



**NITI Aayog**

(National Institution for Transforming India)  
Government of India

# ITS Deployment & Enforcement

Challenges and Opportunities

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# Indian Scenario and World



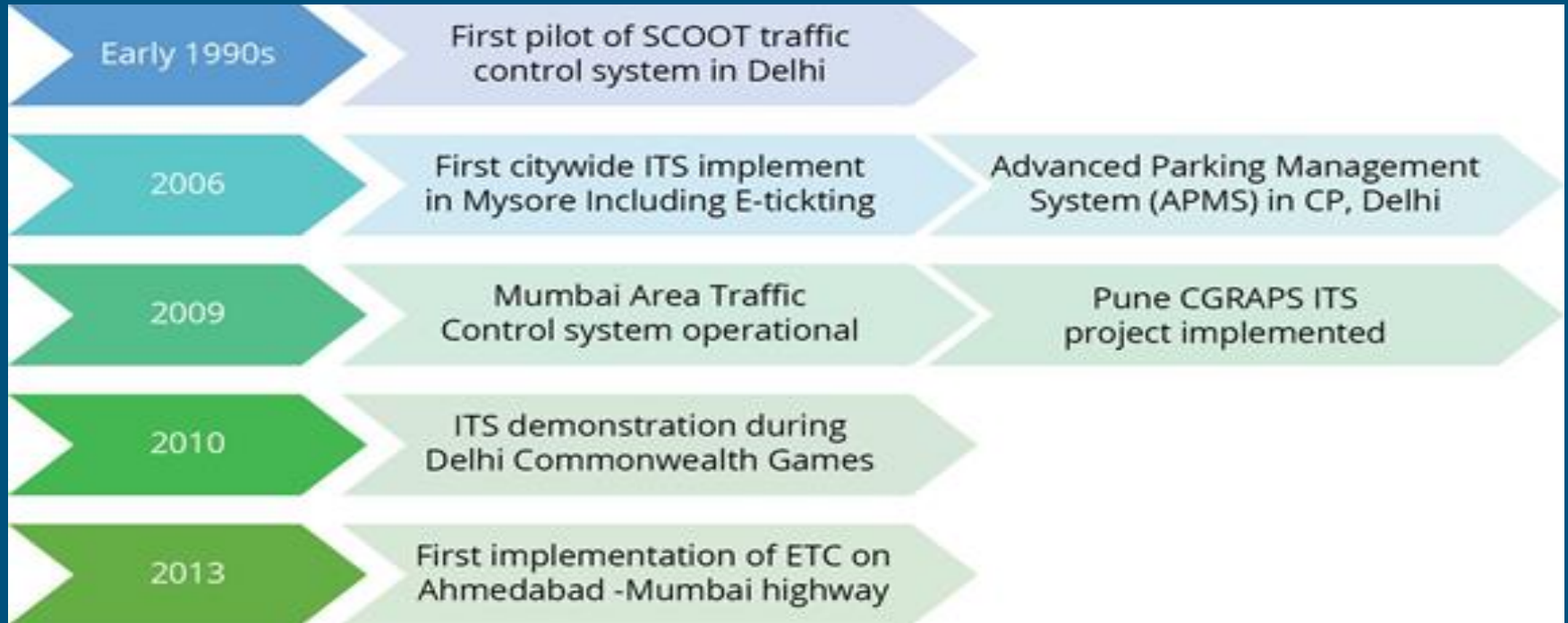
- **Constrained growth of infrastructure due to exponential demand on mobility**
- **Indisciplined traffic movement due to various reasons**
- **Adaptation & innovation of ITS techniques to suit traffic characteristics**
- **Need for boosting R&D efforts**

# Challenges In India



- **Need for enhanced maintenance of infrastructure**
  - Brings inefficiency of ITS services
- **Need for suitable guidelines and regulations**
  - To enable rapid physical rollout of ITS
- **Need for comprehensive approach for institutional governance**
  - For better multimodal coordination and connectivity, and efficient city-wide traffic operations
  - Address incompatibility issue for the integration of ITS applications with international ITS architecture.

# Milestones in Development of ITS in India



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# Deployment of ITS Systems in India

# Public Transport: Mysore

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- Aim: Relieve road congestion by promoting usage of bus services.
- Coverage: 500 buses, 105 bus stops, 6 bus terminals, 45 platforms
- Partners: Developed under the Sustainable Urban Transport Programme (SUTP) with financial assistance from the World Bank, the Government of India's Jawaharlal Nehru National Urban Renewal Mission (JNNURM) fund and the Government of Karnataka.
- Technology: Passenger Information System (PIS), Commuter Web Portal, Automatic Vehicle Location (AVL) using GPS, and Enterprise Management System. (EBTC, 2017-18)

# Signalization & Traffic Management: Mumbai, Pune

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- The Intelligent Adaptive Traffic Control System (ITACA) Mumbai for approximately 255 traffic signals with two command control centres.
- Indigenous system CoSiCoSt (Composite Signal Control Strategy) for poor lane discipline and two-wheelers was deployed at Pune
- The measure of effectiveness (MoEs) in Pune reported an average travel speed increase in the range of 2% to 12% and reduction in average delay in the range of 11% to 30%



# Electronic Toll Collection

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- The National Highways Authority of India (NHA) has developed two mobile apps (MyFASTag and FASTag Partner) that enable online transactions for an ETC system (EBTC, 2017-18).
- Currently, ETC in India is based on RFID (Radio-Frequency Identification) technology
- The NHA is parallelly exploring possibility of other technologies of ETC such as GPS based, NFC cards, MLFF and dynamic toll pricing etc.



