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Case Study: on Reduction of Traffic Congestion by Using Intelligent Transportation System

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Abstract—*India is the second biggest nation in the classification of populace. With the expanding populace the utilization of the vehicles additionally builds, prompting basic weight on activity administration in the metropolitan urban communities and towns of the nation. In India, a quickly developing economy, the issue is intensely felt in every real city. This is fundamentally on the grounds that framework [2] development is ease back appeared differently in relation to improvement in number of vehicles, because of space and cost requirements. For controlling the development all over the place some regular methodologies were used like using action lights and development indications, development policemen and backhanded. In this paper we will examine the current methods which will help India for controlling the movement on the streets.*

In this way, Intelligent Transport Systems (ITS), utilized for productive activity administration in the created nations and in addition in India however can't be utilized as it is in numerous urban areas of India. ITS procedures need to experience adjustment and advancement to suit the differentiating movement qualities of Indian streets. Sharp action structure (ITS) applies correspondences and information development to give answers for this stop up and other development control issues.

1. INTRODUCTION

India, the second most swarmed country on the planet, and a rapidly creating economy, is seeing horrendous road blockage issues in its urban communities. Building system, gathering honest to goodness obligations to check private vehicle advancement and improving open transport workplaces are whole deal answers for this issue. These perpetual arrangement approaches require government intercession.

Movement is the real worry in the created and creating nations. Each nation has their standards and directions to control the movement. In the earlier decade the thickness of vehicles had developed the avenues provoking road movement, blockage and setbacks. Customary techniques were utilized for controlling the movement i.e. sending activity lights, movement signs, movement policemen and indirect. In any case, these strategies are getting out of date step by step. In the time of advancement, sharp and adaptable apparatus should be used to control the development. A few urban areas like Bangalore, Pune, Hyderabad and Delhi-NCR, with their sudden developments in the IT segment [5], likewise have a lofty development in populace, additionally expanding transportation needs. Meeting such advancement with system improvement is clearly infeasible, mainly in light of room and cost impediments. Canny administration of activity flows and making explorers more educated about movement and street status, can lessen the negative effect of clog, however can't unravel it through and through. This is the idea behind Intelligent Transport Systems (ITS). ITS in India, regardless, can't be an insignificant replication of passed on and attempted ITS in the made countries.

2. ITS APPLICATIONS

Indian activity can benefit from a couple of possible ITS applications. One plan of usages is for movement organization.

- Junction control - At junction focuses, picking the total banner cycle and the split of green conditions among different gush, is a champion among the most principal activity organization applications [1].
- Incident acknowledgment - Spot regions of incidents or vehicle wear out is key to manage the emergency conditions.
- Wagon classification - Perceptive what kind of vehicles, and in what degrees, handle a particular road broaden, picks fitting road width and black-top materials.
- Monitoring - Contamination and road quality watching is crucial for taking therapeutic measure.
- Revenue accumulation - Toll charges for framework support and fines for manage implementation should be gathered.
- Historical traffic information - Long term information designs new framework, align traffic flag times, and

include open transport thus another arrangement of utilizations can help the workers on streets.

- Congestion maps and travel time gauges - These assistance workers in course determination.
- Public transport data -Instruction about arriving of open transport helps in choice of development mode and decreases hold up lags.
- Particular vehicle organization- Clutching information about ceasing spots or checks of carbon impression, help proprietors of private vehicles.
- Accident taking care of - Accident benefits after mishaps are a urgent need.

3. RELATED WORK

Clog out and about is the real issue now nowadays. In India there are a few reasons which ascribe to abnormal state of clogs [2] on the streets. The single street is shared by various kinds of vehicles. There by making clog. In created nations the particular path is implied for particular transport vehicle following path train. Along these lines, there is less possibility of blockage on the streets. In the created nations ITS [3] had assumed an imperative part and supported in decrease of clog on the streets and enhance explorer's understanding. While proceeding onward the street if there is clog which causes mishap, at that point workers require be educated that there is blockage ahead.

