTEM IN HYDERABAD AND SECUNDERABAD ALONG NH-44, NH-65

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*Abstract---*

The road traffic is a regular problem of the any developed cities. India is the fast growing country and the Indian cities are having a lot of traffic congestion. To improve the traffic management the road infrastructure improvement is required. One kind of the infrastructure of the road contains the Intelligent Transport Systems (ITS). Intelligent Transport Systems (ITS), used for efficient traffic management in developed countries, that cannot be proper using in India. ITS techniques have to undergo adaptation and innovation to suit the different traffic characteristics of Indian roads. Intelligent transport systems in Hyderabad can be studied about the two main road lines in the city. The project involves the all the (ITS) technologies in the city. The two main road lines are the National Highway-65 and National Highway-44. In this position paper, I present a comprehensive study of all available ITS systems, including both research prototypes and deployed systems. We next pose a set of interesting open research problems in the context of Hyderabad ITS. Though our paper focuses on the Hyderabad traffic scenario because of our hands-on experience of working with it, many of the problems and solutions outlined in this paper are relevant for other developing countries as well

**Key words:** Intelligent Transport Systems, GPS, GSM, VMS, ITS.

## I.INTRODUCTION

Intelligent transport systems ITS is the application of modern information and communication technologies in roads and vehicles to promote safer travel, reduce the congestion, and maximize the capacity of existing infrastructure. Intelligent transport systems vary in technologies applied, from basic management systems such as traffic signal control systems, container management systems, speed cameras to monitor applications like

security CCTV systems, car navigation, automatic number plate recognition, variable message signs, speed cameras to monitor applications, and to more advanced applications that integrate live data and feedback from a number of other sources, such as parking guidance and information systems, weather information systems. India, the second most populous country in the world, and a fast growing economy, is seeing terrible road congestion problems in its cities. Building infrastructure, levying proper taxes to curb private vehicle growth and improving public transport facilities are long-term solutions to this problem. These permanent solution approaches need government intervention. The Government of India has committed Rs.234,000 crores in the urban infrastructure sector [5]. Bus Rapid Transit (BRT), metro rails and mono rails are being built in different cities to encourage the use of public transport. But still there is a steep growth of private vehicles [6]. Some cities like Bengaluru, Pune, Hyderabad and Delhi-NCR, with their sudden growths in the IT sector, also have a steep growth in population, further increasing transportation needs. Meeting such growth with infrastructure growth is seemingly infeasible, primarily because of space and cost constraints. Intelligent management of traffic flows and making commuters more informed about traffic and road status, can reduce the negative impact of congestion, though cannot solve it altogether. This is the idea behind Intelligent Transport Systems (ITS). ITS in India, however, cannot be a mere replication of deployed and tested ITS in the developed countries. The non-lane based disorderly traffic with high heterogeneity of vehicles, need the existing techniques to be adapted to the Indian scenario, before they can be used. Thus ITS in the Indian context needs significant R&D efforts. ITS is an interdisciplinary research area. Building road sensors need embedded systems background. Using mobile phones for sensing need mobile computing background. Analyzing sensed data needs signal processing or computer vision background. Communication among sensors and traffic control authorities need wired or

wireless networking background. The traffic classification and prediction algorithms need machine learning or statistics background. Applications like traffic signal management need transportation engineering background. So the ITS literature is very widespread with papers appearing in seemingly unrelated venues. In this paper, we make a comprehensive list of ITS literature, to give an overview of all existing techniques. We follow it up with a set of open research questions in the context of Indian roads and traffic. Finally, we list a set of public and private sector organizations and academic institutions, who are active in research or application in this field, as meaningful collaborations and technology transfer should happen if research has to make any practical impact.

