



Proceedings of
Webinar on Emerging Technology and Best Practices in
Road Safety
(11 March, 2024)



WEBINAR AGENDA

Theme: Emerging Technology and Best Practices in Road Safety.

(11 March, 2024)

BPR&D Hqrs, Ministry of Home Affairs, New Delhi

Mode of Webinar: Online (Cisco WebEx)

Time	Session
10:45 Hrs – 10:50 Hrs	Inaugural Address – IG(Mod), BPR&D
10:50 Hrs – 11:20 Hrs	<i>Session 1: Road Safety Measures in Puducherry.</i>
11:20 Hrs – 11:25 Hrs	Q&A – Session 1
11:25 Hrs – 11:55 Hrs	<i>Session 2: Techno reforms in transport related to road safety.</i>
11:55 Hrs – 12:00 Hrs	Q&A – Session 2
12:00 Hrs – 12:30 Hrs	<i>Session 3: Legal Aspects of Road Safety Policy</i>
12:30 Hrs – 12:35 Hrs	Q&A – Session 3
12:35 Hrs – 13:05 Hrs	Presentation by Industries
13:05 Hrs – 13:10 Hrs	Q&A
13:10 Hrs – 13:15 Hrs	Vote of Thanks – Principal Scientific Officer

PROCEEDINGS

The Webinar on “Emerging Technology and Best Practices in Road Safety” was held on March 11th, 2024 in virtual mode at Bureau of Police Research & Development (BPR&D), New Delhi. The event was conducted by Traffic and Transport wing, one of the seven verticals of Modernization Division, BPR&D.

The Webinar was chaired by Sh. Anurag Kumar, IPS, IG, BPR&D. More than 150 participants from States, UT, CAPFs, CPOs and other Government Departments attended virtually. Following were the eminent speakers from LEAs, domain experts and Industries who addressed in the Webinar:

1. Mr. M.S. Upadhye, Ex. Joint Commissioner (Traffic), Delhi Police
2. Mr. Rahul Alwal, IPS, Senior Superintendent of Police, Mizoram
3. Mr. Anil Chhikara, Former Dy. Commissioner (Transport), New Delhi
4. Mr. Shailendra Singh, Vice President, Vehant Technologies
5. Mr. Yogesh Ray, Co-founder SrivisifAI Technologies

The webinar was moderated by Dr. M.M. Gosal, SSO(T), Modernisation, BPR&D. He commenced with a welcome to the chair, Sh. Anurag Kumar, IPS, IG, BPR&D and expressed his gratitude towards DG, BPR&D and started the proceedings by welcoming Sh. Navrattan Joshi, PSO, Modernisation, BPR&D for delivering the welcome address.

Brig. Navrattan Joshi, PSO, BPR&D delivered the welcome address. He expressed his gratitude towards DG, BPR&D and Director, Modernisation and acknowledged the participants, speakers, and the significance of the event. In his address, he mentioned the substance of the topic “Emerging Technology and Best Practices in Road Safety” and encouraged the participants to actively engage in the subsequent technical sessions.

The inaugural address was delivered by Sh. Anurag Kumar, IPS, IG/Director Modernisation, BPR&D. He warmly welcomed the distinguished speakers, participants from LEAs, and colleagues from BPR&D and offered compliments to the Modernisation Division for organising the webinar on the theme of “Emerging Technology and Best Practices in Road Safety” of such paramount significance.

In his address, he expressed that road safety is a global concern with millions of lives lost annually due to traffic accidents, despite efforts from various stakeholders. He emphasized that road safety is a critical issue requiring urgent attention, particularly in India, where millions of lives are endangered by rampant accidents and fatalities.

The grim statistics from the Ministry of Road Transport and Highway's report for 2022 were cited, showing a notable increase in road accidents, deaths, and injuries compared to the previous year. The statistics were portrayed not merely as numbers but as representing countless lives lost, families shattered, and individuals enduring lifelong disabilities. The urgent need for comprehensive measures to address India's myriad road safety challenges was underscored, given the alarming frequency of accidents and deaths.

