ITS India Digest October to December 2024

October 2024

MoUs

To further the collaborative vision of the ITS India Forum, two significant Memorandums of Understanding (MoUs) were recently signed:

(a) **ITS India Forum and South Asian University (SAU):** This MoU aims to address the skill gap in Intelligent Transportation Systems (ITS) and foster research, innovation, and sustainable transportation solutions across the region. Key initiatives include capacity building, collaborative research programs, and the establishment of a Centre of Excellence focused on ITS. The MoU was signed by Dr. Shiv Kumar, Director General of ITS India Forum, and Professor Pooran Chandra Pandey, Director of the Centre of Excellence on Climate Change, Green Transition, and Sustainability at SAU. Both leaders emphasized ITS's potential to alleviate traffic congestion and advance sustainable urban mobility.

(b) **ITS India Forum and Geospatial World:** Signed at the Geospatial World office in Noida, this MoU focuses on leveraging geospatial technologies to improve transportation efficiency and sustainability across India. The MoU was signed by Mr. Sanjay Kumar, CEO of Geospatial World, and Mr. Akhilesh Srivastava, President of the ITS India Forum.

Conference at Pragati Maidan, New Delhi

On October 23, the ITS India Forum organized a conference at Bharat Mandapam, Pragati Maidan, New Delhi, featuring prominent leaders from the ITS sector, government policymakers, and academics from South Asian University. The event promoted ITS implementation as a vital solution for efficient, safe, and sustainable transportation in India. Special guests included Mr. Akio Yamamoto, Secretary General of ITS Asia Pacific and President of ITS Japan, and Mr. Takehiko Barada, Senior Vice President (International Affairs) of ITS Japan. They shared insights on advanced ITS technology implemented in Japan, presenting it as a model for India's ITS ecosystem.

Indian Road Federation Event, Istanbul, Turkey

Mr. Akhilesh Srivastava, President of ITS India Forum, represented India at the Indian Road Federation (IRF) event in Istanbul, Turkey, where he delivered two lectures. He discussed ITS applications for road safety and the transformative impact of ITS technology on the transportation sector, strengthening ITS India Forum's position in the international ITS landscape.

Visit from ITS Asia Pacific Representatives

The ITS India Forum welcomed two distinguished guests from ITS Asia Pacific, Mr. Akio Yamamoto and Mr. Takehiko Barada, to their New Delhi office. During a roundtable meeting, these esteemed visitors engaged with ITS India Forum's mission, initiatives, and organizational team. Discussions revolved around ITS India Forum's role in ITS promotion and skill development in India, with both guests commending the organization’s readiness for global representation at events like the ITS World Congress in Atlanta and a major upcoming ITS event in South Korea.

Developments Section

(1) Launch of ITS Research Digest

ITS India Forum is set to launch a research digest that will contribute to ITS advocacy and development through collaborations with premier Indian institutions such as IITs. This publication will feature insights and pioneering research to support technological innovation and ITS growth in India.

(2) Industry Collaborations and Pilot Projects

ITS India Forum invites industry leaders to partner on pilot projects for advancing ITS technology development and implementation in India. A recent successful initiative includes a green corridor CV2X project in collaboration with industry leaders Acradis and Danlaw and government organization CDAC.

November and December 2024

Contribution to ITU Study Group 20 through TEC, Ministry of Communications, India

On November 19, 2024, the ITS India Forum made a significant contribution to the ITU Study Group 20 through the Telecom Engineering Centre (TEC), Ministry of Communications, India. The presentation focused on the *Requirements, Capabilities, and Architectural Framework for Tolling and Revenue Collection Using GNSS*. This forward-looking initiative was successfully advanced to the next level and will be deliberated at the upcoming ITU-T SG-20 meeting in Geneva from January 15-24, 2025.

Other Strategic Contributions by ITS India Forum

In line with its mission to shape the future of mobility and transportation, ITS India has also submitted several cutting-edge proposals to the global ITS community:

- **Vehicle Emission Monitoring ITS Standards:** A framework for integrating remote vehicle emission monitoring with urban air quality management systems, enhancing environmental sustainability.
- **ITS Standards for Freight and Logistics Management:** Aimed at optimizing logistics and enhancing operational efficiency, reducing costs in freight movement through advanced ITS standards.

