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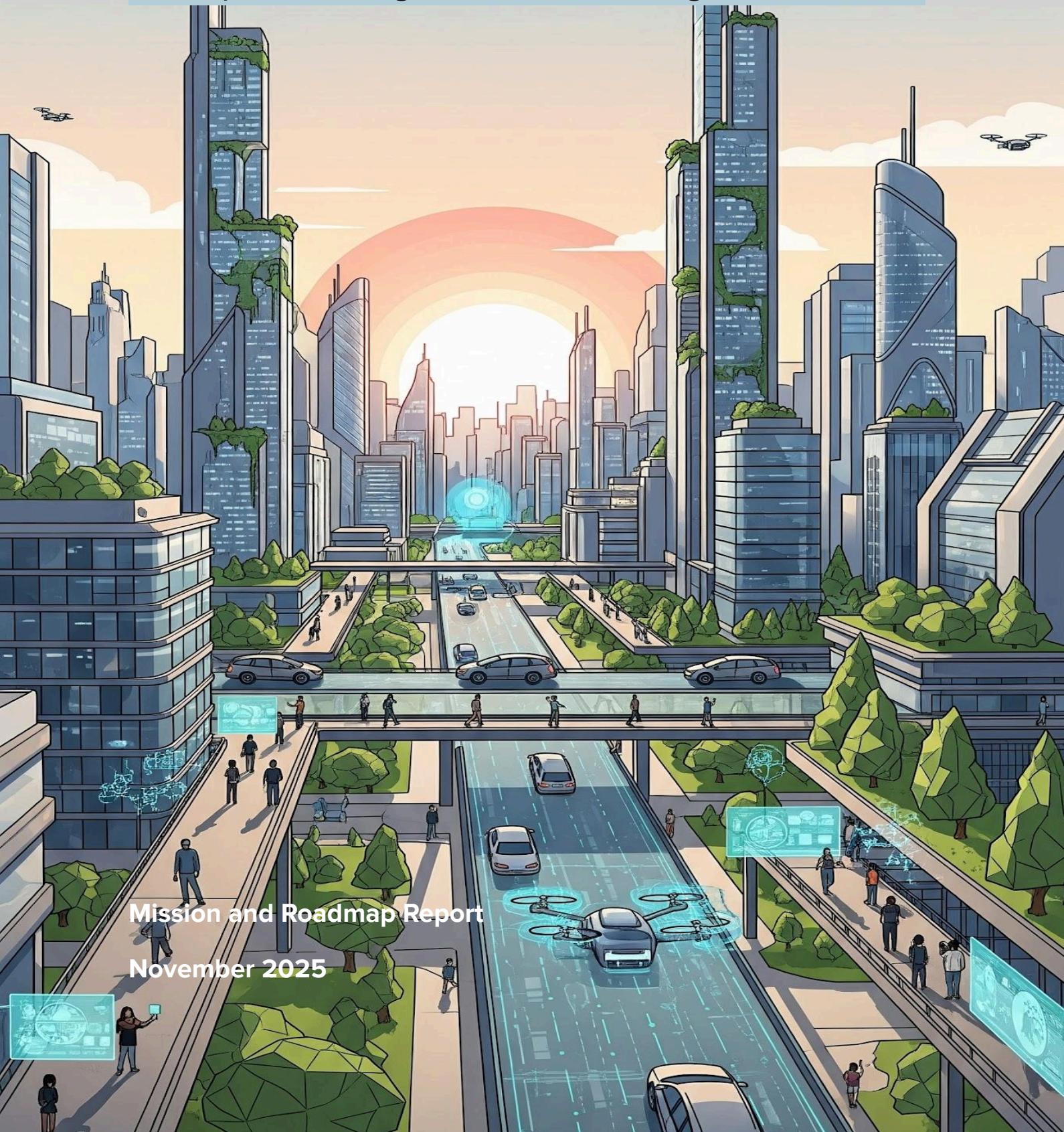
National Mission on AI in Mobility:

Accelerating Safe, Smart, and Sustainable Transport through Artificial Intelligence in India



Mission and Roadmap Report

November 2025

National Mission on AI in Mobility: Accelerating Safe, Smart, and Sustainable Transport through Artificial Intelligence in India

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Mission and Roadmap Report by

ITS India Forum & OMI Foundation Trust

President's Message

Akhilesh Srivastava
President,
ITS India Forum

India is entering an era where intelligence, not just infrastructure, will define mobility. Across our cities and corridors, the integration of artificial intelligence into transport systems is no longer a distant vision; it is a national imperative. This *Mission and Roadmap report*, titled, **National Mission on AI in Mobility**, outlines how India can strategically deploy AI to make transportation safer, cleaner, more efficient, and more inclusive. Its findings reaffirm what the Intelligent Transportation Systems (ITS) community has long recognized: technology, when guided by public purpose and sound policy, can transform how India moves.

The report identifies clear priorities for action. First, the adoption of **AI-based traffic management and enforcement** must move from pilots to scale, with interoperable standards and integration across ICCCs, highways, and state traffic systems. Second, **predictive road safety analytics and AI-assisted emergency response** can dramatically reduce fatalities; data from the Road Accidents in India 2023 report makes this an urgent necessity. Third, **AI-enhanced logistics and supply-chain optimization** - building on *Unified Logistics Interface Platform (ULIP)* and *PM Gati Shakti* - can cut logistics costs to under 10% of GDP, unlocking competitiveness for India's industries. Fourth, **public transport modernization** through intelligent scheduling, integrated ticketing, and **green mobility management** will make commuting more reliable and equitable. And finally, the emergence of **Generative and Agentic AI** offers new frontiers - copilots for operators, supervised automation for systems, and synthetic data for innovation - all under human oversight and strong assurance frameworks.

Equally important are the report's recommendations on **governance and capacity building**. The proposed *Assurance and Evaluation Profile* (AEP v1.0) sets a benchmark for safety, ethics, and accountability in AI deployments. The roadmap's emphasis on skill development, regulatory sandboxes, and public-private partnerships mirrors global best practices while remaining deeply contextual to India's needs. These are the foundations upon which a truly national mission can be built.

The **ITS India Forum** is proud to partner with the **OMI Foundation** in advancing this agenda. Together, we bring the perspective of practitioners, policymakers, and innovators working at the frontlines of India's mobility transformation. As we look ahead, we urge policymakers to adopt and operationalize the **proposed National Mission on AI in Mobility** - not as a concept, but as a coordinated national program that unites technology, transport, and governance.

The next decade will determine whether India can convert its scale into intelligence. The roadmap presented here offers a clear path to that future - where every signal, corridor, and control center becomes a node of national intelligence, serving citizens with safety, speed, and dignity.

Foreword

Ambassador (Retd.) Gautam Bambawale
Managing Trustee,
OMI Foundation

Harish Abichandani
First Trustee,
OMI Foundation

India's transportation ecosystem is on the cusp of a historic transformation. With accelerating urbanization, the growth of electric mobility, and the emergence of digital public infrastructure, the time is now ripe to integrate **artificial intelligence as the next enabler of national mobility systems**. AI can help India achieve what no other country has yet managed at scale: a transport network that is safe by design, efficient in operation, sustainable in energy use, and inclusive by intent.

The **AI in Mobility Mission and Roadmap for India** is timely and necessary. As cities face rising congestion, road fatalities remain high, and logistics costs weigh on competitiveness, AI offers a path to leapfrog conventional approaches. Intelligent traffic control, predictive safety analytics, optimized freight corridors, and human-centered automation can save lives, reduce emissions, and unlock billions in productivity gains. Just as digital public infrastructure transformed payments and governance, **AI can now transform mobility** - creating a "Mobility DPI" that makes transport systems adaptive, data-driven, and citizen-centric.

This report, jointly developed by the **OMI Foundation** and the **ITS India Forum**, lays the foundation for such a transformation. It articulates a comprehensive national framework - spanning infrastructure, data, innovation, skilling, and governance - to guide India's journey from experimentation to scale. By aligning with flagship initiatives such as **IndiaAI Mission**, **PM Gati Shakti**, and **Digital India**, it offers a practical and forward-looking blueprint for how India can build a globally competitive, AI-empowered transport ecosystem.

As India approaches its centenary of independence in 2047, the vision of **Viksit Bharat** will depend on how seamlessly the nation moves - its people, its goods, and its ideas. The **AI in Mobility Mission and Roadmap** is a step towards that vision: to make India's mobility not only smart, but intelligent; not only fast, but fair; not only digital, but deeply human.

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Executive Summary

Transforming How India Moves

The **National Mission on Artificial Intelligence in Mobility** charts India's next great technology transition, where data, algorithms, and digital infrastructure together make every journey safer, faster, cleaner, and more inclusive. Conceived as both a **policy blueprint** and an **innovation roadmap**, the Mission envisions **AI** as the **nervous system of India's transport network** by 2047: synchronizing traffic, predicting accidents, managing fleets, powering electric vehicles, and ensuring that every citizen - urban or rural - moves efficiently and safely.

Grounded in the principle of **AI for All**, the Mission aligns directly with **Viksit Bharat 2047**, the **IndiaAI Mission**, and the **PM Gati Shakti National Master Plan**. Its vision is an India where road fatalities are zero, congestion is history, logistics operate at global efficiency, and mobility becomes a driver of economic growth, social equity, and environmental sustainability.

Strategic Objectives

The mission pursues seven national objectives:

1. **Enhance Road Safety:** Cut fatalities by 50 percent by 2030 and move toward Vision Zero by 2047 through AI-based enforcement, driver-assistance, and emergency response.
2. **Reduce Congestion:** Deploy adaptive traffic control, predictive analytics, and congestion-pricing tools to restore smooth flow in all major cities.
3. **Optimize Logistics:** Integrate AI into Unified Logistics Interface Platform (ULIP) and PM Gati Shakti to reduce logistics costs to ≤ 10 percent of GDP by 2030 and ~8 percent by 2047.
4. **Modernize Public Transport:** Enable intelligent scheduling, Mobility-as-a-Service platforms, and integrated ticketing for seamless multimodal travel.
5. **Promote Sustainable & Connected Mobility:** Use AI for smart EV charging, C-V2X connectivity, and readiness for autonomous systems.
6. **Ensure Inclusion & Rural Access:** Extend AI tools to rural and remote areas, thereby optimizing bus routes, enabling drone deliveries, and designing assistive technologies for the elderly and persons with disabilities.
7. **Foster Innovation & Jobs:** Create a thriving ecosystem of startups, R&D centers, and skilled professionals, positioning India as the AI Garage for the Global South.

Five Strategic Pillars

1. **Sovereign AI Infrastructure:** Domestic high-performance compute (AIRAWAT 2.0), secure data centers, 5G/6G networks, V2X communications, and indigenous semiconductor capacity form the digital backbone.
2. **Open Data and Digital Ecosystem:** A unified India Mobility Data Platform will aggregate multimodal data from ULIP, PM Gati Shakti, and Smart-City Integrated

Command and Control Centers (ICCCs), enabling a trusted “single source of truth” for innovators and planners.

3. **Innovation and Industry Collaboration:** New Centers of Excellence and PPPs will accelerate frontier solutions - from traffic decongestion to rural mobility - using Generative and Agentic AI copilots and supervised automation.
4. **Skilling and Capacity Building:** Nationwide training through universities and transport agencies will create an AI-ready workforce; over 5 lakh professionals will be trained by 2030.
5. **Governance and Standards:** A Safe & Trusted AI framework, including the Assurance and Evaluation Profile (AEP v1.0), sets benchmarks for accuracy, robustness, fairness, and privacy; every AI actuation remains human-in-the-loop, logged, and auditable.

Implementation and Key Initiatives

The Mission moves from pilots to nationwide adoption through targeted programs:

1. **Urban Traffic & Enforcement:** AI-based ATMS and adaptive signals in all metros and highways; enforcement cameras integrated with e-Challan; congestion-management in peak zones.
2. **Road Safety & Emergency Response:** Predictive analytics for black-spot detection, smart ambulance corridors, and AI-assisted emergency dispatch across national corridors.
3. **Freight and Logistics:** AI-enhanced ULIP dashboard, multi-modal optimization via Gati Shakti data, and smart trucking corridors.
4. **Public Transport & EV Ecosystem:** Dynamic scheduling, Mobility-as-a-Service (MaaS) apps, and smart-charging management for e-buses and shared EV fleets.
5. **Connected & Autonomous Vehicles:** C-V2X pilots, autonomous test zones, and national telematics dashboards for predictive maintenance.
6. **Rural and Disaster Mobility:** AI route-planning for rural buses, drone logistics for remote delivery, and AI-enabled emergency resilience platforms.

Governance and Funding

A **National AI in Mobility Council**, co-chaired by MeitY and MoRTH ministers, provides apex direction. A **Mission Secretariat** and state-level councils ensure coordination, while **expert advisory groups** align standards with global best practices.

Funding draws on central allocations (~₹10,000 crore scale), state contributions, PPPs, startup grants, and international cooperation. Lifecycle O&M and outcome-based incentives guarantee sustainability.