## II. NEED FOR THE STUDY

In any development country economy will mostly based on transportation. The new technologies are used to decrease the congestion of traffic, travel time, air pollution, to improve the emergency management, toll pricing, and to detect the vehicles. The ITS is essential part in transportation of the developing city. Demand for transport is increasing day by day due to industrialization and urbanization during recent years. But the road infrastructure has not been developed along with the travel demand due to lack of resources. This imbalance is creating problem. To improve the modern technologies is necessary in transportation net works to improve the city as a free of traffic congestion, travel time, parking management etc.

## III. STUDY AREA

The Hyderabad is a huge developed city. One such an metropolitan city is Hyderabad. It is a 5th largest city in India, and it is the capital of both Telangana and Andhra Pradesh states. In Hyderabad the population is more than 12 lacks Million & agglomerated area is 727 sq.kms on the Deccan plateau. In Hyderabad city having an high traffic congestion, incident managements, to erect these problems the ITS implementation is necessary. The Hyderabad metropolitan development authority (HMDA) is decided to implement the ITS technologies in the city. The implementation of ITS will ensure the city with proper facilities and information systems.

### Objectives of the study

The major objectives of this study are

- To relieve the traffic congestion in Hyderabad.
- To improve traffic safety.
- To reduce air pollution.
- To increase the energy efficiency.

- To promote the development of related industries.
- To suggest the ITS technologies to the HMDA.

## Literature review

Intelligent transportation systems by Roger R. Stough and Guang Yang, school of public policy, George Mason University, USA. In this paper is examines the concept of intelligent transportation systems ITS as a method of improving the productivity of existing transportation systems.

The goals of this paper are to explain what ITS is and how it is or is not contributing to improved transportation facilities. The ITS is the application of computer and information technology to transportation systems in the hope of making them more efficient and productive.

In these paper indicates and examines in some detail a broad range of ITS technologies and the benefits. This benefit includes improved mobility, travel time, throughput, cost savings, improved safety, air quality and economic development. In this part of the paper the benefits of ITS is accessed. The assessment is organized around four category synthesis of the list of user services are Advanced Traveler Information Systems (ATIS), Advanced Traffic Management Systems (ATMS), Advanced Public Transportation Systems (APTS), and Advanced Commercial Vehicle Operations (CVO). In ATIS collect and synthesize traffic information from a number of sources like video surveillance and disseminate it to travelers via radio telephone/ mobile phones, television, and the internet. ATMS is the mobility by improving the flow of traffic during non incident conditions, Improved communications and better sensor supported traffic information enable traffic managers to adjust traffic control devices like dynamic signal timings, variable message signs which in turns the improves flow conditions in both congested and uncongested conditions. APTS is like other transportation modes can improve travel time by more efficient vehicle operation and by improving transportation networks by using automatic vehicle location (AVL) systems based on GPS. CVO is reducing the time of involved in transporting cargo in an important competitiveness. The ITS and CVO services can be expected to reduce the commercial vehicle travel time.

How rapidly should developing countries implement intelligent transportation systems (ITS) to solve the growing urban traffic congestion problem, by Mandar Khanal, Boise State University. This paper examines how to implement the intelligent transportation systems to develop the countries like India to reduce the traffic congestion problem in urban cities.

Many newly developing countries are growing rapidly. One example is India, currently the second most populous country in the world. According to the Indian Ministry of Urban Development, from 1981 to 2001, the population in six major Indian cities increased twofold while motor vehicles increased eightfold. Such rapid growth in vehicles without a comparable growth in transportation infrastructure leads to increasing traffic congestion. Cities in India are already considered congested today, and are going to be even more congested in the coming years since the rate of urbanization in India in 2006 was only 29% and is expected to grow to 41% by 2030. The corresponding rates for the world and Asia as a whole are projected to be 61% and 55%, respectively.

**SURVEY AND DATA COLLECTION**

Initially Primary and secondary survey was conducted for identification of areas facing transportation problem and partitions of each area. Based on the survey finally I have taken two stretches in two different area namely crowded and wider areas. For those two survey stretches I have done two different types of surveys and results also showed.

**IV. RESULTS**

The results and observations are shown for along the NH-65 and NH-44 throughout the Hyderabad areas with seven variations of categories for both the areas.