- **Scalable Standards for ITS in Smaller Cities:** Designing scalable, modular ITS solutions to cater to the needs of Tier-II and Tier-III cities, making ITS more accessible to smaller and rural areas.
- **Public-Private Partnership Guidelines:** Advocating for strong collaboration between public and private sectors to boost ITS deployment across India.
- **Localization of Urban Traffic Management Standards:** Tailoring urban traffic management solutions to meet the unique needs of the Indian context, fostering smarter city planning.

Empowering Innovation: CSR Innovation Fund Launch

ITS India Forum has launched an exciting new initiative – the *CSR Innovation Fund*, designed to foster the next wave of innovation in the ITS domain. This fund will support research, startups, and pilot projects, providing them with the opportunity to test and demonstrate emerging technologies. Led by *Mr. Tushar Chhabra*, Founder and CEO of CRON AI, and a visionary recognized among BW 40 under 40, the initiative is poised to spark the growth of transformative solutions in the transportation sector.

Collaborative Dialogues with Key Government Bodies and Institutions

In a bid to strengthen India's ITS ecosystem, ITS India Forum continues to engage with crucial stakeholders:

- **Meeting with MeitY (Ministry of Electronics and Information Technology):** On December 3, 2024, ITS India participated in discussions with Ms. *Sunita Verma*, Group Coordinator, and Mr. *Kamlesh Kumar*, Scientist D. The focus was on enhancing R&D efforts, scaling indigenous ITS solutions, and ensuring alignment with national goals. A follow-up meeting with ITS stakeholders is planned for January 2025.
- **Partnership with South Asian University (SAU):** ITS India Forum and SAU are collaborating on a series of programs, including a potential M.Tech in ITS, executive PhD programs, and diploma courses. A workshop is scheduled for early 2025 to kickstart the next phase of this initiative.
- **Niti Aayog Collaboration:** ITS India continues to engage with Niti Aayog on formulating policies that will shape the future of ITS in India.

Strategic Global Partnerships

ITS India's global outreach has resulted in strategic alliances with international players, such as the *5G Automotive Association (5GAA)*. By joining forces with leaders like Audi, BMW, and Qualcomm, ITS India is poised to leverage cutting-edge cellular communication technologies to drive advancements in connected mobility, road safety, and autonomous driving. This collaboration will play a crucial role in implementing smart traffic management systems, paving the way for future-ready transportation solutions.

Exploring Advanced Mobility Solutions

As part of its commitment to sustainable transportation, ITS India has taken a bold step towards the electrification of roadways. The introduction of *Electrified Roads* for dynamic electric vehicle (EV) charging offers an innovative infrastructure solution. This technology, which allows EVs to charge while moving, promises to revolutionize the landscape of electric mobility. In Uttarakhand, ITS India is also proposing a smart parking pilot for the Char Dham Yatra, combining innovation with road safety for a better pilgrimage experience.

Driving Research and Development in ITS

ITS India Forum is set to launch the *ITS Practitioners Journal* in January 2025, a publication dedicated to the latest technological innovations and research in Intelligent Transportation Systems. Led by *Dr. Rajesh Krishnan*, the journal will feature groundbreaking ideas and serve as a platform for thought leadership in the ITS domain.