Phased Timelines and Outcomes

Phase	Key Milestones
Phase 0.5 (Next 90 Days)	Launch Traffic Ops Copilot; GenAI Sandbox; AEP v1.0 release.
Phase 1 (2025-27)	Mission launch, governance setup, pilots in 10 cities & 5 highways; India Mobility Data Platform beta; 3 CoEs operational.
Phase 2 (2028-35)	50% fatality reduction; congestion down 20%; logistics cost ≤ 10% of GDP; 100 Smart Cities with AI traffic systems.
Phase 3 (2036-47)	Vision Zero progress; global export leadership; logistics cost ~8% of GDP; full rural and EV integration.

Key Performance Indicators

1. **Road Accident Fatalities:** 12.1 per 100k population to ≤ 6 by 2030 to ≤ 3 by 2047.
2. **Urban Congestion Index:** 20 % reduction by 2030, 50 % by 2040.
3. **Logistics Cost:** ≤ 10% of GDP by 2030, ~8% by 2047.
4. **Public Transport Mode Share:** +10 percentage points by 2030; ≥ 50% by 2047.
5. **AI Adoption:** 100% major intersections AI-enabled by 2030; Zero harm from agentic systems.
6. **Employment:** 5 lakh people trained by 2030; 50,000 new jobs created.

Global Leadership and Export Vision

By 2030, India will pioneer **Generative and Agentic AI for the Global South** - exporting multilingual copilots, affordable ATMS, and ethical automation systems.

By 2047, the National Mission on AI in Mobility positions **India** among the **top ten intelligent-mobility powers**, contributing world-class technologies, standards, and thought leadership to international forums (ISO TC204, ITU, UNECE). Indian companies will supply safe, scalable, and sovereign mobility AI solutions worldwide - fulfilling the nation's *AI Garage* promise.

India's Mobility Future

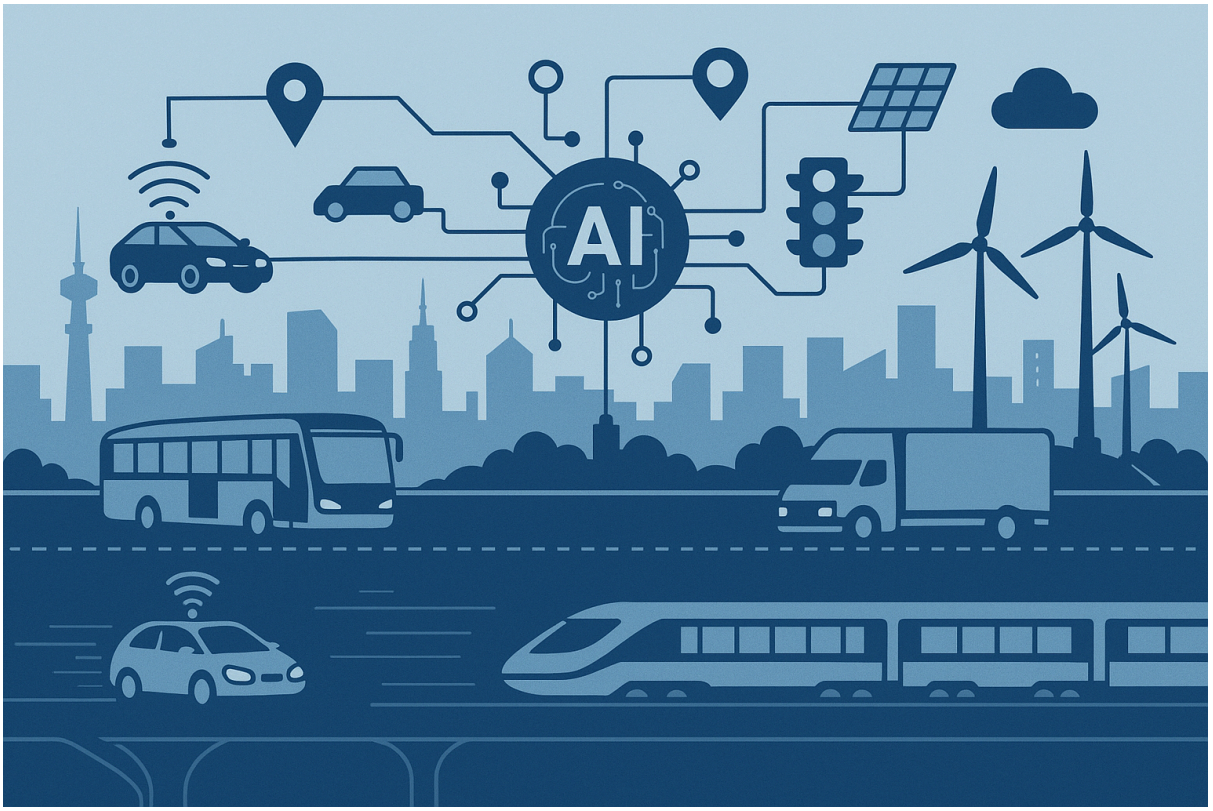
The National Mission on AI in Mobility is more than a technology agenda; it is a national transformation plan. It unites safety, sustainability, inclusion, and innovation into one coherent framework. By 2047, as India celebrates a century of independence, every citizen should experience mobility that is intelligent, green, and human-centered - where **AI moves India, and India moves the world**.


BIGGER & BETTER

1. Vision

To transform India's transportation network through artificial intelligence, making mobility **safe, sustainable, efficient, resilient, and inclusive** for all citizens, while positioning India as a global hub for intelligent mobility solutions by 2047. The mission's vision is rooted in the principle of ***"AI for All"***, ensuring that AI technologies augment infrastructure and services across urban and rural India, leaving no one behind (Ministry of Electronics & IT, 2025a). By leveraging AI-driven automation, real-time data intelligence, and connectivity, India envisions a future where traffic flows smoothly with minimal congestion, road fatalities are drastically reduced, public transport is smart and convenient, logistics move at world-class efficiency, and clean energy vehicles are seamlessly integrated. This vision aligns with the nation's broader digital transformation and development goals - a **Viksit Bharat 2047** where mobility acts as an engine of economic growth, social inclusion, and environmental sustainability. Overall, the mission aspires for an India where every commute - whether an urban metro ride, a highway freight trip or a village bus journey - is empowered by AI to be safer, faster, and more reliable, reflecting India's leadership in marrying technology with mobility for the greater good.

Figure 1: India's Intelligent Horizon - A vision of AI-empowered, connected, and sustainable mobility uniting cities, highways, and villages under one intelligent network by 2047



Source: AI-generated; Author.

2. Objectives

To realize this vision, the AI in Mobility Mission sets out clear objectives that will guide policies and initiatives across the country. These objectives are designed to address current challenges and future needs of India's mobility sector, and they serve as measurable goals for the coming decades:

2.1. Enhance Road Safety: Towards Vision Zero

Drastically reduce accidents and fatalities on Indian roads through AI-driven interventions. The mission adopts India's commitment to cut road accident deaths by 50% by 2030, moving toward a longer-term vision of "Zero Fatalities" by 2047 (Ministry of Road Transport & Highways, 2024). Intelligent systems will monitor driver behavior, enforce traffic rules, predict and mitigate collision risks, and improve emergency response times, saving lives every day.

2.2. Reduce Traffic Congestion

Leverage AI for dynamic traffic management in cities and highways to reduce travel time and commute stress. By deploying adaptive traffic signal control, real-time route optimization, and predictive analytics for congestion management, the goal is to significantly improve average traffic speeds and bring down congestion delays in all major cities. This will improve urban livability and productivity, aligning with the emphasis on efficient urban infrastructure under the aegis of Ease of Living and Smart Cities Mission, among others (PIB, 2025a).

2.3. Optimize Logistics and Freight Efficiency

Transform logistics through AI so that goods move faster and at lower cost, boosting economic competitiveness. The mission aligns with the National Logistics Policy target to reduce logistics cost from ~13-14% of GDP to under 10% by 2030 (PIB, 2025b). AI-powered supply chain platforms, demand forecasting, and route planning will help India reach global benchmarks in logistics performance (aiming to be in the top 25 of the Logistics Performance Index by 2030). Efficient logistics will in turn support the goal of a $5 trillion economy and beyond (PIB, 2025b).

2.4. Modernize Public Transport and Mobility Services

Improve the quality, accessibility, and integration of public transportation using AI. From smart scheduling of buses and trains to on-demand mobility and last-mile connectivity solutions, the objective is to make public transport a reliable backbone of urban and rural mobility. The mission will support innovations (e.g., through initiatives like Transport4All that incubate transit startups) to increase public transport usage, decrease wait times, and ensure every citizen has affordable mobility options (PIB, 2025a).

2.5. Promote Sustainable and Connected Mobility

Facilitate the transition to electric and connected vehicles with AI for better energy management and safer operations. AI will enable smart EV charging infrastructure, optimizing energy use and grid load, and support C-V2X (Connected Vehicle-to-Everything) technologies for vehicle connectivity. This will reduce vehicular emissions and prepare India's transportation system for autonomous and semi-autonomous vehicles in the future. By 2047, the aim is for India to have a green, connected transport ecosystem that contributes to environmental goals and energy security.

2.6. Inclusive & Rural Access

Bridge the urban-rural divide in mobility by deploying AI solutions for remote and underserved areas. The mission targets improved connectivity for rural populations - optimizing rural bus routes, facilitating on-demand transport in villages, and using technologies like drones or AI-assisted scheduling to ensure even far-flung regions have access to essential mobility and supply chains. Inclusive mobility also means addressing the needs of the differently-abled, elderly, and other vulnerable groups through assistive AI technologies in transport services.

2.7. Foster Innovation, Entrepreneurship and Jobs

Catalyze a vibrant innovation ecosystem around AI in mobility, fueling startups, industry growth, and skilled employment. The mission will support R&D and startups working on transportation AI solutions, creating high-quality jobs and intellectual property in India. It envisions India becoming a net exporter of smart mobility technology. By building this ecosystem, the mission contributes to economic growth and aligns with the Digital India goal of harnessing technology for empowerment and employment. The objective is not only to deploy proven technologies but also to develop home-grown innovations - positioning India as a global "AI Garage" for mobility solutions, and generating products and services that can be scaled internationally for revenue and impact (Global Policy, 2025).

Right Turn

Each of these objectives comes with specific targets and programs detailed in the subsequent sections. Together, they ensure that the ***National Mission on AI in Mobility*** addresses the spectrum of outcomes from safety and efficiency to innovation and inclusion, truly reflecting a holistic national strategy for the future of transport in India.

3. Strategic Pillars

To achieve its objectives, the ***National Mission on AI in Mobility*** is structured around several **strategic pillars** that form the **foundation of its approach**. These pillars mirror the structure of other successful national missions in India including the **IndiaAI Mission**, and provide a **framework for coordinated action**. Each pillar represents a key area of intervention, ensuring that the mission not only deploys **technology** but also builds the supporting ecosystem of **infrastructure, skills, policies, and partnerships**. The strategic pillars of the AI in Mobility Mission are:

3.1. Sovereign AI Infrastructure for Mobility

A robust, sovereign technological infrastructure is the bedrock of this mission. This pillar focuses on building and strengthening the **compute and connectivity infrastructure** needed for AI in the transportation domain.

A flagship initiative under this pillar is developing **high-performance AI compute capacity** within India. For example, expanding on India's **AIRAWAT** high-end computing platform (which will soon host over 10,000 GPUs for AI research and startups) to ensure ample processing power for mobility applications (IndiaAI, 2024a). By investing in domestic cloud and supercomputing facilities dedicated to AI, India will enable real-time traffic analytics, autonomous vehicle simulations, and city-scale mobility digital twins without relying on foreign infrastructure.

Complementing compute, this pillar also encompasses **physical and digital connectivity**: nationwide **5G/6G networks, V2X** (**vehicle-to-everything**) **communication**, **IoT sensors** (cameras, radar, GPS) embedded in roads and vehicles, and **edge computing** at traffic junctions and transport hubs.

Importantly, the infrastructure pillar aligns closely with the **India Semiconductor Mission's** goals of self-reliance in hardware, leveraging the ₹76,000 crore incentives to boost domestic semiconductor manufacturing (PIB, 2025c). By fostering local production of critical chips and sensors for automotive and AI uses, the mission ensures long-term sovereignty over the building blocks of intelligent mobility.

In summary, this pillar guarantees that India's AI-enabled mobility runs on **secure, sovereign, and high-capacity infrastructure**, including everything from data centers and AI chips to smart roads and dedicated communication bandwidth for transport systems.

3.2. Open Data and Digital Ecosystem

Data is the lifeblood of AI. This is especially true for mobility, where real-time data can improve everything from traffic flow and vehicle maintenance to road safety. This strategic pillar aims to create an **open data ecosystem** and integrated digital platforms to fuel innovation. It will establish a unified **India Mobility Data Platform** analogous to the IndiaAI Datasets Platform (**AIKosh**), which is streamlining access to non-personal datasets for researchers (IndiaAI, 2024b; AIKosh, n.d.).

Under this pillar, **vast amounts of transport-related data**, such as traffic footage, vehicle counts, public transport ridership, freight movement logs, maps and geo-spatial data, will be aggregated, anonymized, and made securely available to startups, researchers, and government agencies. The mission will promote **common data standards and APIs** so that different systems (city traffic control centers, logistic platforms, map services) can interoperate.

Ongoing initiatives will be leveraged, such as the **Unified Logistics Interface Platform (ULIP)**, which already integrates data from various logistics ministries and logged over 100 crore API transactions by early 2025 (PIB, 2025b). By building on ULIP and expanding it with AI analytics, the mission will enable **predictive logistics and supply chain visibility across modes**.