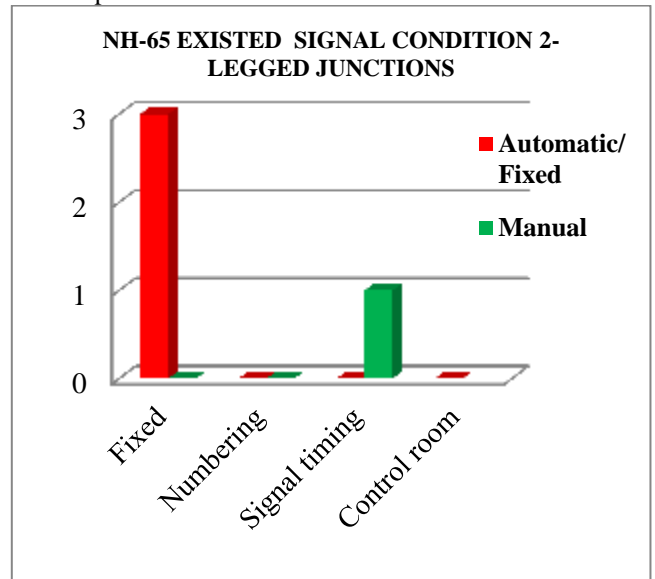
In Hyderabad ITS developed now a days. The ITS is installed mostly the congestion places to control the traffic. The data will be collected along the stretch of NH-65, NH-44 throughout the Hyderabad.

The following ITS observations are made in Hyderabad:

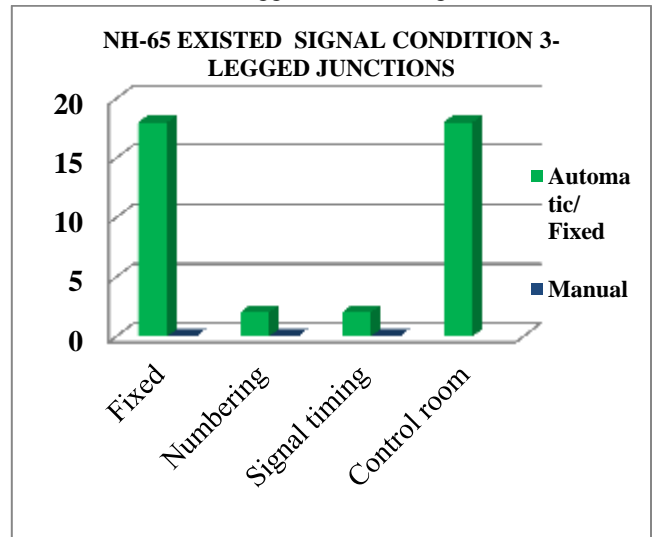
**Advanced Traffic Management Systems (ATMS) are**

- Traffic signals,
- Variable message signs.

- Vehicle detectors.
- Speed detectors



Stretch of NH-65 2-Legged Junction Signal Condition



**Observations:**

The signals are the two types operating are there in the city traffic. The signals are actuated and fixed type signals are using in Telangana. I have observed Type of Signals-SOLAR & AUTOMATIC, Some places Virtual loop cameras used for presence or absence of vehicles, these cameras changes the signals time depends on vehicles volume, time. In some signals having a control room. The signals are actuated and fixed type signals are using in Telangana. Signal timing also some of the signal having a fixed time signals are used.

### Automatic vehicle location based on GPS:

Public transportation ITS technologies are using Automatic vehicle location based on GPS and GSM in Hyderabad. The system consists of four modules: BUS Station Module, In-BUS Module, BASE Station Module and BUS Stop Module. Equipped with PC and GSM modem, BUS Station Module sends the initialization information containing the bus number and license plate number to In-BUS Module and BASE Station Module using SMS. The microcontroller based In-BUS Module consisting mainly of a GPS receiver and GSM modem then starts transmitting its location and number of passengers to BASE Station Module. BASE Station Module equipped with a microcontroller unit and GSM modems interfaced to PCs is designed to keep track record of every bus, processes user request about a particular bus location out of BUS Station and updates buses location on bus stops. BUS Stop Module is installed at every bus stop and consists of a GSM modem, memory unit and dot matrix display all interfaced to a microcontroller. This module receives buses location information coming towards that stop from BASE Station module and displays the information on a dot matrix display. The results have shown that the developed system is useful for facilitating people using public transportation services.