4. KEY BENEFITS OF USING ITS

The vast majority of the created nations transportation has been alleviated and demonstrated usage of ITS. The principle thought process of the ITS is to give the general population security, natural encourages and some more. A portion of alternate advantages of utilizing ITS are as per the following:

4.1 Increasing Safety

The primary thought process of utilizing ITS is to give people in general security on the streets. In the previous quite a while the pattern of driving had been changed, accordingly expanding the street mischances. Along these lines, to stay away from or get guided before any episode to happen the ITS assumes a crucial part. ITS will control the client through voice and in addition gives an alarm to the client about the activity or clog ahead, so the client may act in like manner. With this the proportion of undesirable mishaps will be diminished to some degree.

4.2 Delivering Environmental Benefit

The primary thought process of utilizing ITS is to give people in general security on the streets. In the previous quite a while the pattern of driving had been changed, accordingly expanding the street mischances. Along these lines, to stay away from or get guided before any episode to happen the ITS assumes a crucial part. ITS will control the client through voice and in addition gives an alarm to the client about the activity or clog ahead, so the client may act in like manner. With this the proportion of undesirable mishaps will be diminished to some degree.

4.3 Capacity / Throughput

ITS is furthermore keeps a track on the blockage before it happened. All it is done by getting the amount of vehicles on each and every way. On the off chance that the quantity of vehicles is more on single path, at that point. ITS takes a choice to course the movement onto another path, so diminishing the danger of blockage of the specific path. It additionally keeps tracks on the limit of the vehicles running out and about at a specific time on specific path. It will likewise send an alarm to client that at some specific time the clog will feel high on some specific path.

4.4 Information Dissemination Delivering

Conveying the report of the street about the clog there are numerous different approaches to present to client

5. ENHANCING MOBILITY AND CONVENIENCE

Clever transportation framework can be improved in satellite-based vehicle route and different other application which can convey the ongoing movement data to the client. Customer can check the status of the development and other information where they are heading before leaving from their homes.

6. APPLICATIONS / SERVICES / FUNCTIONAL AREAS OF ITS

There are some applications associated with the use of ITS which are as follows:

Table 1: Applications and categories of its

S. No.	ITS Category	Specific ITS Applications
1	Propelled Traveler Information System (PTIS)	Ongoing Traffic Information Course Guidance/Navigation Systems Roadside Weather Information Systems
2	Propelled Transportation Management Systems (PTMS)	Activity Operations Centers Dynamic Traffic Signs
3	ITS-Enabled Transportation Pricing Systems (ITSETPS)	Electronic Toll Collection Variable Parking Fees
4	Propelled Public Transportation System (PPTS)	Impact Avoidance Intelligent Speed Adaptation
5	Completely Integrated Intelligent Transportation (CIIT)	Ongoing Traffic Status Dynamic Traffic Control Frequency Response

6	Propelled Traffic Management System (PTMS)	Traceability and wellbeing of business vehicles, for example, trucks, vans, and cabs.
7	Business Vehicle Operations (BVO)	Impact Warning of the vehicles
8	Propelled Vehicle Control Systems (PVCS)	Give Information about Remote streets by means of Radio.
9	Progressed Rural Transportation System (PRTS)	

7. NEED OF ITS IN INDIA

The economy of India when stood out from world is rapidly growing along these lines extending the use of autos on Indian urban boulevards. In 2011-12 alone, 20.4 million mechanized vehicles were taken in India [4]. While a little scale ITS endeavors had been exhibited in various urban groups in India including Delhi, Pune, Bangalore, Chennai and Indore for toll gathering, halting information, electronic pilgrim information et cetera [5]. Beside these applications which had been passed on, there are more ITS thoughts which may be useful for Indian circumstance like emergency organization, blockage organization, impelled development organization systems, pushed wayfarer information structure, business vehicle errands, moved vehicle control systems et cetera. The present applications show a hidden potential for the organization of ITS in India. Regardless, there are a couple of challenges in the sending of ITS in India. ITS use can't be finished by mimicking what is presently been done in the made countries by virtue of the extent of social, lifestyle and physical differences among them. In India the different extent of vehicular paces (walker, bicycle, LMV's, HMV's, animal drawn trucks), wide arrangement of vehicles (tallying individual by walking action) and poor way prepare (mostly happening in view of the underlying two parts and not entirely on account of social reasons) and high people thickness makes allotment of Western ITS models and outline troublesome.

A segment of the moves ought to have been made to address the troubles of ITS in India which join the settings up the totally viable Traffic Management Center, making national ITS data document, making models and figuring's for ITS, propelling national ITS standard for different ITS applications and do collaboration between the academic group, organizations and administrative workplaces to deliver more interest. These can be proficient through the difference in advancement, structure and social designs.