In parallel, the **PM Gati Shakti National Master Plan** - India's integrated digital platform for multi-modal infrastructure - has begun opening selected layers of its vast **geospatial and logistics datasets** to private enterprises, researchers, and startups. This marks a significant step toward democratizing high-value infrastructure intelligence, enabling industry to co-create **analytics and AI solutions for network planning, route optimization, and last-mile connectivity** (Ministry of Commerce & Industry, 2025).

Similarly, every **Smart City's Integrated Command and Control Centre (ICCC)** will be networked into a pan-India smart mobility grid, sharing data on traffic and transit in real time. This pillar also supports open data through **policies**, thereby encouraging agencies to share non-sensitive data, and possibly mandating anonymized data sharing by private operators (ride-sharing companies, shared mobility fleets, logistics firms, e-commerce and quick commerce companies) to contribute to the public mobility data commons.

By nurturing an open data culture and digital infrastructure, this pillar ensures that innovators have the fuel (data) and platforms needed to create AI solutions, while government planners gain a 'single source of truth' for informed decision-making in transportation.

3.3. Innovation and Industry Collaboration

AI in mobility will advance through continuous innovation, i.e. the development, testing, and deployment of cutting-edge solutions to Indian transport challenges. This pillar focuses on fostering a **thriving innovation ecosystem** and **strong public-private collaboration**.

a. Partnerships Driving Change

The mission will set up dedicated **Centers of Excellence (CoEs) for AI in Mobility** - world-class research hubs possibly co-located at leading institutions (IITs, IIITs, NITs) - to drive R&D in areas like autonomous driving algorithms, traffic simulation models, battery analytics, and drone-based delivery, among others. These CoEs will collaborate with industry and startups to translate research into practical applications, mirroring the approach of **IndiaAI's Application Development Initiative** which bridges theory and practice in critical sectors (IndiaAI Application Development Initiative, n.d.; Ministry of Electronics & IT, 2025b).

A key aspect of this pillar is **nurturing startups and entrepreneurs** in the intelligent mobility space. The mission will launch grand challenges, hackathons, and innovation grants focused on problems such as AI for traffic decongestion, or AI for rural mobility, etc. It will also facilitate access to capital through an **India Mobility AI Startup Fund,** complementing the broader **IndiaAI Startup Financing** programs (IndiaAI Startup Financing, n.d.; PIB, 2025d). This could provide seed funding, scale-up loans or incentives (like tax breaks, procurement preferences) for startups building indigenous solutions - from trip or journey planning AI apps to advanced driver-assistance systems.

Public-Private Partnerships (PPPs) are central to this pillar. The government will actively partner with private tech firms, automakers, logistics companies, and industry associations to implement pilot projects and scale successful solutions nationwide. For example, under a PPP model a tech startup might work with a city traffic police department to deploy an AI-based traffic signal system, with the mission sharing costs and expertise. By leveraging India's vibrant IT industry and startup talent, and by promoting a culture of co-creation, this pillar aims to position India as a **global innovation hub in smart mobility**. It also ensures that solutions are tailored to local needs: Industry and startups will work on India-centric challenges (like chaotic mixed traffic or rural road conditions), aligning with the broader goal of AI for All, i.e. AI solving local problems (Ministry of Electronics & IT, 2025a). Ultimately, this pillar will yield a pipeline of homegrown innovations, intellectual property, and scalable business models, driving economic growth and exports in the mobility sector.

b. Generative and Agentic AI for Mobility

The Mission also embraces frontier technologies such as Generative and Agentic AI to enhance decision-making, automate routine operations under human oversight, and deliver multilingual citizen-facing services. The Mission will deploy **generative AI (text, code, image, and multimodal)** and **agentic AI (goal-directed systems that perceive, decide, and act with human oversight)** to accelerate **planning, operations, and citizen services**. Applications include copilots for officials, synthetic data for model training, and supervised agents that execute routine workflows (e.g., incident triage, signal plan updates, charger load balancing). All agent actions are logged, reversible, and subject to human-in-the-loop and Safe & Trusted AI controls.

Generative and Agentic AI will be central to the Mission's innovation agenda. **Generative AI copilots** will serve as digital assistants for traffic operators, transport planners, and logistics managers, thereby automatically drafting incident reports, signal timing plans, enforcement notes, fleet rosters, and multilingual commuter advisories. Generative models will also support **synthetic data creation** to supplement sparse datasets such as rare crash scenarios or low-frequency transit patterns, enabling more robust AI training.

Agentic AI systems will provide **supervised automation** for high-volume, routine workflows: dispatching alerts to emergency services, pre-clearing ambulance corridors, dynamically re-slotting freight at ports, or balancing EV charging loads across networks. All agent actions will remain subject to **human-in-the-loop oversight, audit logs, and rollback mechanisms, ensuring safety and accountability**.

By integrating these frontier AI capabilities into public-interest mobility use-cases, the Mission will **help India leapfrog into the next wave of AI deployment**, thereby developing solutions that are scalable, explainable, and exportable to the rest of the world.

3.4. Skilling and Capacity Building

Successfully deploying AI across India's mobility sector requires skilled human capital at all levels: from data scientists and engineers to transport planners and drivers adept with new tech. The **Skilling and Capacity Building** pillar is devoted to **developing an AI-ready workforce** and **strengthening institutional capacities in transport agencies**.

First, the mission will support **educational initiatives to produce experts in AI and transportation**. This includes introducing specialized curricula on intelligent transportation systems in engineering and urban planning programs, establishing Data and AI labs in academic institutions across the country, and expanding scholarship and fellowship programs for research in AI for mobility. It aligns with the **IndiaAI FutureSkills** program that increases AI courses availability nationwide, extending it to domains like traffic engineering and logistics management (IndiaAI FutureSkills, n.d.; Ministry of Electronics & IT, 2025c). By leveraging institutions such as the newly formed **Gati Shakti Vishwavidyalaya** (focused on transport and logistics education) and other universities, the mission will create channels for continuous learning in emerging areas like autonomous systems, data analytics, and robotics in transport.

Second, this pillar focuses on **upskilling government officials, public transport operators, and industry professionals**. Dedicated training modules and workshops will be conducted for city planners, traffic police, state road transport corporations, and logistics managers on how to implement and use AI systems: from interpreting analytics dashboards in ICCCs to maintaining AI-enabled vehicles. A **national 'AI for Mobility' capacity building program** could be launched, similar in spirit to past nationwide training schemes, to certify thousands of officials in basic AI literacy and advanced technical skills.

Third, **public awareness and community engagement** are part of capacity building. The mission will run awareness campaigns so that the public understands and trusts AI interventions: for example, knowing that an AI traffic camera system is for their safety, or how to use an AI-driven transit app. By 2030, the goal is to have a sizeable pool of professionals and decision-makers in every state who are competent in AI applications for mobility, ensuring smooth adoption of new systems.

Overall, this human capital foundation will not only support domestic projects but also give India a competitive edge globally, as its workforce becomes renowned for expertise in transportation AI.

3.5. Governance, Standards and Policy Framework

For AI in mobility to flourish responsibly, a strong governance and regulatory framework is essential. This strategic pillar establishes the **policy environment, standards, and governance mechanisms** that will guide AI deployment in the transportation sector. At its core, the mission commits to **Safe and Trusted AI**, echoing the emphasis of the national AI

mission on ethical AI development (IndiaAI Safe & Trusted AI, n.d.; Ministry of Electronics & IT, 2024). This means formulating guidelines and protocols to ensure that AI systems in mobility are **bias-free, transparent, and secure**. For instance, standards will be set for **algorithmic safety in autonomous driving** so that self-driving or driver-assist systems meet rigorous safety criteria before public use. Likewise, **standards for data privacy** will ensure that data from vehicles or commuters is protected under the Personal Data Protection framework.

The mission will work closely with bodies like the **Bureau of Indian Standards (BIS)** to develop **standards for AI in transport**, covering areas like C-V2X communication protocols, functional safety of AI components in vehicles, cybersecurity for connected cars, and data formats for traffic systems. **Regulatory sandboxes** may be introduced to allow testing of innovations like autonomous vehicles or drone deliveries in controlled environments, informing future regulations.

This pillar also includes establishing an appropriate **governance structure** (detailed in the next chapter) to **oversee mission rollout**. This includes coordination among central, state, and city authorities. Moreover, the mission will **align its standards with international best practices**, enabling global interoperability and acceptance of Indian solutions. An **advisory group on AI regulation under the Principal Scientific Adviser** is already in place; the mission will feed domain-specific insights (e.g., results from pilot projects) into such forums to shape forward-looking policies (Ministry of Electronics & IT, 2025a). Importantly, the governance pillar encompasses **legislation and incentives**: recommending updates to laws like the Motor Vehicles Act or traffic rules to accommodate AI-based enforcement (e.g., legally recognizing AI-generated evidence for issuing fines) and mandating safety features (many advanced driver assistance features might become compulsory in new vehicles over time, building on steps like the Bharat NCAP safety ratings).

In essence, this pillar ensures that the institutional and regulatory backbone is in place, thereby providing clear rules of engagement for innovators, confidence to users and investors, and accountability for the outcomes of AI interventions. With strong governance and standards, the mission will guide AI adoption in a manner that upholds public interest, safety, and sovereignty.

Right Turn

These *five strategic pillars* - **Infrastructure, Data Ecosystem, Innovation, Skilling, and Governance** - collectively provide a 360-degree support system for the AI in Mobility Mission. They are interlocking, thereby reinforcing each other: robust infrastructure enables data sharing; open data fuels innovation; innovation thrives with skilled talent; and all must function within a trusted governance framework.

The next chapters describe how these pillars will be translated into action through a phased implementation strategy, what governance model will manage this mission, how funding and incentives will be arranged, and how progress will be measured over time.

4. Key Initiatives

Implementing the AI in Mobility Mission requires a phased and coordinated approach across multiple domains of transportation. This chapter outlines how the strategy will be put into action in practical terms, detailing key initiatives in each focus area of mobility. The **implementation will be collaborative**, involving central ministries, state governments, city authorities, industry partners, and academia, under the **guiding framework of the strategic pillars**. The following are the major components of the implementation strategy.

4.1. Urban Traffic Management and Congestion Reduction

a. Adaptive Traffic Control Systems

The mission will roll out AI-powered traffic signal systems in major cities to optimize traffic flow. These systems use real-time data from cameras and sensors at intersections to adjust signal timings dynamically based on vehicle volumes, much like pilot projects already seen in several parts of the country (IndiaAI, 2025). In every metropolitan area and tier-1 city, the plan is to install **Intelligent Traffic Management Systems (ITMS)** integrated with **city command centers**. All 100 Smart Cities have already deployed ITMS monitored via ICCCs, yielding improvements in traffic operations and enforcement (PIB, 2025a). Building on this, the mission will extend such systems to additional cities and inter-city corridors. AI algorithms will synchronize traffic lights along key corridors, provide automatic incident detection (e.g., stalled vehicle or accident alerts), and manage reversible lanes or dynamic speed limits during peak hours. The results expected are shorter commute times, smoother traffic with fewer stop-and-go waves, and reduced fuel wastage from idling. Further, Control-room staff will be supported by **Generative AI copilots** that auto-draft incident reports, diversion plans, and daily congestion summaries. Over time, **agentic AI assistants** will be deployed in supervised mode to propose adaptive signal updates and coordinate green corridors, subject to human confirmation. This will increase operator productivity and accelerate response in fast-changing traffic conditions.

b. AI-Based Advanced Traffic Management Systems (ATMS):

As Indian cities expand their smart mobility infrastructure, **Advanced Traffic Management Systems (ATMS)** are emerging as the backbone of AI-driven urban transport. These systems integrate multiple layers of intelligence - **adaptive signal control, automated incident detection, CCTV analytics, digital enforcement, and traveler information systems** - to provide cities with a holistic, data-driven command-and-control capability.

Building on the standards developed by the **Ministry of Road Transport and Highways (MoRTH)** (Ministry of Road Transport and Highways, n.d.), the Mission will promote **interoperable ATMS deployments** across metropolitan areas, cities, and towns in a phased manner, integrated with their respective **Integrated Command and Control Centres (ICCCs)**.

To complement traffic flow optimization, **AI-based enforcement** will be expanded to improve compliance and strengthen road safety. High-resolution cameras equipped with computer

vision will automatically detect violations such as red-light jumping, speeding, riding without helmets, not wearing seatbelts, and improper lane usage. For instance, on Delhi's **Dwarka Expressway**, an AI-powered ATMS has been deployed that can detect up to **14 categories of violations** - including speeding, triple-riding, and seatbelt non-compliance - and instantly notify enforcement authorities (The Economic Times, 2025).

The Mission will replicate and scale such systems across national highways, expressways, and urban corridors, linking them with the **e-Challan system** for digital issuance of penalties. This will not only deter violators through swift, data-backed enforcement but also free up traffic police personnel for more critical safety and emergency duties.

AI enforcement cameras will feed into centralized control rooms, functioning as the digital "nervous system" of road corridors, and will coordinate with both **police and emergency response services** for real-time interventions. Robust **privacy safeguards, calibration protocols, and audit mechanisms** will be mandated to ensure that only legitimate violations are captured and prosecuted.