Engagement at Geospatial World 2024 Conference

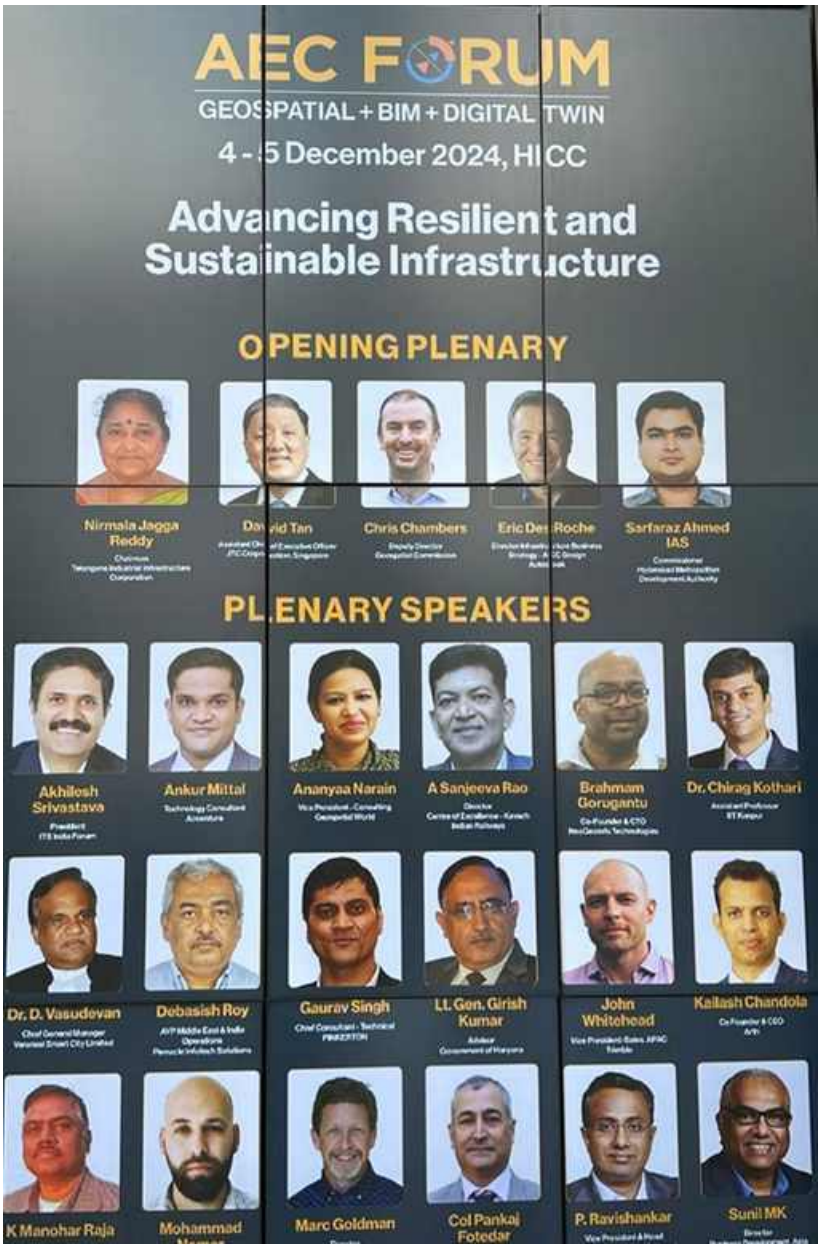
ITS India was prominently represented at the *Geospatial World* conference held in Hyderabad in December 2024. *Shri Akhilesh Srivastava* participated in high-profile discussions on leveraging digital technologies for infrastructure design, while *Dr. Shiv Kumar* contributed to debates on data sovereignty and cybersecurity in geo-intelligence. The conference reinforced ITS India's role as a thought leader in the intersection of transportation, technology, and data security.

ITS India Forum

Geospatial World, GeoSmart 2024, was held on **4th and 5th December 2024**, at **Hyderabad International Convention Centre (HICC)**,

Mr Akhilesh Srivastava, President ITS India and Dr Shiv Kumar, Director General ITS India participated in the mega conference.

On December 4, 2024, Mr. Akhilesh Srivastava was among the eminent speakers at the AEC Forum's Plenary Session on "Redefining Highways: Leveraging Digital Technologies for Design and Project Management." His vibrant talk set the tone for the session, leaving a lasting impact on the audience.



On December 5, 2024, Dr. Shiv Kumar delivered a keynote address in the session on “Ensuring Data Sovereignty & Cyber-Resilient Geointelligence.” His message resonated strongly with the audience and was highly appreciated

The President of ITS India chaired a session on "Intelligent Transportation Systems (ITS) and Advanced Sensor Technologies: Enhancing Rail Safety and Asset Management." He skilfully moderated the session, making it highly engaging and insightful.

Specialized Working Groups for Innovation

ITS India Forum has established several specialized working groups to address critical issues in transportation and technology, including:

- ITS for Women's Mobility
- ITS for Electric Vehicles
- AI-Integrated ITS Solutions
- Blockchain in ITS
- Pollution Monitoring and Remote Identification of Polluting Vehicles
- Drone Mobility Solutions

These groups aim to provide targeted solutions for emerging challenges in the transportation sector, fostering a holistic approach to mobility.

Global Collaborations and Future Outlook

In anticipation of the *2025 Suwon ITS Asia-Pacific Forum* in South Korea, ITS India is strengthening its ties with the *Korean ITS Association* to explore new opportunities in the Asia-Pacific region. The theme of the forum, *Hyper-Connected Cities by ITS*, will provide a platform for international collaboration, featuring high-level discussions on ITS strategies and innovations.