# Citywide Surveillance: Bengaluru

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- The B-TRAC (Bengaluru Traffic Improvement Project) initiative in Bengaluru began in 2010, with a focus to install ITS for digital surveillance and enforcement cameras.
- It includes a Traffic Management Centre with a variety of installations including vehicle-actuated signals and the ability to remotely update signal timings.

# Parking Management: Pune, Thiruvananthapuram

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- e-PARK uses sensors at the gate boom barrier and variable message signs (VMS) to inform availability status of parking lots and has installations in Pune and Thiruvananthapuram.
- Technology Deployed: Individual Bay monitoring, pre-trip Web-based Information Systems, Variable Message Sign - assisted display boards for driver guidance
- Smart mobility cards for seamless travel, collision avoidance technologies for railways (several pilots have been conducted for indigenous technologies), automated number plate recognition (ANPR) technologies

# Research & Development

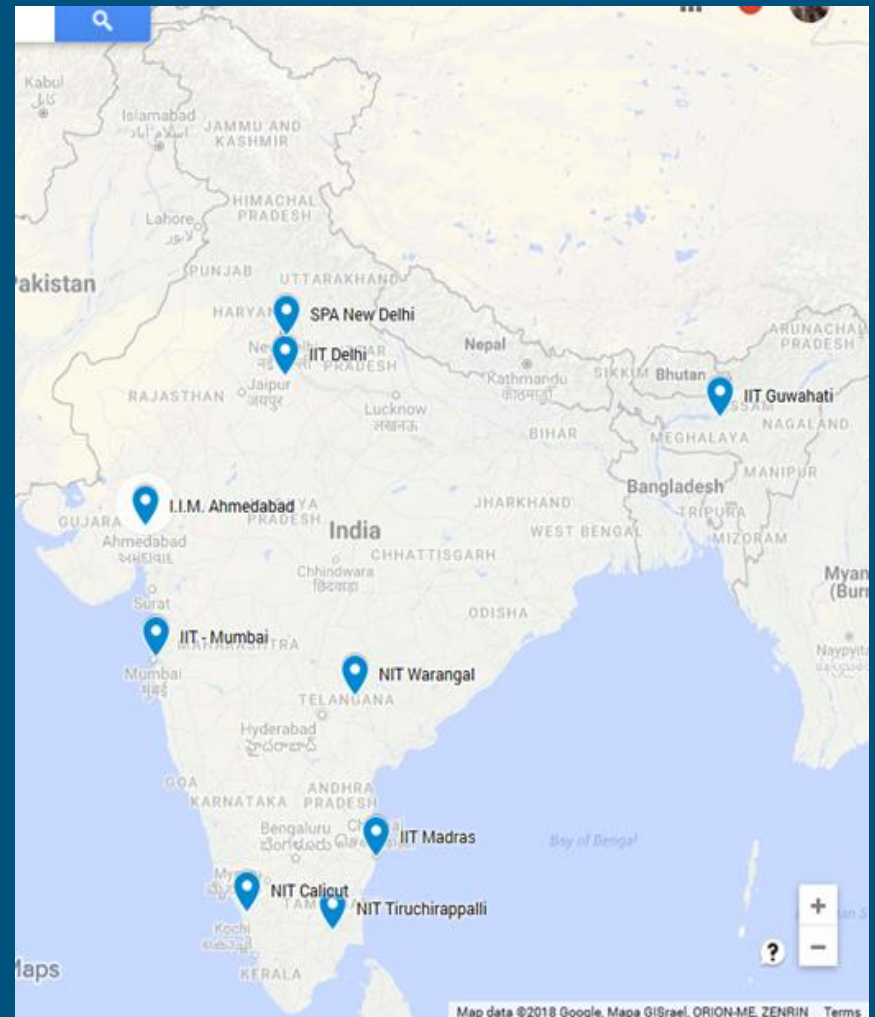
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- By leading academic institutions like Indian Institute of Science (IISc.) Bengaluru, Indian Institute of Technologies (IITs)
- The Government R&D organisation C-DAC also has an ITS unit that undertakes key research in such technologies.
- Several private organisations: key products in ITS areas like ETC, parking management, ANPR systems and wireless communication devices
- Large Potential in:
  1. Adaptation of signal actuation to Indian conditions
  2. Work zone traffic control and incident management
  3. Road safety risks and occurrence, accident avoidance