Over time, consistent and transparent AI-based enforcement is expected to **reshape driver behavior**, promote voluntary compliance, and significantly **reduce accident rates**, thereby creating safer, smarter, and more disciplined mobility systems nationwide.

c. Congestion Charging and Demand Management

In the later phases, the mission will work with city governments to implement AI-driven congestion pricing or traffic demand management in the most congested urban zones. Using AI to analyze traffic patterns, cities can identify when and where congestion is worst and potentially deploy measures like variable road pricing (charging a fee for entering busy downtown areas during peak times) or adaptive tolling on crowded expressways. Any such policy will be data-driven; for instance, using predictive models to ensure alternatives like park-and-ride and public transport capacity are in place. AI can also enable **real-time traveler information systems**: city apps and signage will provide congestion info and suggest alternate routes or modes (e.g., urging commuters to take the metro when road traffic is heavy). By 2030, the aim is that at least all major metros have some form of smart congestion management operational, reducing peak congestion levels significantly.

4.2. Road Safety and Accident Reduction

a. Predictive Analytics for Accident Prevention

The mission will **employ AI to analyze historical accident data and real-time road conditions to predict high-risk locations** (hazardous intersections, accident-prone highway stretches) and **times** (such as foggy winter nights) **for accidents**. By processing data from the Ministry of Road Transport & Highways, like the detailed accident records in the **e-DAR system**, along with weather, traffic, and driver behavior data, machine learning models can identify emerging **"black spots"** before too many incidents occur (Ministry of Road Transport & Highways, 2024). Transport authorities will use these insights to take **pre-emptive actions** - such as installing warning systems, increasing patrolling or improving road engineering at those spots. The

mission's engineering interventions (better road signage, crash barriers, etc.) will be guided by AI risk analysis for maximal impact on safety.

b. AI-Enhanced Emergency Response (Golden Hour)

When accidents unfortunately occur, a rapid response in the golden hour can save lives. The mission will **integrate AI with emergency services to cut down response times**. Connected roadside cameras or vehicle sensors can automatically detect a crash (through sudden deceleration patterns or image recognition of collisions) and instantly alert the nearest ambulance and police unit with precise location. For example, the command centers on highways act as digital brains that dispatch emergency units during accidents or adverse conditions. Cities will implement **smart ambulance corridors** where traffic signals turn green in the path of an approaching ambulance - achieved by IoT devices in ambulances communicating with traffic control. Such **cellular vehicle-to-everything (C-V2X) systems** have been tested in a few cities, and shown to reduce transit time for emergency vehicles (ITS India Forum and OMI Foundation, forthcoming - 2025a). Additionally, the mission will promote **mobile apps** or **built-in vehicle eCall systems** that automatically send an SOS with location and crash severity to a central 112 emergency response system. By 2025, pilot projects for AI-assisted emergency response will be operational along high-traffic highways (e.g. the Mumbai-Pune Expressway, parts of the Golden Quadrilateral), and by 2030 the goal is nationwide coverage on all national highways and major urban centers. This will ensure help reaches accident victims faster, improving survival rates and outcomes. Further, **Generative AI** will assist in synthesizing crash cluster data and drafting blackspot remediation reports, while **agentic systems** will pre-fill enforcement workflows, triage emergency calls, and trigger ambulance dispatch notifications. These systems will operate under strict **human oversight**, ensuring both speed and due process in safety-critical situations.

c. Driver Assistance and Behavioral Coaching

To tackle causes of accidents like human error, the mission encourages the deployment of AI-driven driver assistance systems and behavior monitoring. Advanced Driver Assistance Systems (ADAS) - such as collision avoidance alerts, drowsiness detection, lane-keeping aids, and automatic braking - will be promoted for installation in **commercial fleets (trucks, buses, shared mobility vehicles)** and eventually private cars. The government has already mandated certain **safety technologies**, such as speed limiters, seat-belt reminders, ABS (Ministry of Road Transport & Highways, 2024). The mission will work on expanding these mandates to include **AI-based features**; for example, forward collision warning systems in all new heavy vehicles). For existing vehicles, aftermarket telematics devices with AI can be used, especially in commercial transport. These can give instant feedback to drivers and fleet managers if a driver is speeding, tailgating, or driving erratically. Over time, a repository of driver behavior data can help in training and licensing - good driving can be incentivized (lower insurance premiums or rewards), while risky drivers can be flagged for additional training or enforcement. By combining education, enforcement, and technology - i.e., the '4 E's' approach of **Education, Engineering, Enforcement, Emergency Care** - India aims to steadily lower its annual road fatalities (which stood at 168,491 in 2022) toward the targeted 50%

reduction by 2030, and continue thereafter toward zero by 2047 (Ministry of Road Transport & Highways, 2024; ITS India Forum and OMI Foundation, forthcoming - 2025b).

4.3. Freight Logistics and Supply Chain Optimization

a. Smart Logistics Platforms

In alignment with the **National Logistics Policy**'s push for digitization, the mission will **integrate AI into logistics management** to make freight movement more efficient, predictable, and cost-effective. A core project is the enhancement of the **Unified Logistics Interface Platform (ULIP)** with AI capabilities. ULIP already brings together data from multiple logistics stakeholders (ports, rail, highways, customs, etc.). The mission will add a layer of AI analytics to this unified data. This means logistics operators and policymakers can get predictive insights; for example, forecasting port congestion and advising rerouting of shipments, or predicting demand surges for trucks on certain routes and optimizing asset allocation. The **Logistics Data Bank** (which tracks containers across India) has recorded over 75 million containers, providing a rich dataset for analysis. AI can analyze such data to reduce dwell times and idle capacity. The outcome will be a **National AI Logistics Dashboard** accessible to industry and government, showing real-time movement of goods and AI-driven metrics like estimated time of arrival (ETA) for shipments (a feature ULIP already enables), carbon footprint of different routing options, and risk alerts, such as likelihood of delay due to weather or disruptions (PIB, 2025b). Moreover, **Generative AI copilots** will help integrate ULIP feeds, generate optimized slotting schedules, and auto-draft coordination briefs for shippers. **Agentic AI systems** will dynamically re-route convoys, rebook freight slots at ports, and balance warehouse flows in response to delays, always with rollback safeguards and operator approval.

b. Multi-Modal Logistics and Gati Shakti Integration

The **PM Gati Shakti Master Plan** envisions seamless multi-modal connectivity by integrating 57 ministries' infrastructure planning via a digital platform with 1,700 data layers. The **National Mission on AI in Mobility** will leverage this wealth of planning data to optimize multi-modal logistics - ensuring that goods transition smoothly between roads, railways, ports, and waterways. AI models will be used to identify the most efficient mode-mix for freight (for instance, suggesting when to use rail for long haul vs trucks, based on cost, time, and environmental impact). They will also assist in locating new **Multi-Modal Logistics Parks (MMLPs)** by analyzing data on production centers, consumption markets, and transport networks (PIB, 2025b). The mission's timeline syncs with Gati Shakti: by 2027, several key MMLPs are expected to be operational, and AI systems will be embedded in their operations (e.g., autonomous vehicles or drones moving containers within big logistics parks, or AI-managed warehouses for quicker sorting and loading). This integration means that, as India builds physical infrastructure for logistics, it simultaneously deploys digital intelligence to use that infrastructure to the fullest.

c. Trucking Industry Upgrades

Given that road transport carries a majority of India's freight, special focus is on improving trucking via technology (NITI Aayog, 2018). Implementation measures include encouraging fleet owners to adopt **AI-based fleet management systems** that do route optimization (minimizing empty backhauls), predictive maintenance of trucks (avoiding breakdowns through IoT sensor data analytics), and consolidation of loads through marketplaces. The mission will collaborate with the logistics industry to create pilot **digital freight corridors** where convoys of trucks use vehicle-to-vehicle communication, platooning (closely following to reduce drag), and smart scheduling so that they hit toll plazas or city entry points during off-peak hours - all coordinated by AI. Also, **improving safety and training for truck drivers** using AI simulators (for training) and fatigue monitoring systems will be part of the plan, aligning with road safety goals. By making trucking smarter and safer, India can reduce delays, cut logistics costs, and improve the livelihood of drivers.

The cumulative effect of these logistics-focused implementations will be a more reliable supply chain. The mission's success will be reflected in tangible outcomes: industry achieving faster turn-around times, the share of freight moved by more efficient modes (rail, coastal shipping) rising, and India climbing in global logistics rankings. **The target is to approach developed-country levels of logistics efficiency by 2030, as evidenced by reduced logistics cost (near 8-10% of GDP) and improved Logistics Performance Index (LPI) score** (PIB, 2025b).

4.4. Public Transport and Sustainable Urban Mobility

a. AI-Augmented Public Transit Operations

Public transportation systems - buses, metro rails, suburban trains - will be made smarter through AI for higher efficiency and better passenger experience. Urban transit agencies will deploy AI for **dynamic scheduling and routing**: algorithms that adjust bus frequencies based on demand patterns (peak vs off-peak, weekday vs weekend) and even implement on-demand routes in low-density areas by analyzing ridership data (ITS India Forum and OMI Foundation, forthcoming - 2025c; 2025d; 2025e). For instance, city bus systems can use **predictive models** to send additional buses to routes when large crowds are anticipated (say, after a big event or during rush hour) and **re-route buses** in real time if there is an accident or road closure. The mission will pilot such **smart bus management systems** in major cities by partnering with tech firms. In rail-based transit, AI can **optimize train timetables and connection times between modes** (ensuring, for example, that metro schedules align smoothly with feeder bus services). Commuters will benefit from **AI-driven mobile apps** providing accurate **real-time arrival information** and **multimodal journey planning** (integrating options like public bikes, auto-rickshaws, etc., for first/last mile). By reducing uncertainty and wait times, these measures aim to boost public transport usage. Additionally, transit operators will benefit from **Generative AI copilots** that auto-generate rosters, schedule adjustments, and multilingual commuter updates. In later phases, **supervised agentic systems** will monitor ridership patterns in real time, proposing on-the-fly bus redeployments or train frequency adjustments, to be confirmed by human controllers.

b. Integrated Ticketing and Mobility-as-a-Service (MaaS)

A cornerstone of convenient public transport is integration. The mission will support expansion of the **National Common Mobility Card (NCMC)** and **digital payment systems** across all cities and all modes, enabling one-card/one-app access to buses, metros, trains, and intermediate transport. On top of this, AI will enable **Mobility-as-a-Service platforms** - digital platforms where users can plan and pay for an end-to-end journey across multiple modes in one go. For example, a traveler could input a destination and an AI-based MaaS app would suggest a combined trip: an e-scooter to a metro station, then metro, then an electric bike taxi or electric auto-rickshaw - all coordinated and booked via one interface, with optimized timing. Some Indian cities have begun such integration; the mission will universalize it (ITS India Forum and OMI Foundation, forthcoming - 2025c; 2025d; 2025e). By 2030, all million-plus population cities should have a unified mobility app for public and shared transport. These platforms will also generate **valuable data on travel demand** that AI can analyze to continuously improve service provision.

c. Green Mobility and Electric Vehicles

In line with India's sustainable development goals, the mission integrates efforts to increase electrification of public and shared transport. **AI** will be used to **manage EV charging infrastructure**; for instance, smart charging management systems that prevent excessive load on the grid by scheduling e-bus or e-car charging during off-peak electricity hours, or automatically optimizing charge distribution among charging stations. Cities will deploy **AI for locating new EV charging stations** by analyzing patterns of vehicle use, and land and electricity availability. Public bus fleets in many cities are transitioning to electric; the mission will assist transit agencies with AI tools that **manage battery health** and predict when a bus should be taken out of service for charging or maintenance, thereby **maximizing uptime**. Furthermore, AI can facilitate ride-sharing and micro-mobility solutions; e.g., intelligent bike taxi/ auto-rickshaw/ taxi-cab hailing systems, bicycle-sharing with predictive rebalancing of bicycles at docks (ITS India Forum and OMI Foundation, forthcoming - 2025d). All these interventions make urban mobility not only smarter but cleaner and interconnected. As a result, by 2030 we expect significant adoption of EVs in public transportation and last-mile connectivity, contributing to India's climate commitments.

d. Inclusive and Accessible Transport

Implementation strategy also ensures public transport and overall shared mobility are inclusive. AI-based assistive technologies - like mobile apps with voice instruction for the visually impaired to navigate transit stations, or smart traffic signals that adapt timing to help elderly pedestrians cross safely - will be promoted. The mission encourages every city to audit its transport systems with inclusivity in mind and leverage tech to address gaps. Pilot programs will demonstrate how AI can enable, for example, on-demand mobility services in rural or peripheral areas where fixed-route buses are infeasible, ensuring no region is left disconnected (OMI Foundation, 2022; Ola Mobility Institute, 2021).