The Road Ahead

As we look towards 2025, the landscape of Intelligent Transportation Systems is poised for transformative change. Through strategic collaborations, innovation-driven initiatives, and a commitment to sustainable mobility solutions, ITS India Forum is at the forefront of driving the future of transportation in India and beyond. With exciting developments in electric vehicles, road safety, and urban mobility solutions, the coming years promise a wave of change that will make transportation smarter, safer, and more sustainable.

Stay tuned for further developments as ITS India continues to lead the charge in shaping the future of mobility.

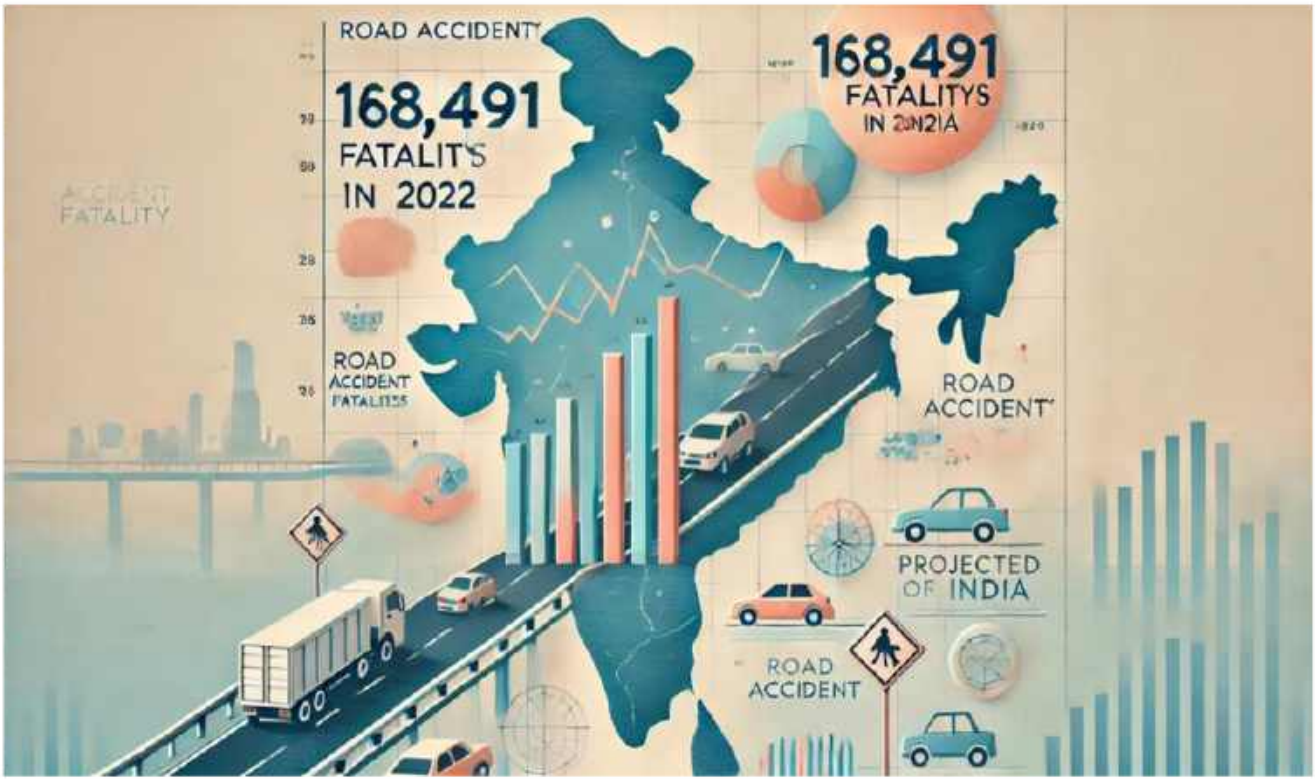
Articles Section -

Transforming Road Safety in India with Safe Driving Scores (SDS) and Intelligent Transportation Systems (ITS)

By Akhilesh Srivastava, Road Safety Ambassador IRF & WEF, President ITS India Forum, IT Advisor ITDA, Government of Uttarakhand, Visiting Professor La Sierra University.