In India there is need to improve the boulevards and road establishment to decrease down the action on congested courses. In metropolitan urban groups the issues have been settled by building flyovers and widening the lanes. In any case, the establishment is restricted by the space goals of avenues of India.

8. CONCLUSION

Activity in India can be described by the substantial clog, low quality of streets and muddled movement. ITS systems that were produced for the created nations, doesn't hold here. ITS in the Indian situation falls flat owing to absence of turnpikes, non-consistency of vehicle speed and the paths made by the ITS methods in the created locales. Establishment of settled sensor systems include tremendous establishment and upkeep cost. There is requirement for the systems that consider the qualities of the Indian streets. Utilization of sensors like GPS, Microphone, Wi-Fi and camera in the cell phones can be utilized to anticipate the activity conditions and entry time of the vehicle at the goal. Introducing the framework on the Indian streets is confined by the space. Since there are part of difficulties stay to be settled for the completely sending of ITS on Indian streets.

REFERENCES

[1] W. McShane, R. P Roesss, and E. Prassas. Traffic engineering. In *Prentice-Hall, Inc*, 1998.

[2] Bhoraskar, R.; Vankadhara, N.; Raman, B.; Kulkarni, P., "Wolverine: Traffic and road condition estimation using smartphone sensors," Communication Systems and Networks (COMSNETS), pp.1,6, 2012

[3] 19th ITS World Congress, “Congress Report”. In Vienna, Austria, 2012.

[4] http://www.knowindia.net/auto.html

[5] http://www.unescap.org/tid/projects/tiri_nag.pdf

[6] R. Sen, B. Raman, and P. Sharma. Horn-ok-please. In Mobisys, June 2010.

[7] R. Sen, P. Siriah, and B. Raman. Roadsoundsense: Acoustic sensing based road congestion monitoring in developing regions. In IEEE SECON, June 2011.

[8] V. Jain, A. Sharma, and L. Subramanian. Road traffic congestion in the developing world. In ACM DEV, 2011.

[9] W. McShane, R. P Roesss, and E. Prassas. Traffic engineering. In Prentice-Hall, Inc, 1998.

[10] S. Cheung, S. Coleri, B. Dundar, S. Ganesh, C. Tan, and P. Varaiya. Traffic measurement and vehicle classification with a single magnetic sensor. Paper ucb-its-pwp-20047, California Partners for Advanced Transit and Highways (PATH), 2004.

[11] B. Coifman and M. Cassidy. Vehicle reidentification and travel time measurement on congested freeways. Transportation Research Part A: Policy and Practice, 36(10):899–917, 2002.

[12] Timothy Hunter, Teodor Moldovan, Matei Zaharia, Samy Merzgui, Justin Ma, Michael J. Franklin, Pieter Abbeel, Alexandre M. Bayen in Scaling the Mobile Millennium System in the Cloud. SOCC’11, 2011.

[13] Dean Zabrieszach in “ITS activity in Australia”. In ISO TC 204, WG 9 Meeting, Seattle, Washington, USA, 2013.

[14] 19th ITS World Congress, “Congress Report”. In Vienna, Austria, 2012.

[15] Roy, S.; Sen, R.; Kulkarni, S.; Kulkarni, P.; Raman, B.; Singh, L.K., "Wireless across road: RF based road traffic congestion detection," Communication Systems and Networks (COMSNETS), 2011 Third International Conference on, vol., no., pp.1,6, 4-8 Jan. 2011.

[16] P. Angin, B. Bhargava, and S. Helal. A Mobile Cloud Collaborative Traffic Lights Detector for Blind Navigation. First MDM international Workshop on Mobile Cloud, 2010.

[17] Thiagarajan, Arvind, Lenin Ravindranath, Katrina LaCurts, Samuel Madden, Hari Balakrishnan, Sivan Toledo, and Jakob Eriksson. "VTrack: accurate, energyaware road traffic delay estimation using mobile phones." In Proceedings of the 7th ACM Conference on Embedded Networked Sensor Systems, pp. 85-98. ACM, 2009.

[18] J. Chen, M. Arumaithurai, L. Jiao, X. Fu, and K. K. Ramakrishnan. COPSS: An Efficient Content Oriented Publish/Subscribe System. ANCS, 2011.