4.5. Connected Vehicles and Autonomous Mobility

a. C-V2X Deployment

As India rolls out 5G networks, a major opportunity is **Cellular Vehicle-to-Everything (C-V2X) technology** - allowing vehicles to communicate with other vehicles, infrastructure (traffic lights, road sensors), and even pedestrians' devices. The mission will coordinate with the telecom and automotive sectors to establish pilot C-V2X corridors, particularly in smart cities and on modern expressways. In these pilots, equipped cars and traffic signals will "talk" to each other: for example, a car approaching an intersection could receive signal phase timing information and adjust speed to pass safely, or vehicles will get alerts about upcoming hazards - e.g., accident ahead, or a pedestrian crossing signaled via their smartphone. The low latency of 5G is crucial for such real-time communication, and initial trials will validate the safety benefits (ITS India Forum and OMI Foundation, forthcoming - 2025a). By 2025-26, expect a few **urban testbeds** for connected vehicle tech. Gradually, as **standards mature** (the mission will input into **national ITS standards** so that devices from different makers interoperate), C-V2X capability will be expanded to more vehicles and road infrastructure by 2030. This paves the way for **semi-autonomous driving in controlled conditions**, like platooning trucks on highways or driverless shuttles in geofenced areas.

b. Autonomous and Assisted Driving Trials

While fully autonomous (Level 5) vehicles on public Indian roads may be a longer-term prospect, the mission will enable incremental progress. It will support **R&D and closed-circuit testing of autonomous vehicles (AVs)** in India's context; for instance, autonomous pods or carts for campuses and tech parks, or drone-based delivery in urban and rural areas alike. **Regulatory sandboxes** will allow companies to test AVs with safety drivers under specified conditions. By fostering this, India keeps pace with global advancements and ensures its regulations and infrastructure are AV-ready when the time comes. In the near term, **advanced driver assistance** (Level 2/3 autonomy) will become common; e.g., interventions like traffic jam assist, highway pilot (where the car can drive itself on highways under supervision), automated parking etc. The mission will work with the automotive industry to encourage these features in new models and possibly create an **innovation zone**; e.g., a specific city or highway corridor, where higher levels of automation can be deployed as a showcase by the mid-2030s. Such innovation zones already exist in the form of such as National Automotive Test Tracks (NATRAX) under the Ministry of Heavy Industries, Government of India, or Technology Innovation Hub on Autonomous Navigation (TiHAN) at the Indian Institute of Technology (IIT) - Hyderabad. This experimentation will also stimulate local innovation in sensors, AI vision systems, and mapping needed for autonomy.

c. Telematics and Remote Diagnostics

In connected mobility, another focus is using **vehicle telematics data** (from connected cars, trucks, buses) to **improve maintenance and operations**. The mission will promote establishing a **National Vehicle Telematics Dashboard** that aggregates live data (with consent and privacy safeguards) from public sector vehicles (like state transport buses,

government vehicle fleets) and voluntarily from private fleets. AI can analyze this data for patterns – identifying, for example, parts prone to failure, or suggesting optimal times for preventative maintenance to avoid breakdowns. This reduces downtime and costs. For personal vehicles, connected services can alert owners to issues or recall notices. The government may also use **aggregated connected vehicle data to inform infrastructure planning** (e.g., identifying consistently low-speed segments indicating road bottlenecks to be fixed).

Overall, by systematically introducing connectivity and partial autonomy, India's vehicle fleet will become smarter year by year. This contributes to **safety** (vehicles that can warn each other of dangers), **efficiency** (platooning and optimized driving save fuel), and **user convenience** (cars that navigate traffic jams themselves). The implementation strategy ensures that when global car technology shifts, India's ecosystem - from roads to regulations - is prepared to integrate those advances rather than lag behind.

4.6. Rural and Remote Mobility Solutions

a. AI for Rural Transport Planning

The mission recognizes that rural areas have distinct mobility challenges: lower population density, longer distances to services, and often sparse transport options. To improve this, AI will be applied to **optimize rural bus routes and schedules**. State transport departments, with mission support, will gather data on village populations, travel demand (e.g., to markets, schools, hospitals), and existing routes. Using **AI-based optimization algorithms**, they can design more efficient routes that cover maximum needs with minimal resources; for example, scheduling smaller buses or vans at appropriate times rather than running half-empty large buses. Some states have already experimented with demand-based rural transport; the mission will institutionalize this by developing an **AI route planning tool** that any district can use to plan transport services (including for school buses or health outreach mobile vans). By reducing costs and travel times, this will **improve access for rural citizens**.

b. Drones and Aerial Connectivity

In remote areas with difficult terrain (hilly regions, areas with poor road connectivity), the mission will encourage the use of drones (unmanned aerial vehicles - UAVs) for **transport of critical supplies and mapping**. Already, projects like "Medicine from the Sky" (in states like Telangana) have shown drones can deliver medicines or vaccines to remote clinics efficiently. Building on these, AI-powered drones could be used for tasks like transporting medical samples, delivering e-commerce parcels to remote villages or congested urban areas, or quickly surveying road damage after floods to guide repair crews. The mission will work with the civil aviation authorities to expand drone corridors and permit innovative uses under safe operating guidelines (OMI Foundation, 2024; 2025). By 2030, a network of drone delivery routes in remote parts of Northeast India, Himalayan regions, and other hard-to-reach areas could complement traditional transport, ensuring even the most isolated communities are not left out of the digital and logistics revolution.

c. Agricultural Supply Chains and Market Access

Mobility in a rural context also means **moving goods from farms to markets**. **AI** can aid in **optimizing agricultural logistics**: predicting crop yields and planning transport capacity in advance, reducing transit losses by suggesting best packaging and handling via IoT sensor feedback, etc. The mission, in coordination with schemes like **e-NAM (National Agricultural Market)**, will pilot intelligent systems that coordinate collection of produce from villages; for instance, an app where farmers indicate ready harvest and an AI schedules aggregation trucks efficiently. This improves market access for farmers and reduces waste.

By implementing these measures, **the mission ensures that modernization is not confined to cities**. On the contrary, it will uplift rural mobility, which in turn supports rural livelihoods and social development (ease of reaching healthcare, education). The inclusive growth principle of ***Sabka Sath, Sabka Vikas*** (together with all, development for all) underpins these efforts - making sure that an AI-empowered transport network serves every Indian, whether in a metro city or a remote hamlet.

4.7. Emergency Mobility and Disaster Response

a. Integrated Command and Control for Emergencies

The **AI in Mobility infrastructure** will double up as a critical asset during emergencies (natural disasters, extreme weather, public health crises). As seen during the COVID-19 pandemic when Smart City ICCCs were repurposed as war rooms, a robust Information and Communications Technology (ICT) system can coordinate response effectively (PIB, 2025a). The mission will ensure that **all city and state control centers are equipped with emergency response modules**. These include **AI-driven simulations for disaster scenarios** (e.g., how to evacuate a city quadrant if a flood is forecast), and **real-time dashboards** that integrate feeds from various agencies - police, fire, medical, meteorological department, etc. When an incident occurs, the system can rapidly suggest **optimized response plans**, such as evacuation routes free of traffic, or where to position relief vehicles. Furthermore, **Agentic AI systems** will support incident orchestration: triaging alerts, drafting evacuation routes, pre-clearing ambulance or fire corridors, and dispatching drones for reconnaissance. All actions will require human approval before execution, ensuring accountability while drastically cutting emergency response times.

b. Priority Mobility for Critical Services

During emergencies, certain mobility needs take precedence (**ambulances, fire trucks, supply trucks, rescue teams**). The mission will implement protocols in traffic management systems to **automatically prioritize and clear the path** for such vehicles. For instance, if a city has a major fire incident, the traffic control system could automatically create a **"green corridor"** for fire engines, similar to how organ transplant green corridors have saved time (The Times of India, 2025; ITS India Forum and OMI Foundation, 2025a). On highways, in event of an accident or pile-up, intelligent systems will instantly communicate upstream to divert traffic and guide highway patrol and cranes to the site. The mission will also explore creating emergency mobility reserves – like a fleet of AI-enabled drones or autonomous

all-terrain vehicles that can be dispatched to deliver essentials in disaster-hit zones when normal transport is cut off.

c. Resilient Transport Networks

AI will also help in infrastructure resilience by **monitoring the health of transport assets (bridges, roads, tunnels) and predicting failures or necessary pre-emptive closures in disasters**. For example, sensors on a bridge could detect excessive vibration during an earthquake and automatically block traffic, preventing accidents. Post-disaster, **AI-powered damage assessment** (using satellite and drone imagery) can quickly identify which roads are blocked or which rail lines are safe, helping prioritize restoration. These aspects tie into broader national disaster management efforts, with the mobility mission contributing the transportation-specific intelligence.

Right Turn

Through these detailed implementation initiatives across urban traffic, road safety, logistics, public transport, connected vehicles, rural access, and emergency response, the **National Mission on AI in Mobility** will gradually but fundamentally **upgrade India's transportation landscape**. Each state and city will tailor these initiatives to local context with the support of the national mission guidelines and funding. The phasing will ensure early wins (like reducing traffic signal delays by next year in pilot cities) build momentum for larger changes (like nationwide accident reduction by 2030, autonomous vehicle rollouts by 2035, etc.).

The governance and monitoring frameworks described next will ensure that implementation stays on track and that learnings from one region are shared and applied across the country, creating a virtuous cycle of improvement.

5. Governance Structure

Implementing a mission of this scale, cutting across numerous domains and administrative levels, requires a robust governance structure. The **National Mission on AI in Mobility** will be governed through a **multi-tiered framework** that ensures strategic guidance from the **center**, active participation of **states and cities**, expert input from **industry and academia**, and efficient **on-ground execution**. The governance model takes inspiration from prior national missions, such as the Smart Cities Mission's use of Special Purpose Vehicles, and the coordinated governance of the IndiaAI program, while tailoring it to the unique needs of an AI-driven initiative spanning transport and digital sectors (PIB, 2025a).

5.1. Apex National Council

At the highest level, a National AI in Mobility Council will be constituted, chaired by a senior cabinet-ranking official; for example, the Minister for Electronics & IT, and co-chaired by the Union Minister for Road Transport & Highways. This council will include representation from key central ministries, reflecting the mission's cross-sectoral nature:

- Road Transport & Highways (MoRTH)
- Housing and Urban Affairs (smart cities and other new ease of living missions, metro rail),
- Railways
- Civil Aviation (for drones, air taxi, and air traffic aspects)
- Ports and Shipping (for maritime logistics)
- Communications (for digital network support)
- Power (for EV charging infrastructure)
- Home Affairs (for traffic enforcement and emergency response)

The Principal Scientific Adviser (PSA) to the Government and the CEO of NITI Aayog (policy think-tank) will serve as advisors.

The Apex Council's role is to provide overall strategic direction, ensure inter-ministerial coordination, and resolve any policy or regulatory issues that require high-level decision. It will meet periodically (e.g., quarterly) to review progress, approve major initiatives, and align the mission with other national programs (Digital India, IndiaAI, Gati Shakti, etc.). This body essentially guarantees that the mission has political and administrative backing from the top, streamlining cooperation across government.

5.2. Mission Steering Committee and Secretariat

A dedicated **Mission Steering Committee** will be established for day-to-day oversight and decision-making. This committee will be chaired by the Mission Director - a senior official (likely of Additional Secretary level) appointed to lead the mission implementation unit. Members of the Steering Committee will include Joint Secretary-level representatives from the relevant ministries, a few state government representatives on a rotation basis (to bring in state perspective), as well as domain experts in AI and transportation from academia/industry.

The Steering Committee will be the nerve-center handling approvals of project proposals, sanctioning funds, monitoring KPI progress, and issuing operational guidelines.

Supporting it will be a **Mission Secretariat**, a full-time program management team that handles the administrative and technical coordination. This Secretariat will likely be housed in a central agency such as the National Highway Authority of India (NHAI) or a special cell in NITI Aayog or MoRTH - or even structured as a new Special Purpose Vehicle (SPV) under MeitY and MoRTH jointly. The Secretariat will have experts in project management, data science, traffic engineering, and policy, possibly drawn from both government and hired from the market (to incorporate cutting-edge skills). They will coordinate pilot projects, manage knowledge sharing, and produce periodic progress reports. Each pillar of the mission might have a nodal officer within the Secretariat; for example, one in charge of Infrastructure & Data, one for Innovation & Startups, etc.

5.3. State and City Level Implementation Units

Given transportation is managed at state and city levels, the mission's success hinges on local implementation. Each State/UT government will be encouraged, and funded to create a **State AI Mobility Council or Task Force** headed by a senior official; for instance, the state Transport Secretary or Urban Development Secretary. This body will **adapt the national strategy to the state context**, identify priority projects, such as a city needing an AI traffic system, or a state highway needing an ATMS, and coordinate among state departments - transport, urban, rural development, etc. At the city level, especially for million-plus cities and all Smart Cities, the existing Smart City SPVs or city municipal bodies will serve as the anchor for mission projects. **City Mobility Mission Cells** may be formed, led by the Municipal Commissioner or Smart City CEO, with membership of the city traffic police, metropolitan transport corporations, and local academic/ industry partners. These local units will implement projects on the ground - from procurement to deployment - following guidelines and with funding from the national mission.

This **decentralized structure** ensures **flexibility**: states and cities have autonomy to innovate and prioritize, while adhering to broad national standards and targets. It also **promotes competition** and **peer learning**; e.g., best performing cities in reducing congestion could be recognized and their models replicated elsewhere.

5.4. Expert Advisory Group

To incorporate cutting-edge knowledge and keep the mission updated with global best practices, an Expert Advisory Group will be constituted. This group will include **technologists, AI researchers, industry leaders** (from automotive companies, logistics firms, tech startups), **planners and designers,** and **civil society representatives.** It will advise the Mission Steering Committee on new technologies, ethical considerations, and mid-course corrections. For example, as global standards for autonomous vehicles evolve, this group can recommend how India should adapt its regulations. The presence of independent experts also brings **accountability** and **transparency** to the mission. Notably, the government's existing **AI advisory mechanisms**, such as the AI regulatory group under the PSA, will be linked to this mission to ensure consistency in AI ethics and standards (Ministry of Electronics & IT, 2025a).