# Capacity Building

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Institutes of higher learning which teach ITS courses in the country and build potential capacities in the ITS sector



# Key Principles for Deployment

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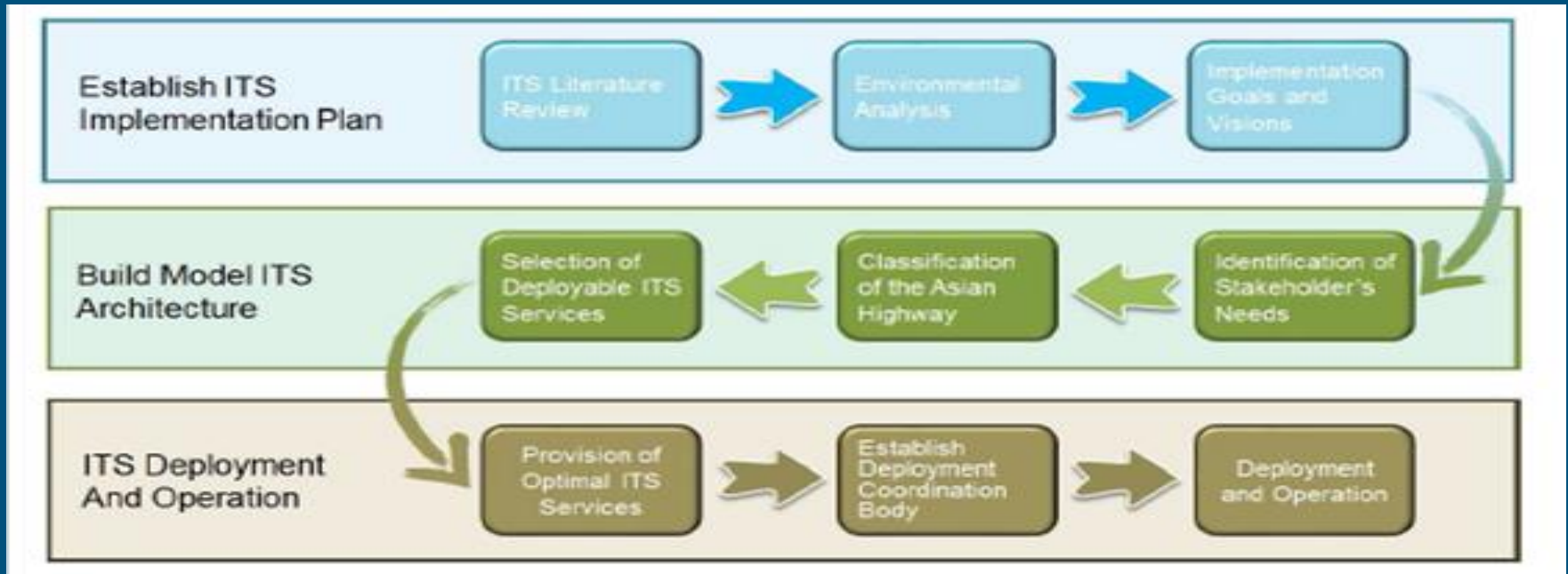
- 1. Promote equality of access**
- 2. Facilitate inter-modality**
- 3. Adherence to Global standards**
- 4. Promote consistency across modes and geography**
- 5. Promote data sharing**
- 6. Deliver interoperability**
- 7. Support continuity of service in a seamless manner**
- 8. Encourage innovation**
- 9. Transparency**



# Recommended Process for ITS Deployment

## Steps

- Set realistic goals and visions for model ITS deployment
- Develop a suitable ITS architecture to implement them
- Deploy and operate the model ITS services





# ITS Standards, Security and Innovation

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## ITS Standards

## ITS Security

- Big Data and Privacy: regulatory framework, secure authentication and authorization procedures
- National Data Repository

## Financing and Collaboration for Expansion of ITS

- Dedicated funding mechanism for financing ITS initiatives
- Encouraging major automobile manufacturers to participate in R&D projects and envision the commercialization of in-car and other ITS

# Institutional Framework in ITS

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## **National ITS Association**

- To develop the ITS Architecture for fostering the ITS ecosystem for multiple stakeholder management

## **National Institute of Intelligent Transport System and Research**

- To further countrywide research and pilot projects for deployment

# Capacity Building in ITS

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## Teaching , Research and Dissemination

- Development of ITS courses & curriculum at graduate and post-graduate levels
- Development of course content in sync with industry, research organizations and global best practices
- Establishment of ITS Labs

# Capacity Building in ITS

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## Training

- Continuous Training Programmes for skilling and reskilling
- Faculty Development Initiatives
- Short term certificate courses, Seminars

**Manuals and Toolkits for Professionals, Policy Planners and Government officials**

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**Thank You**