### V. RECOMMENDATIONS

The recommendations are given to the not only the stretch it applies along the city of the Hyderabad. The recommendations are given based on types of ITS technologies.

#### Signals

Total 122 junctions are there in NH-44, NH-65&Major junctions in Hyderabad

- 37 junctions are having fixed signals, 14 junctions are having solar signal. We have to implement the 37 fixed signal junctions are replacing with solar signals. Solar signals mainly implemented in 2 legged & 3 legged junctions.  
Ex: Dhullapally X-road, Kompally, Jeedimetla.
- 11 junctions are having manual signals, 36 junctions are having Automatic signals. We have to implement the 11 manual signal junctions are replacing with Automatic signals, by operating the Control room.

Automatic signals mainly implemented in 3-legged & 4-legged junctions.

- Density control room using IR sensors and microcontroller & Sydney coordinated adaptive traffic system. We have to implement the major 4-way & 5-way junctions  
Ex: Khairathabad, LB Nagar, Dilsuknagar etc...
- We can reduce the traffic congestion, accidents, delay of time& money.

### CONCLUSIONS

Following conclusions are drawn from this study: Signals: total 122 junctions are there in the stretch of NH-44, NH-65.in this 2-legged, 3-legged, 4-legged junctions are there in NH-44, in NH-65 2-legged, 3-legged, 4-legged and 5-legged junctions are present.

- In the Stretch of national high way-65 along the city .the signals solar automatic signals are used in the junctions.
- The signals are the two types operating are there in the city traffic. The signals are actuated and fixed type signals are using in Hyderabad.
- Some places Virtual loop cameras used for presence or absence of vehicles, these cameras changes the signals time depends on vehicles volume, time. In some signals having a control room. The signals are actuated and fixed type signals are using in Hyderabad. Signal timing also some of the signal having a fixed time signals are used.
- Stretches of national highway-44 the signals are mostly manual type of signals are used.
- Signal timing also some of the signal having a fixed time signals are used.
- The signals are actuated and fixed type signals are using in Hyderabad. Signal timing also some of the signal having a fixed time signals are used.
- The variable message sign at tank band is not working in the city.
- The variable message sign is not using properly throughout the city.
- The CCTV cams are will detect the vehicles in the NH-44 the CCTV cams are installed high traffic junctions only

### REFERENCES

- Roger r. Stough and Guang Yang, “intelligent transportation systems”, school of public policy, George mason university, USA
- Dinesh Mohan, “Intelligent Transportation Systems (ITS) And The Transportation System” Transportation research and injury prevention programme, Indian Institute of Technology Delhi, India.
- Rijurekha Sen and Bhaskaran Raman “Intelligent Transport Systems For Indian Cities” Department of Computer Science and Engineering, Indian Institute of Technology, Bombay.
- Praveen Kumar, Varun Singh, Student Member, IEEE, and Dhanunjaya Reddy, “Advanced Traveler Information System For Hyderabad City”, Department of Civil Engineering, Indian Institute of Technology, Roorkee, India .
- Hyderabad Traffic Integrated Management System(HTRIMS),HYDERABAD
- “Hyderabad Wikipedia”
- “The Hindu news paper”
- “Times of India News Paper”
- “Traffic Engineering and Transport Planning” by Dr.L.R.Kadiyali, Khanna publishers (2012).
- “Fundamentals of Intelligent Transportation systems planning”. M A Chowdhary and A Sadek Artech House Inc., US, 2003.