5.5. Public-Private Partnership frameworks

The governance will facilitate public private partnerships (PPPs) by establishing **clear frameworks for collaboration**. Model concession agreements, MoU templates, or pilot project guidelines will be issued by the Secretariat so that private firms and startups know how to engage - whether through competitive innovation challenges, or as vendors for city implementations, or as partners in PPP projects, such as a tech company partnering with a city on revenue-sharing basis for a traffic management system. A procurement innovation that may be used is the Challenge Method, where cities pose a problem and invite solutions, then scale up the best one, to avoid overly prescriptive tenders and instead focus on outcomes.

5.6. Monitoring and Reporting

A strong monitoring system will **track progress of the mission**. A centralized dashboard will compile key performance data from all states and projects, aligned with the KPIs mentioned later. The Mission Secretariat will publish annual reports detailing achievements, challenges, and next year's plan. Additionally, independent audits and evaluations at mid-term (say 5-year mark) and end-term will be conducted to assess impact. This ensures accountability for the significant public funds and high stakes involved. Parliament may also be kept informed through annual statements or reports laid by the concerned ministry, given the national importance of the mission.

5.7. Legal and Regulatory Alignment

The governance structure will **work in tandem with legislative bodies** for any legal changes needed. For example, if the Motor Vehicles Act needs amendments for autonomous vehicle trials, the mission leadership will propose and pursue those changes. Standards development organizations (BIS, TEC, etc.) will be engaged formally to fast-track standards needed for AI systems. This coordination might be facilitated through the Ministry of Electronics & IT which handles digital standards, the Ministry of Road Transport and Highways which handles road standards, or the Ministry of Heavy Industries which handles vehicle standards, for instance.

5.8. Safe & Trusted AI

The Mission will adopt an **Assurance Framework for Generative and Agentic AI** to ensure safe, trusted, and accountable deployment. All generative models used in public mobility contexts will be **evaluated against benchmarks** for accuracy, robustness, fairness, privacy, and hallucination rates. **Agentic AI systems** that can trigger real-world actions - such as signal changes, dispatch orders, or enforcement notices - will operate strictly under a **human-in-the-loop protocol**, with actions logged, reversible, and auditable.

A mandatory **red-teaming and simulation process** will precede any scale-up, exposing models to adversarial and edge-case scenarios. Audit trails, rollback mechanisms, and fail-safe "kill switches" will be required for every system. Procurement guidelines will mandate **model factsheets** detailing lineage, controllability, and hosting arrangements, including

sovereign/ on-premises options. Through this assurance framework, the Mission will balance innovation with safety, ensuring public trust in frontier AI systems.

Safeguards for Frontier AI in Mobility

The **National Mission on AI in Mobility** will adopt Generative and Agentic AI in a **"safety-first, human-in-the-loop" paradigm**:

- **Human-in-the-loop by design** for any actuation (signals, fines, dispatch).
- **Eval suite**: accuracy, robustness, latency, fairness, and **hallucination rate** thresholds; red-team before scale-up; scenario sims.
- **Data & privacy**: (Digital Personal Data Protection) DPDP-compliant retrieval-augmented systems; minimize PII; auditable logs.
- **Safety cases**: for any agent that can change the physical world (signals, chargers), require a documented safety case, kill-switch, rollback plan.
- **Procurement guardrails**: require model lineage, fine-tuning/ controllability factsheets, on-prem/ sovereign hosting options, and incident reporting SLAs.

Right Turn

In summary, the governance of the AI in Mobility Mission is a blend of **centralized strategic direction and decentralized execution**. It institutionalizes **cooperation** between the **Union** and **States** - critical since transport is a subject with shared responsibilities. It also fosters a **multi-stakeholder approach**, bringing in experts and private players into the fold of decision-making in a structured way. By having **clear roles at each level** (national, state, city) and a mechanism for **regular communication** among them (perhaps a digital portal and monthly review videoconferences), the mission's governance ensures that best practices spread quickly and that bottlenecks (whether financial, technical or regulatory) are addressed promptly through the right channels. This solid governance backbone is what will keep the mission on track through its ambitious, multi-year journey.

6. Funding and Incentives

Achieving the **ambitious targets of the National Mission on AI in Mobility** will require significant investment - both public and private. In this section, we outline the funding strategy and incentive mechanisms that will fuel the mission's projects across India. The approach is multifaceted: a substantial commitment of public funds as the foundation, innovative financing models including PPPs, and targeted incentives to encourage industry, startups, and state governments to participate actively.

6.1. Government Budgetary Support

The central government will likely provide a lion's share of the funding for this mission through dedicated budget allocations. Given the scale of envisioned outcomes (comparable to other national tech missions), the outlay could be on the order of several thousand crores of rupees over the mission period. By way of comparison, the IndiaAI program was approved with an allocation of ₹10,372 crore to strengthen the overall AI ecosystem (IndiaAI, 2024c). The National Mission on AI in Mobility, being a sector-specific offshoot with deep infrastructure components, could see a similar magnitude of investment. Funds may be channeled via the Ministry of Road Transport & Highways and Ministry of Electronics & IT primarily, possibly under a consolidated "AI for Transportation" budget head. This funding could cover central projects (like developing the national data platforms, HPC infrastructure expansion) and provide grants to states and cities for local implementations. A significant portion could be likely earmarked for infrastructure upgrades - for example, equipping 1000+ intersections with AI signal systems, or upgrading the ICCCs in all Smart Cities with enhanced AI modules.

6.2. State Government and ULB Contributions

State governments and Urban Local Bodies (ULBs) will also be stakeholders in funding, especially for project maintenance and scale-up. Often, central funding might be given as matching grants or with a cost-sharing formula (e.g., 80% central, 20% state) to ensure local skin-in-the-game. The mission will encourage states to use their budgets (or raise funds through bonds, etc.) for complementary investments, like hiring data analysts in city traffic departments or maintaining the equipment installed through mission funds. For poorer states or regions, the central government may bear a higher share to ensure equity.

6.3. Public-Private Partnerships (PPP)

The mission strongly embraces PPP models to leverage private sector efficiency and capital. Several mission components are suitable for PPP - such as smart city traffic systems, EV charging networks, logistics parks, etc. The government can offer viability gap funding (VGF) where projects are not immediately profitable, thereby attracting private players. For example, to roll out an AI-based traffic enforcement system, a private vendor could install and operate the system, recovering costs through a share of fine revenues or an annuity from the government. The mission will create standard PPP contracts with defined performance indicators (like uptime of systems, reduction in accidents, etc.) so that private partners are

incentivized to deliver results. Additionally, financial models like Operating leases (for expensive hardware like GPUs or cameras) or Infrastructure debt funds may be utilized. Notably, India's semiconductor mission saw substantial private investment commitments (cumulative ₹1.6 lakh crore in projects across states when backed by government incentives (PIB, 2025c). Similarly, we expect private companies (automotive, IT, telecom) to invest in mobility AI initiatives when they see a clear government push and market potential.

6.4. Incentives for Startups and Industry

To galvanize innovation, the mission will set aside a portion of funds specifically as innovation incentives. This includes R&D grants for academic and private labs working on mission-aligned projects (e.g., a university researching AI for traffic signal optimization can receive a grant), and challenge awards for startups (monetary prizes and incubation support for winners of national innovation contests on AI in mobility). There will also be a focus on easing access to capital for startups - building on the IndiaAI Startup Financing, the mobility mission may partner with venture funds or create a dedicated fund-of-funds to invest in early-stage mobility AI companies (IndiaAI Startup Financing, n.d.). On the industry side, incentives could take the form of tax benefits: e.g., accelerated depreciation for logistics companies adopting AI-driven fleet management systems, or GST reductions on certified "smart" transport equipment (like AI-enabled dashcams or ADAS components). Another tool is Production-Linked Incentives (PLI) - while PLI schemes are already in place for automobiles (especially EVs) and for advanced chemistry batteries, the mission could propose a PLI extension or a new scheme specifically for intelligent transportation systems and devices. This would encourage domestic manufacturing of things like LiDAR, traffic sensors, telematics devices, etc., aligning with Atmanirbhar Bharat (self-reliance) ideals.

6.5. International Funding and Collaboration

The mission will also explore international sources of funding and expertise. Multilateral development banks - World Bank, Asian Development Bank, and agencies such as JICA, etc. have interest in funding sustainable urban transport and road safety projects. The mission can bundle AI-based enhancements into such projects to receive soft loans or grants. For instance, an ADB loan for urban transport might include a component for AI traffic management with technical assistance. Additionally, bilateral cooperation can be tapped: countries with advanced mobility tech (like Japan, Singapore, Germany) might partner through their aid agencies or joint ventures to pilot technologies in India. Such collaborations can bring both funding and knowledge.

6.6. Cost Recovery Mechanisms

While many of the mission's benefits are public goods (safer roads, quicker commutes), some interventions allow for direct revenue generation to sustain them. The mission encourages implementing user charges or savings-based repayment in certain cases. For example, if a city uses AI to optimize parking management, the increased parking fee collection can pay back the investment. Congestion pricing revenues can be recycled into public transit improvements. Fuel savings and reduced accidents also have economic value - the mission

will articulate these in business cases so that finance can be raised against future benefits (a concept of "outcome financing"). Insurance companies, for instance, might offer sponsorship for road safety tech since it reduces claims in the long run.

6.7. Maintenance and Lifecycle Funding

A challenge in tech projects is sustaining them beyond initial capex. The mission's funding plan incorporates lifecycle costs. This means when funding a city to install AI cameras, it will also allocate funds or revenue models for operations & maintenance (O&M) for at least a few years. The principle of "design-build-operate" may be used in contracts to ensure vendors stick around to maintain systems, or capacity is built in local bodies for the same. Incentives will be tied to performance outcomes to keep systems running optimally.

6.8. Alignment with Other Schemes

Wherever possible, the mission's funding will be dovetailed with existing schemes to avoid duplication and amplify impact. For example, the Smart Cities Mission funding, ₹1.64 lakh crore invested with 100 cities' projects, already has components for ICCCs and smart traffic (PIB, 2025a). The AI mission can provide incremental funding to upgrade those with advanced AI capabilities, effectively "plugging in" to completed infrastructure. Similarly, the PM E-DRIVE scheme funds EVs and charging stations; the mobility AI mission could supplement it by funding the smart management system overlay on those chargers.

Right Turn

The **funding strategy of the National Mission on AI in Mobility** stands on a strong **central commitment**, but smartly leverages **partnerships** and **market mechanisms** to multiply its effect. The government's role is to pump-prime investment and de-risk innovation, after which private enterprise and state initiative can drive large-scale deployment. By offering the right incentives, the mission aims to create a thriving marketplace for AI mobility solutions - where companies find it profitable to build and deploy systems that achieve public policy goals. This synergy between public funding and private innovation will ensure financial sustainability and accelerate progress.

Ultimately, the investment in this mission is expected to pay rich dividends: estimates suggest India's AI sector could add many billions to the economy by 2030, and in mobility, reduced accidents and improved logistics alone save countless lives and rupees (EY, 2025). The funding is not an expenditure but an investment into an AI-empowered transportation future that will yield economic and social returns for decades to come.

7. Timelines and Milestones

The **National Mission on AI in Mobility** is envisioned as a long-term initiative unfolding over the next two decades, with clear milestones to track progress. Establishing timelines helps ensure accountability and allows course corrections. Below is a phased timeline with key milestones and target outcomes for each phase, aligned with national goals like 2030 sustainable targets and the 2047 vision.

7.1. Phase 0.5: Quick Wins (Next 90 Days)

1. Launch **Traffic Ops Copilot** (Hindi/English + 2 local languages) in 3 pilot cities' ICCCs.
2. Set up a **GenAI Sandbox** on a national Mobility AI Cloud with pre-approved datasets & retrieval.
3. Kick off a **Supervised Agent pilot** for ambulance pre-emption on 2 corridors (approve-to-act flow).
4. Publish the **Assurance and Evaluation Profile** (AEP) v1.0 (evaluation profile + red-team playbook + model cards template).

Frontier AI Use Cases: Immediate to Long-Term

1. **GenAI Copilots**
    a. Traffic Ops Copilot: draft signal timing plans, incident briefings, and work orders from CCTV/IoT summaries; propose diversions; auto-generate daily congestion reports.
    b. Road-Safety Copilot: summarize crash clusters; draft blackspot remediation notes; generate multilingual public advisories.
    c. Transit Copilot: propose bus-headway tweaks from historical data; generate clear SOPs and crew rosters; answer commuter FAQs in multiple Indian languages.
    d. Logistics Copilot: unify ULIP feeds; explain ETA deviations; draft slotting schedules and vendor comms.
    e. Data/Code Copilot: generate ETL jobs, SQL, and model-monitoring dashboards for ICCCs.

