INTELLIGENT TRANSPORTATION SYSTEM AND ANPR USER FEE COLLECTION SYSTEMS

Overview

- In India, a fast-developing economy, the problem of road **traffic congestion** is getting aggravated in every major city.
- Infrastructure growth is slower as compared with growth in number of vehicles, due to space and expense imperatives.
- The increasing transportation capacity by building new roads and upgradation of existing infrastructure may not be the only suitable solution in many urban areas as a result of the high costs as well as environmental and associated social issues.

Need for an Intelligent Transport System

- **The Intelligent Transportation System has emerged as an effective traffic management tool, based on a combination of information and communication technologies.**
- Helps to improve the quality of service and safety for the users of both public transport and personalized vehicles
- Leads to improved mobility as well as road safety
- Enhances transport productivity
- Saves energy
- Reduces carbon footprint
- Facilitates effective land management

Current Status

User Fee Collection

- Currently, India has an operable National Electronic Toll Collection (NETC) called FASTag supplied and deployed by the Indian Highways Management Company Ltd. (IHMCL)
- The system is based on RFID technology, 720+ electronic toll plazas across the country, as well as On-Board-Units (OBU) in vehicles
- **NHAI has accelerated the plan to launch a GNSS-based tolling** system by opening a tender for a technical consultant to develop a roadmap on how this tolling system can unfold
- NHAI has taken various revolutionary steps in consultation with the Reserve Bank of India and NPCI. **The authority has launched two mobile apps – My FASTag and FASTag Partner**. The FASTag Partner app will enable more than 6,000 dealers in the country to access a single platform and activate the FASTag at the time of delivery of the vehicle
- **NHAI has engaged a consultant for** preparing a roadmap for implementation of GNSS- based tolling in India

ITS

- **Union Minister of Road, Transport and Highways launched first ITS on 6 lane Eastern Peripheral Expressway at Dasna, Ghaziabad on 23rd Dec 2021.** Also, ITS implantation is under advance stage for Trans Haryana Expressway project
- NITI Aayog and Geneva-based International Road Federation signed an agreement recently to cooperate in the field of Intelligent Transportation Systems and to design a policy framework for the same
- **IOT based real time equipment health status and toll data lake** though toll monitoring and control center (TMCC)has been established by NHAI for effective monitoring of critical equipment and repository for all data related to users

Applications of ITS

Advanced traffic management system, Advanced traveler information system, tracking vehicular movement using camera, Route Patrolling and emergency calling and rerouting method

Existing Policy / Standard

- Under the ITS, AIS guidelines have been formulated by the Automotive Industry Standard (AIS) with the Automotive Research Association of India (ARAI) as AIS 140
- **A scheme guideline for inclusion of State toll plazas under FASTag programme was launched in 2019**, providing financial assistance to State Governments in terms 50% of the CAPEX cost upto Rs 20 lakhs per plaza

Challenges

- "An ITS solution in India needs to be cost effective, easy to implement and have less human intervention. Due to **unavailability of skilled personnel** on the ground level of the traffic police, technology should be adapted as per the local language of the populace
- **There is a lack of definite guidelines & regulations for nationwide ITS architecture and framework**. ITS systems cannot just be modelled on existing successful ITS solutions of other nations due to basic inherent driver behaviour and conditions in India
- The higher the pressure on the infrastructure, the larger is the challenge for deployment of technology. In most cases, deployment of available technologies will hardly create any significant impact. **What India needs is improvisation of existing technologies, a 'desi' version – a customized deployment rather than an as-is implementation**

Upcoming technologies and Way forward

- **The MoRTH has also finalized a global positioning system (GPS)-**based technology for toll collection to ensure seamless movement of vehicles across the country. With this, the country is expected to become "toll booth-free" within the next two years. Under the new technology, the toll amount will be deducted directly from bank accounts based on the movement of vehicles
- **NHAI has also been actively looking at alternative ETC technologies such as smart cards with on-board units (OBUs),** which allow a user to punch in a smart card and zip through the toll plaza. While there is flexibility in the payment mechanism associated with this technology, the high costs associated with OBUs can make it very expensive to deploy
- **Another noteworthy technology involves the recognition of license number plates, allowing for automatic toll deduction.** This technology is currently being deployed in some of the advanced economies around the globe. It offers flexibility in the payment mechanism and is linked to the user's account.
- **Intelligent car toll solutions use smartphone apps or in-vehicle technologies. Automatic number plate recognition (ANPR)**
- **Emergency vehicle notification systems, Automatic Road enforcement, Advanced Driver Assistance System (for emergency vehicles)**
- ***GNSS/GPS tolling*** - India operates its own satellite navigation system and can also take advantage of the other GNSS constellations using multi-constellation GNSS chipsets for developing the system
- **Going forward, FASTag can also be used for contactless enforcement of the Motor Vehicles Act** without stopping vehicles. Seeking to support its vision of "One Nation, One FASTag", the government's future roadmap also entails the integration of FASTag with the VAHAN portal, and GSTN and toll plaza transaction processing APIs