Introduction

India's roads are alarmingly dangerous, contributing to one of the highest road fatality rates in the world. In **2021**, the nation recorded **153,972 road accident fatalities**, a number that surged to **168,491 in 2022**. Projections for **2023** suggest a grim figure of **175,000 fatalities**, underscoring a worsening crisis.



Globally, road fatalities have decreased by **5%**, thanks to stricter regulations and technology adoption. However, India remains an outlier, with fatalities increasing by **12%** in 2022 alone. Traditional road safety measures, such as awareness campaigns and manual enforcement, are failing to curb these numbers effectively. Studies reveal that such measures yield only a **6% improvement in driver behavior**, which is insufficient for a country with over **300 million registered vehicles**.

The **Safe Driving Score (SDS)**, backed by **Intelligent Transportation Systems (ITS)**, offers a transformative, data-driven approach to address this dire situation. By incentivizing safe driving habits, SDS not only promotes behavioral change but also creates a robust framework for sustainable road safety.

India's Road Safety Landscape: A Crisis in Numbers

India's road safety issues stem from multiple challenges:

- **Rising Fatalities**: Fatalities rose by **27%** from **131,714 in 2020** to an estimated **175,000 in 2023**.
- **High Global Share**: India accounts for **11% of global road deaths** despite having only **1% of the world's vehicles**.
- **Economic Impact**: Road accidents cost India nearly **₹5.96 lakh crore annually**, equivalent to **3% of its GDP**, affecting healthcare, productivity, and infrastructure.
- **Human Costs**: Beyond statistics, every fatality represents a family shattered by loss, a community impacted, and a future altered irrevocably.

The Cause of High Fatalities in India

The primary contributor to this alarming rate of road fatalities is human behavior, responsible for over **84% of road accidents**, according to data from the Ministry of Road Transport and Highways (MoRTH). Behaviors such as speeding, reckless overtaking, distracted driving (e.g., mobile phone usage), and driving under fatigue or the influence of alcohol significantly increase accident risks. This is compounded by weak compliance with traffic regulations and insufficient enforcement due to resource constraints. The lack of awareness about road safety among drivers, coupled with poor adherence to safety measures like wearing seatbelts and helmets, further exacerbates the issue. Without addressing these behavioral flaws, road safety in India cannot improve significantly.

These figures highlight the need for innovative and scalable solutions like SDS, which directly address unsafe driving behaviors.

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What is the Safe Driving Score (SDS)?

The **Safe Driving Score (SDS)** is a measurable indicator of driving behavior, calculated based on parameters such as:

1. **Speeding**: Adherence to speed limits.
2. **Acceleration and Braking**: Smooth versus abrupt movements.
3. **Distraction Monitoring**: Detection of phone usage or other distractions.
4. **Drowsiness Alerts**: Ensuring alertness through AI-driven fatigue detection.
5. **Compliance**: Following traffic signals and taking mandated breaks.

SDS assigns a real-time score that incentivizes safe behavior by linking it to tangible rewards like reduced insurance premiums and recognition programs.

Why India Needs SDS

1. Enhanced Road Safety

Unsafe driving behaviors cause over **84% of accidents** in India. SDS provides actionable insights to drivers, helping them reduce risks.

2. Economic Efficiency

Safer driving lowers operational costs for fleet owners and minimizes accident-related healthcare expenses.

3. Driver Empowerment

Drivers receive continuous feedback and rewards, encouraging long-term behavioral improvement.

4. Policy Integration

SDS can be seamlessly linked to government systems for:

- Adjusting insurance premiums.
- Streamlining license renewals.
- Promoting public recognition for safe drivers during events like **Road Safety Month**.

How SDS Works

SDS integrates with ITS technologies to ensure accurate monitoring and evaluation:

- **Telematics**: Tracks real-time driving behaviors, including speed adherence and braking patterns.
- **ADAS**: Features like collision prevention and fatigue monitoring.
- **AI Analytics**: Processes driving data to identify trends and predict risks, enabling proactive interventions.

This comprehensive system encourages safer driving habits while reducing accidents.

The Carrot-and-Stick Policy: An Effective Strategy

India's **police-to-population ratio** of **158 per 100,000** is significantly lower than Western countries, which average **300-400 per 100,000**. This disparity makes automated enforcement systems essential.