2. **Agentic Supervised Automation**
    a. Agentic Incident Manager: detect to classify to notify to dispatch tow/ambulance; pre-fill FIR/112 tickets; push VMS messages; request signal pre-emption; always with human approval/ override.
    b. Signal Plan Agent: continuously learns corridor patterns; proposes off-peak plans; rolls back if KPIs dip.
    c. ChargeAI Agent: shifts EV charging to off-peak; negotiates loads with DISCOM APIs; triggers price signals.
    d. Freight Slotting Agent: coordinates gates at ports/ICDs; rebooks slots when trains/convoys slip.

3. **Agentic Orchestration with Policy Guardrails**
    a. Corridor Orchestrator: multi-agent system jointly optimizes incidents, signals, VMS, and enforcement to meet corridor SLAs.
    b. Fleet Autonomy Support: agents supervise semi-autonomous shuttles/trucks in geofenced domains (campuses, depots), handing off to humans on edge cases.

7.2. Phase 1: Laying the Foundation (2025-27)

Milestones by March 2026

1. Official launch of the National Mission on AI in Mobility with cabinet approval and funding allocation.
2. Formation of governance bodies (Apex Council, Mission Secretariat, etc.) completed.
3. Pilot projects initiated in at least 10 major cities and 5 national highways. For example, by the end of 2025, install AI-enabled adaptive traffic signal systems at 100 critical junctions across Delhi, Mumbai, Bengaluru and other metros, reducing average wait times by 10-15%.
4. Deploy the first phase of the AIRAWAT AI compute expansion, increasing compute capacity significantly for mobility AI research.
5. Release of national guidelines on AI traffic enforcement and data sharing frameworks.

Milestones by March 2027

1. First wave of capacity building: at least 1,000 officials and engineers trained in AI tools across states.
2. Establishment of the India Mobility Data Platform (beta version) aggregating data from 50+ sources (cities, highways, logistics).
3. Three Centers of Excellence for AI in mobility operational at leading academic institutions.
4. Successful completion of a “Traffic Tech Challenge” with at least 5 startup solutions selected for city implementation (e.g., AI parking management in one city, computer vision for bus occupancy in another).
5. Drafting of necessary legal amendments (Motor Vehicles Act, if needed) underway for new tech adoption.

Milestones by March 2028

1. Scale-up from pilots: AI traffic management extended to all Smart Cities (100 cities) ICCCs, improving urban traffic efficiency nationwidepib.gov.in. At least 50 cities have operational AI-based traffic violation detection systems, contributing to an increase in enforcement actions by 25% and a noticeable dip in certain violations (e.g., speeding incidents reduced).
2. The central accident analytics system identifies 100 high-risk zones and 80 of them are treated with mitigation measures.

3. The unified Logistics Dashboard with AI analytics is in use by leading logistics providers and by the Ministry of Commerce to monitor NLP targets.
4. EV charging management systems deployed in top 5 EV-adopting cities, ensuring no major grid disruptions from EV loads.
5. By 2027, aim for an initial reduction in road accident fatalities by ~10% (compared to the 2022 baseline) through combined safety interventions, and a reduction in average logistics costs by 1-2 percentage points of GDP (from ~14% down to ~12-13%). These intermediate achievements set the stage for larger impact.

7.3. Phase 2: Acceleration and Scale (2028-35)

Milestones by 2030

This is a crucial benchmark year aligning with many national and global targets. By 2030, the mission aims to realize several high-level outcomes:

1. **Road Safety:** Achieve the targeted 50% reduction in road accident fatalities compared to 2020 baseline. This means tens of thousands of lives saved annually by 2030. Every state should report declines, supported by AI-driven enforcement and safety analytics in all districts. Trauma care response time reduced significantly (e.g., average ambulance response to highway accidents under 15 minutes).
2. **Urban Mobility:** At least 50 cities show a measurable improvement in congestion metrics (average travel speeds in peak hour improved by ~20%). Introduction of congestion pricing or low-emission zones in 3-4 major metros, powered by AI monitoring. Public transport share in urban commutes increases (target an average 10% modal share rise in metros due to reliability improvements).
3. **Logistics:** Logistics cost as % of GDP falls to around 10% or below, approaching the goal set by the National Logistics Policy. India's rank in World Bank's Logistics Performance Index moves into top 25 nations, reflecting smoother, tech-enabled logistics. Dedicated Freight Corridors complemented with AI scheduling realize high utilization (goods train punctuality and turnaround time improved drastically). Multi-modal integration projects (like all 35 planned MMLPs) incorporate AI systems by this year.
4. **Infrastructure & Data:** Nationwide mobility data platform fully operational, used by at least 1000 stakeholders (startups, researchers, government). Over 5000 datasets or data streams available openly or on interoperable platforms, fueling continuous innovation. The sovereign AI compute infrastructure (GPUs, cloud) expanded to target levels (10,000+ GPUs) and actively supporting both government analytics and private R&D. Indigenous chips or hardware contributions start coming from the domestic semiconductor ecosystem for these deployments, thanks to synergy with the India Semiconductor Mission (ISM).
5. **Innovation Ecosystem:** By 2030, the mission would have supported creation of, say, 500 new startups and small and medium enterprises (SMEs) in the mobility AI space. Many of these grow to scale, creating collectively thousands of skilled jobs. Some Indian startups and companies become global leaders in AI in mobility overall and niche areas too.

6. **Policy & Standards:** A full suite of standards for AI in transportation in place (BIS/ISO standards adopted). Regulatory frameworks for autonomous vehicles and drones finalized, allowing limited commercial deployment in controlled scenarios. India may host a global conference or expo on AI in Mobility in 2030 to showcase progress, similar to the SEMICON India events that highlight tech successes.

Milestones 2031-35

Building on successes, the early 2030s will focus on consolidation and reaching underserved areas. By 2035, the mission expects:

1. 100% of all cities with population > 1 million to have **advanced AI traffic management and integrated public transport systems** operational.
2. **AI-enabled systems** (like ATMS) on **all National Highways and major State Highways**. Ideally, all new highway projects from now on include smart infrastructure by default.
3. Widespread use of **connected vehicle tech**: possibly mandate C-V2X capability in all new vehicles by the mid-2030s. We could expect semi-autonomous vehicle pilot services (like driverless shuttle routes) running in at least a few cities.
4. **Electric mobility mainstream**: EVs form a significant share of new vehicle sales (target ~30% or more), and AI keeps the ecosystem stable (charging, grid).
5. **Rural coverage**: All tier-2 towns and many villages benefiting from AI in transport - whether through better bus services, app-based ride sharing or drone supply lines.

7.4. Phase 3: Maturity and Global Leadership (2036-47)

In the longer horizon leading up to 2047 (India's centenary of independence), the AI in Mobility Mission aims for full maturation:

1. **World-Class Safe Transport:** Bring annual road fatalities down towards zero ("Vision Zero"). By 2047, India's per-capita road death rate should be comparable to the safest nations, a drastic improvement from 2020s levels. AI-driven prevention, vehicles that practically won't crash (due to autonomy and ADAS), and ingrained safety culture contribute to this outcome.
2. **Seamless Mobility for All:** Every citizen should experience convenient, tech-enabled mobility. Urban congestion might be largely eliminated through smart infrastructure and perhaps demand management. Commute times in big cities stabilize even as the population grows, thanks to AI optimization and capacity expansion. Public transport and shared mobility predominate in urban travel, aided by AI for efficiency and user experience.
3. **Efficient Logistics Powering a Developed Economy:** Logistics becomes a strength for India, enabling it to be a global manufacturing and trade hub. By 2047, the target is to further reduce logistics costs (maybe ~8% of GDP, matching advanced economies) and rank among the top 10 in LPI. Highly automated ports, warehouses, and possibly widespread use of autonomous trucks/trains and drones for freight will characterize this era.
4. **Technology Leadership:** India emerges as a global leader and exporter in intelligent mobility solutions. By the mid-2040s, Indian companies could be exporting smart

traffic management systems, affordable autonomous vehicle software, drones, etc., to developing countries, thereby fulfilling the "AI Garage" vision to serve the global south. Participation and leadership in international standards bodies for transportation AI becomes routine, with Indian experts contributing significantly.

5. **Integration with Viksit Bharat 2047 goals:** Mobility achievements contribute to India's overall developed nation status: cleaner air in cities due to optimized transport, inclusive growth as villages are well-connected, and technology-driven governance that is citizen-centric. In essence, by 2047, the mission would have played a key role in transforming the way India moves, which in turn boosts productivity, inclusivity, and sustainability in every sector.
6. **Monitoring Milestones:** To keep to this timeline, the mission will use the KPIs *(next chapter)* to annually check progress. Key checkpoint reviews are planned at 2027, 2030, 2035, and 2040, where independent evaluations will assess if milestones are met or need adjustment. The timeline is ambitious, but each milestone is grounded in a realistic trajectory given adequate political will, funding, and innovation, all of which this mission is designed to mobilize. The phased targets also give stakeholders clear near-term goals to rally around (like accident reduction by 2030, which is also a global UN Decade of Action for Road Safety goal), while keeping the eye on the grand prize in 2047.

The timelines and milestones lay out a roadmap from **Initiation to Impact to Excellence.** They ensure that the **National Mission on AI in Mobility** is not an open-ended endeavor, but one with **concrete deliverables at every stage,** guiding **India** steadily towards a future where **mobility is a catalyst of its development and technological prowess**.

8. Key Performance Indicators (KPIs)

Measuring progress is critical to the mission's success. The following Key Performance Indicators (KPIs) will be used to track outcomes against the objectives, providing quantifiable metrics that can be monitored annually and at major milestones. The KPIs are aligned with the mission's goals in **safety, efficiency, inclusivity, and innovation**. Each KPI has a **baseline value (current state)** and **target values for 2030 and 2047**, creating a clear performance contract for the mission. Here are the primary KPIs:

1. **Road Accident Fatalities (Annual):**
    a. Baseline ~173,000 deaths in 2023 (Ministry of Road Transport and Highways, 2024, 2025).
    b. Target 2030: ~50% reduction to ~86,500 or fewer.
    c. Target 2047: Approach zero fatalities (vision zero), aiming for >90% reduction.
    d. Indicator of road safety improvements due to AI enforcement, driver assistance, and faster emergency response.
2. **Urban Traffic Congestion Index:**
    a. Composite metric of travel time delay in major cities.
    b. Baseline 2025: index value; e.g., average extra travel time in peak hours ~50% of free flow.
    c. Target 2030: Reduce congestion index by 20% in 10 largest cities.
    d. Target 2040: 50% reduction in congestion index nationwide; ensure peak hour commute times not significantly worse despite growth.
    e. Reflects success of AI traffic management and demand management.
3. **Public Transport Mode Share:**
    a. Percentage of trips in urban areas via public transport.
    b. Baseline: varies by city; ~30% in megacities down to <10% in smaller cities.
    c. Target 2030: Increase by 10 percentage points in metro cities; e.g., from 30% to 40%.
    d. Target 2047: Achieve 50%+ average public transport share in large cities.
    e. Measures improved attractiveness and efficiency of public transit with AI support.
4. **Logistics Cost as % of GDP:**
    a. Baseline: ~13-14% of GDP.
    b. Target 2030: <10% of GDP (around 10% or lower)/
    c. Target 2047: ~8% of GDP (on par with developed countries).
    d. Captures overall logistics efficiency gains from AI optimization, route planning, multimodal integration.
5. **Logistics Performance Index (LPI) Ranking:**
    a. Baseline 2018: Rank 44 (improved to 38 in 2023).
    b. Target 2030: Rank within top 25.
    c. Target 2047: Rank in top 10 globally. International benchmark of logistics infrastructure and efficiency.
6. **AI-Equipped Intersections and Corridors:**

a. Number of junctions with adaptive traffic signals and highways with AI-based ATMS.
b. Baseline 2024: Only a few pilot corridors.
c. Target 2030: 100% of major intersections in all metros and 50% in tier-2 cities have AI signals; All National Highways have basic ATMS coverage.
d. Target 2040: AI traffic management in essentially all urban areas and highways of significance (thousands of intersections nationwide).
e. Reflects extent of technology deployment.

7. **Average Emergency Response Time (road accidents):**
    a. Baseline: ~30+ minutes in many areas.
    b. Target 2030: <15 minutes on highways and in cities (for ambulance to reach).
    c. Target 2047: ~5-10 minutes nationwide average via advanced systems.
    d. Indicator of improved emergency mobility and coordination.
8. **Share of Vehicles with Connected/ADAS Features:**
    a. Baseline 2025: <5%.
    b. Target 2030: 30% of new vehicles sold have at least Level 1-2 ADAS or C-V2X capability.
    c. Target 2040: Majority of fleet equipped with connectivity/ADAS; some level of autonomy common.
    d. Shows adoption of intelligent vehicle tech.
9. **EV Integration and Smart Charging Utilization:**
    a. Metrics like % of public chargers with smart management systems, or peak load shaving achieved.
    b. Target 2030: Smart charging in all big cities, ensure EV charging contributes no more than a certain % to peak load increase.
    c. Ensures sustainable EV growth.
10. **Rural Mobility Index:**
    a. A composite tracking public transport access in rural areas; e.g., % villages with daily bus service or drone delivery access.
    b. Target 2030: 100% villages over a certain size have tech-enabled transport access.
    c. Target 2040: Quality of rural transport services on par with urban; no isolation.
    d. Measures inclusivity.
11. **Number of Startups/ Innovations Deployed:**
    a. Count of startup solutions or indigenous innovations deployed in transport through mission.
    b. Target 2030: >200 startups supported, >50 solutions scaled.
    c. Target 2047: Indian companies among global leaders in at least 5 niches (e.g., traffic AI, AV software).
    d. Shows ecosystem vibrancy.
12. **Employment and Skilling:**
    a. Number of individuals trained or employed in the AI-mobility sector.
    b. Target 2030: Train 500,000 people in relevant skills (from engineers to traffic police).
    c. Create at least 50,000 new jobs via mission initiatives.

    d. Target 2047: Millions trained, India as talent hub. Human capital outcome.
13. **User Satisfaction Surveys:**
    a. Periodic citizen satisfaction scores on mobility (safety, reliability).
    b. Target 2030: Significant improvement in surveyed satisfaction compared to baseline (subjective but important).