A **carrot-and-stick approach** combines rewards with penalties:

- **Carrots**:
  - Insurance discounts for high SDS drivers.
  - Reduced registration fees for compliant vehicles.
  - Recognition programs to motivate drivers.
- **Sticks**:
  - Higher penalties for low SDS scores.
  - Mandatory training for drivers with poor performance.

This strategy leverages financial motivators to influence driver behavior effectively.

Case Study: HUMSAFER Mobile App

The **World Economic Forum's Road Safety 2.0 Pilot** demonstrated SDS's potential through the **HUMSAFER mobile app**:

- **Scale**: Over **20,000 commercial drivers** participated, covering **two crore kilometers** in six months.
- **Technology**:
  - AI-driven drowsiness alerts.
  - Speed monitoring with real-time feedback.
  - Prompts for mandatory breaks to prevent fatigue.
  - Dangerous driving
  - Data Analytics

Key Outcomes

1. **Zero Fatalities**: No major accidents occurred during the pilot.

2. **Improved Scores**: Drivers' SDS improved from **126 to 189**, reducing risky behaviors significantly.
3. **Lives Saved**: An estimated **1,400 fatalities were prevented**.

The pilot's success underscores the scalability and impact of SDS in India.

Global Success Stories:

Sweden's Vision Zero

Sweden's policy combines ITS with infrastructure design to achieve near-zero fatalities. Strategies include:

- Pedestrian-friendly road layouts.
- AI-driven monitoring systems to enforce speed limits.

Singapore's Smart Transport System

Singapore uses ITS to manage traffic efficiently, with real-time alerts and automated enforcement significantly reducing accidents.

United Kingdom's Smart Motorways

AI and IoT integration allow UK motorways to optimize traffic flow, manage congestion, and enforce safety norms.

India can adopt these strategies, adapting them to its unique challenges.

Technological Interventions for SDS

SDS relies on advanced technologies to create a comprehensive safety ecosystem:

1. **Cellular Vehicle-to-Everything (CV2X)**: Facilitates real-time communication between vehicles and infrastructure.
2. **AI-Driven Cameras**: Automatically detect violations like speeding and non-compliance with seatbelt rules.
3. **GIS and Telematics**: Help map accident-prone zones and predict risks.
4. **IoT Monitoring**: Tracks driver behavior and vehicle conditions, enabling real-time feedback.

Broader Applications of SDS

Fleet Management

Logistics companies using SDS can track driver performance, reduce fuel consumption, and minimize accident-related downtime.

School Transport

In a **Karnataka pilot**, SDS-enabled monitoring systems for school buses reduced over-speeding incidents by **45%** in three months, enhancing student safety.

Insurance Integration

Insurers can use SDS to offer discounts for high scores, incentivizing safer driving across demographics.

Stakeholder Benefits

For Drivers

- Personalized feedback encourages safer habits.
- Financial rewards enhance motivation.

For Fleet Operators

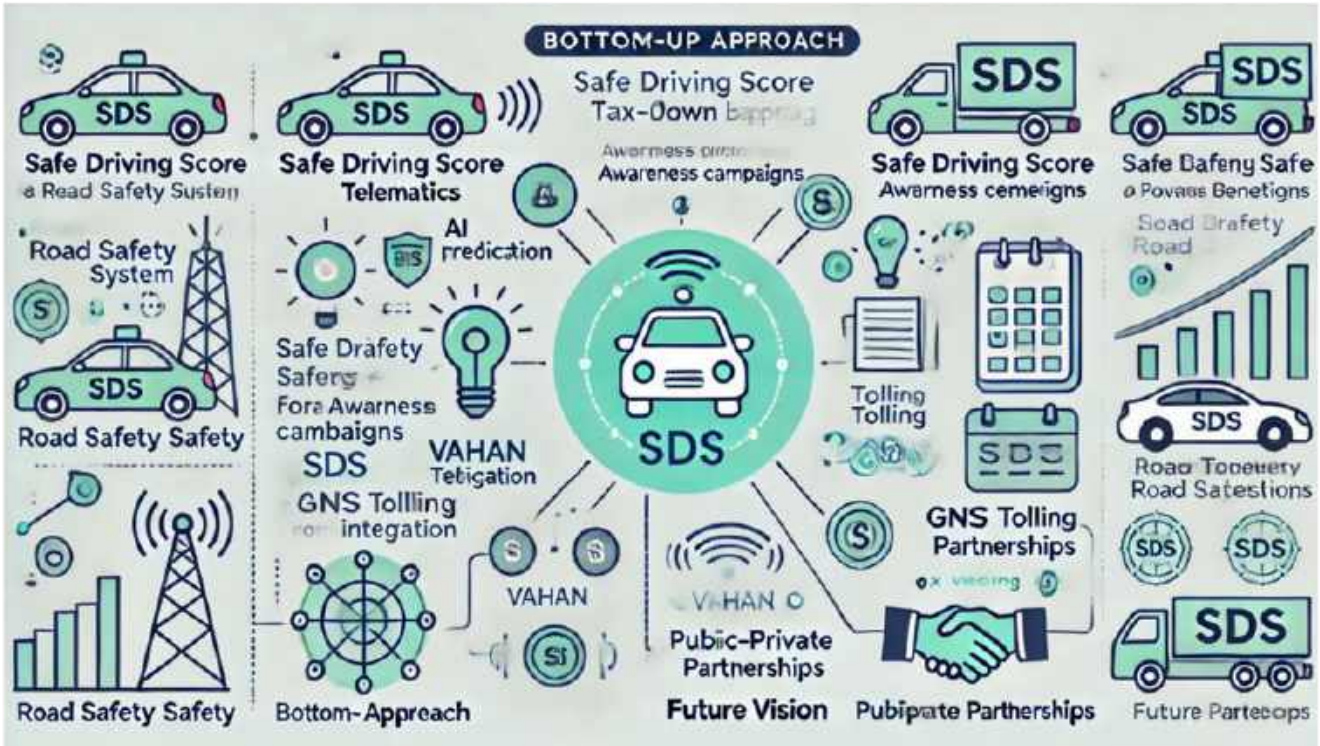
- Reduced accident costs improve efficiency.
- Better driver management minimizes risks.

For Governments

- Lower fatalities save lives and healthcare costs.
- Improved road safety policies foster economic growth.

Implementation Strategy

A phased approach ensures smooth SDS deployment:



1. **Bottom-Up**:
    - Equip vehicles with telematics and ADAS systems.
    - Launch awareness campaigns targeting drivers and fleet operators.
    - Integrate road safety education into school curricula.
2. **Top-Down**:
    - Link SDS to the **VAHAN database** for comprehensive monitoring.
    - Offer tax benefits to safety equipment manufacturers.
    - Mandate SDS tracking for commercial and personal vehicles.

Future Vision: Toward Vikshit Bharat@2047

As part of India's **Vikshit Bharat@2047** vision, SDS and ITS technologies can lead the way for:

- **AI Accident Forecasting**: Using predictive analytics to prevent collisions.
- **GNSS-Based Tolling**: Integrating SDS into tolling systems for real-time scoring.
- **Public-Private Partnerships**: Collaborating with tech firms to develop scalable solutions.

Conclusion: Building Safer Roads Together

India's road safety crisis demands immediate, innovative solutions. The **Safe Driving Score (SDS)**, supported by Intelligent Transportation Systems (ITS), offers a comprehensive framework to:

- Reduce fatalities by **20-30%** in five years.
- Save billions in economic costs.
- Foster a culture of responsible driving.

The time to act is now. As India marches toward **Vikshit Bharat@2047**, SDS provides a pathway to safer, more intelligent mobility. Together, we can transform India's roads into safe and secure spaces for all.

About the author: Mr Akhilesh Srivastava is a globally acclaimed leader in transportation, mobility, and digital governance, known for spearheading transformative projects like India's FASTag electronic toll collection system of India, the AI-powered NHAI Data Lake and Road Safety 2.0 program. As the founding CEO of NHAI's InvIT, he pioneered a successful infrastructure funding model. His leadership introduced Industry 4.0 technologies, Drones, LiDAR, and GIS, revolutionizing highway construction and management in India. Currently, as President of ITS India and the Bitumen India Forum and advisor to organizations like IRF (IC) and McKinsey & Company, he is shaping the future of mobility and infrastructure. Akhilesh's work as IT Advisor to Uttarakhand positioned the state as a leader in digital governance, enhancing public service delivery. As Road Safety Ambassador for WEF and IRF, he has advanced next-generation safety solutions, significantly reducing road accidents. Akhilesh is also a best-selling author and visiting professor at various global universities. He continues to redefine global benchmarks in transportation, infrastructure, and public service with his innovative vision and commitment to societal impact.