Each KPI will be tracked with **data from reliable sources**: e.g., data from the National Crime Records Bureau (NCRB) and Ministry of Road Transport and Highways (MoRTH) data for accidents, periodic traffic studies for congestion, World Bank for LPI, independent audits for tech deployment counts, and surveys for satisfaction. The mission's **monitoring dashboard** will compile these and flag areas where progress lags so that strategy can be adjusted.

For instance, if by 2028 the accident reduction is off-track, the mission could intensify efforts on enforcement or vehicle safety standards. If congestion isn't dropping in some cities, further interventions or best-practice sharing will be done. The KPIs thus serve as the mission's report card. They also help communicate success to the public and stakeholders: e.g., by 2030 announcing "50% fewer Indians are losing their lives on roads" or "Logistics costs down, saving billions annually", which builds confidence and support for continued efforts.

In addition to core safety, efficiency, and inclusion targets, the Mission will track indicators specific to **Generative and Agentic AI adoption**:

1. **Copilot Adoption Rate:** Share of control-room workflows (traffic, transit, logistics, enforcement) that are supported by generative AI copilots.
2. **Time-to-Draft Reduction:** Average reduction in time taken to generate incident reports, rosters, or signal plans after copilot deployment; e.g., target ≥40% improvement by 2030.
3. **Agentic Action Approval Rate:** Percentage of proposed actions by supervised agents; e.g., signal adjustments, dispatch tasks that are approved by human operators without modification.
4. **Operator Productivity Lift:** Increase in incidents resolved or signal plans updated per operator-hour after introduction of generative/ agentic tools.
5. **Safety & Trust Metrics:** Zero harmful incidents attributable to agentic systems; annual publication of evaluation results - accuracy, robustness, hallucination rates.
6. **Citizen experience:** CSAT for multilingual chat; first-contact resolution rate.

These metrics will ensure that frontier AI technologies deliver tangible efficiency gains while remaining safe, transparent, and accountable.

Overall, these KPIs ensure that the **National Mission on AI in Mobility** remains **outcome-oriented**, not just technology-for-technology-sake. Hitting these targets will signify real improvement in citizens' lives and national competitiveness, fulfilling the mission's purpose.

9. Global Positioning and Export Strategy

India's National Mission on AI in Mobility is not just an inward-focused initiative; it is also about projecting India's strengths on the global stage and contributing to the world's mobility solutions. This section outlines how the mission will position India internationally and leverage export opportunities, aligning with the goal of **making India a hub for innovation and a provider of technology to other countries**. The strategy has **multiple facets**: showcasing India's successes, forming international partnerships, aligning with global standards, and enabling Indian companies to compete globally in the intelligent mobility sector.

9.1. Establishing India as the "AI Garage" for Mobility

As articulated in the National AI Strategy, India aspires to be the **"AI Garage" for developing economies** - a place where scalable, affordable solutions are built that can be applied across similar contexts globally. The mobility mission will carry this ethos forward. Solutions developed under this mission - such as low-cost adaptive traffic lights or AI algorithms that work even with erratic traffic or low data - will be packaged for export to regions in **Asia, Africa, and Latin America** that face similar challenges of rapid urbanization and infrastructural constraints. By 2030, we envisage Indian firms, possibly in collaboration with India's development partnership agencies, implementing smart transport projects in other countries - for instance, helping an African city set up an India-modeled traffic control center or providing an ASEAN country with AI-powered road safety analytics. Such **exports of systems and expertise** not only open new economic avenues but also **strengthen India's diplomatic ties via technology cooperation**.

9.2. Leadership in Generative and Agentic AI for Mobility

The Mission will also position **India as a global leader in Generative and Agentic AI for mobility**. By 2030, India aims to develop **export-ready Generative AI copilots** tailored for multilingual, resource-constrained contexts - tools that assist transport operators, planners, and commuters in the Global South. By 2047, India will offer **supervised agentic systems** for safe automation of traffic management, logistics scheduling, and emergency response, demonstrating a uniquely Indian model of human-in-the-loop AI that combines efficiency with public accountability.

These solutions, born from India's complex mobility ecosystem, will be marketed as **affordable, adaptable, and ethically governed alternatives** to high-cost systems developed elsewhere. By embedding **frontier AI** into its mobility exports, **India** can **expand its technology footprint**, strengthen **South-South cooperation**, and reinforce its leadership in setting global standards for **safe and trusted AI in transport**.

9.3. Participation in Global Standards and Forums

To be a leader, India must actively shape global standards in AI and intelligent transport. The mission will ensure **India's representation in international bodies** like ISO TC204 (Intelligent Transport Systems), the International Telecommunication Union (ITU) for connected vehicle

communication standards, and the UNECE Working Party on Autonomous/ Connected Vehicles. Indian experts will bring the lessons and requirements from India's diverse conditions to these forums, influencing standards that work for emerging economies, not just high-income contexts. Concurrently, the mission will adopt relevant global standards to ensure our solutions are internationally compatible. For example, aligning data formats with Mobility Data Specification (MDS) used worldwide or adhering to automotive safety integrity levels in AVs, so that Indian products are recognized and trusted abroad for their quality and safety. In other words, building a brand akin to how Indian IT services are valued worldwide. India's chairmanship or active role in groups like the Global Partnership on AI (GPAI) can be leveraged to promote ethical AI for mobility at a global scale.

9.4. Showcasing Successes at Global Platforms

The mission will document and **showcase its milestones internationally**. Through channels like the annual ITS India Congress, ITS World Congress, World Urban Forum, AI Summits, and other global conferences, India will share knowledge on what has worked (and what hasn't) in deploying AI for traffic, logistics, etc. High-visibility events - for example, hosting an International Conference on AI in Mobility in India - will be organized, inviting global experts and leaders to see India's living labs in action, such as a tour of a city with fully AI-managed traffic or a demo of autonomous shuttle trials. Much like how Semicon India events draw global CEOs and speakers, an India Mobility Tech Expo or ITS India Congress could become an annual fixture attracting foreign stakeholders to explore collaboration and investment. These efforts not only position India as a thought leader but also create business development opportunities for Indian companies on the sidelines of such events.

9.5. Export Promotion and Trade Policy Support

The mission will coordinate with bodies like the **Ministry of Commerce**, **Ministry of External Affairs** and MEA's economic diplomacy division, and **export promotion councils** (such as those for IT/ITES or automotive components) to **facilitate exports of mobility tech**. This could involve identifying target markets and **conducting diplomatic efforts or trade missions** to those countries with demo projects. **Export incentives or credit lines** might be offered for companies that secure international contracts in this domain. For instance, if a traffic management startup from India wins a project in a Middle Eastern city, institutions like EXIM Bank could provide soft financing to the client as an inducement, thereby tying it to procurement of Indian tech. Additionally, the mission would work to include **mobility tech cooperation in bilateral agreements**: e.g., as part of MOUs in the Quad or G20 frameworks, focusing on areas like EVs, smart cities, and AI. With India's G20 Presidency in 2023 having highlighted digital public infrastructure, similar emphasis can be sustained where India positions its mobility AI solutions as a form of "digital public good" that can be shared.

9.6. Leveraging the Indian Diaspora and Global Talent

India's diaspora, including many tech professionals abroad, can be **ambassadors** and **collaborators**. The mission will create channels for NRIs and global researchers to contribute - such as a visiting experts program, hackathons that invite global teams to solve Indian

problems (and vice versa). This cross-pollination ensures our approaches remain cutting-edge and globally informed. It also heightens India's profile as an open and innovative environment.

9.7. Learning from Abroad

Global positioning is also about learning from the best. The mission will actively engage in **knowledge exchange with leading countries** in specific niches: e.g., work with Japan on integrating AI for rail transport (given their leadership in rail automation), collaborate with Europe on traffic safety Vision Zero strategies, partner with the US on autonomous vehicle policy experiences, and with Singapore on smart urban mobility. These partnerships might be formalized through working groups or pilot projects. The **knowledge gained** will be **indigenized** to improve domestic implementation, while our scale and test-bed environment (India's varied conditions) can provide **invaluable feedback to those partners**, making it a mutually beneficial exchange.

9.8. Scaling Solutions for Global South

A special thrust will be to **champion mobility solutions for the Global South**. Many developing nations share challenges like congested cities with mixed traffic (cars, two-wheelers, carts), limited infrastructure budgets, etc. The mission can position India's solutions as appropriate **technology** - **robust, affordable, and adaptable**. For example, an AI traffic system in India that uses standard CCTV cameras (cheap) rather than expensive radar/LiDAR, or our experience in managing traffic without relying solely on lane discipline, are highly relevant to many African and Asian countries. India can spearhead an alliance or platform - perhaps under ISA (International Solar Alliance)-like model - for **"Smart and Sustainable Mobility for All"**, offering a helping hand in capacity building to others and creating markets for Indian firms.

9.9. Economic Impact via Exports

By executing this global strategy, the mission expects a **growing contribution of mobility tech exports to India's economy**. By 2030, Indian companies should secure dozens of international contracts, and by 2047, we envision companies created by this mission among the world's top mobility tech providers. NASSCOM's projection of India's AI market hitting $17 billion by 2027 can be boosted further with global revenue streams. Mobility tech could become a significant export sector just like software services did, thereby diversifying India's export basket into high-tech products and services.

9.10. Soft Power and Thought Leadership

Finally, as Indian cities and states succeed using AI in mobility, it adds to I**ndia's soft power as a country that innovates for public good at scale**. Similar to how **UPI payments** or **Aadhaar** have generated interest globally as **transformative digital solutions**, a successful AI-driven traffic management or road safety model in India can be an inspirational case study. We will brand and promote these initiatives (for example, the tagline #AIforAll in mobility contexts) in international media. India's narrative will be that of a nation harnessing frontier technology to

solve age-old problems of mobility and sharing those solutions with the world - a responsible leader in the use of AI.

Right Turn

The global positioning and export strategy of the **National Mission on AI in Mobility** ensures that India not only elevates its domestic transport systems but also emerges as a global trailblazer in intelligent mobility. By aligning with global visions and exporting our innovations, the mission contributes to India's stature as a developed, technologically advanced nation by 2047 - exactly in line with the Viksit Bharat 2047 aspiration and the goal to be a global AI leader. It's a future where "Made in India" smart mobility solutions move not just India, but also drive progress around the world.

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Credits

About ITS India Forum

The **ITS India Forum** is a leading not-for-profit think tank dedicated to advancing Intelligent Transportation Systems (ITS) in India. ITS India Forum promotes safety, affordability, and inclusivity in transportation in alignment with the Viksit Bharat Vision 2047. The Forum serves as a collaborative platform for industry professionals, government agencies, and academic institutions working together to shape the future of transportation in the country.

About OMI Foundation Trust

OMI Foundation Trust is a new-age policy research and social innovation think tank operating at the intersection of mobility innovation, governance, and public good. Mobility is a cornerstone of inclusive growth providing the necessary medium and opportunities for every citizen to unlock their true potential. OMI Foundation endeavours to play a small but impactful role in ushering meaningful change as cities move towards sustainable, resilient, and equitable mobility systems, which meet the needs of not just today or tomorrow, but the day after.

OMI Foundation houses four interconnected centres that conduct cutting-edge evidence-based policy research on all things mobility:

1) The Centre for Technology Transitions is dedicated to transforming India's innovation ecosystem through a systems approach. It aims to position India as a global leader in ethical, inclusive, and sustainable technological innovation.

2) The Centre for Future Mobility supports the leapfrog of cities to a sustainable future anchored in the paradigms of active, shared, connected, clean, and AI-powered mobility.

3) The Centre for Clean Mobility catalyses the adoption of electric vehicles, future fuels, and renewable energy within the mobility ecosystem as a key climate strategy of cities.

4) The Centre for Inclusive Mobility promotes safe, accessible, reliable, and affordable mobility for all. It paves the road for the future of work and platform economy to fulfil the modern promise of labour.

About Mission and Roadmap Report

A ***Mission and Roadmap Report*** is a policy-oriented framework that translates a national vision into actionable strategies, milestones, and governance structures. It identifies the institutional, technological, and financial pathways needed to achieve transformative outcomes across sectors. Unlike a research report or concept paper, a *Mission and Roadmap Report* is designed for implementation - it defines measurable goals, assigns responsibilities,

and establishes mechanisms for coordination among ministries, states, industry, and academia.

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Suggested Citation

ITS India Forum and OMI Foundation. (2025, November). *National Mission on AI in Mobility: Accelerating Safe, Smart, and Sustainable Transport through Artificial Intelligence in India*. Mission and Roadmap Report.

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