He further apprized that one of the primary road safety challenges in India is the poor state of road infrastructure. Many roads suffer from inadequate maintenance, lack of proper signage, potholes, and insufficient lighting, creating hazardous conditions for motorists, cyclists, and pedestrians alike. Furthermore, the exponential growth in vehicle ownership and urbanisation has led to congested roads and increased traffic, further aggravating the risk of accidents.

He further stated that the prevalence of reckless driving behaviour, coupled with inadequate emergency response infrastructure, contributes significantly to road accidents in India. Reckless behaviours such as speeding, overtaking on blind curves, and ignoring traffic signals endanger lives, exacerbated by lax enforcement of traffic laws. Additionally, the lack of efficient emergency services along highways leads to delays in providing medical assistance, resulting in preventable deaths and worsening injuries. Addressing these challenges necessitates a multi-pronged approach involving infrastructure improvements, strict enforcement of traffic laws, public awareness campaigns, and investment in emergency response systems. Prioritising road safety through education, enforcement, and technology advancement is crucial, with law enforcement agencies playing a pivotal role. Collaboration and sustained commitment are essential to creating a safer road environment for all users.

He further apprised that while we discuss technology, enforcement, and regulation, we must also address our attitudes. In my experience working in Assam, I witnessed villages situated along national highways where cattle freely roamed, posing risks to motorists. Our highways should not be treated as extensions of our homes or party places; they

are meant solely for traffic. We must prioritise pedestrian safety and shift our attitudes towards responsible road usage. It's disheartening that despite advancements in technology and regulations, attitudes remain unchanged. We still witness rampant disregard for traffic laws, including jumping red lights and ignoring pedestrian rights. We need real solutions that address not only technological and infrastructural aspects but also our societal attitudes towards road safety.

He expressed that all participants would benefit greatly from the webinar and discover tangible solutions. These solutions should not only focus on technological advancements and infrastructure enhancements but also on addressing attitudes of road users towards safety.

Dr. M.M. Gosal, SSO(T), BPR&D moderated the webinar and introduced the first speaker of the webinar.

Session 1: Road Safety Measures in Puducherry.

Mr. Rahul Alwal, IPS,

Superintendent of Police, Mizoram

Mr. Rahul Alwal, IPS has emerged as a stalwart in law enforcement, with a particular focus on ensuring road safety and security. He brings a wealth of experience and expertise to his role. He has conducted a case study on Road Safety Measures in Puducherry which comprises of the challenges faced by Police related to maintenance of road, marking of roads/Signage, Traffic Signals and coordination between the Police and other stake holders etc. and the remediation done by state police.

Mr. Rahul Alwal initiated the first session with a warm welcome to all the participants and expressed gratitude towards the organizers of the webinar. Following that, he delineated his professional profile and delivered a presentation on the case study concerning Road Safety Measures in Puducherry, conducted by him.

ROAD SAFETY MEASURES IN PUDUCHERRY

What led to 35% reduction in fatalities in an year, from 2018 to 2019, in the UT of Puducherry?

RAHUL ALWAL, IPS

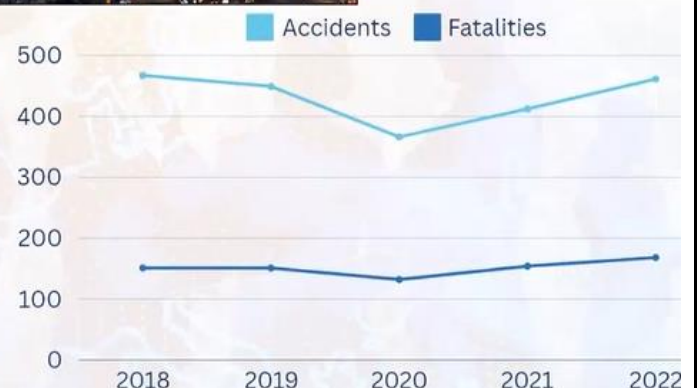


He stated that in the year 2019, Puducherry Police collaborated with the IRTE Faridabad. Together, they embarked on a year-long project that resulted in a significant reduction of fatalities by 35%. His presentation was based on the experiences gained during the project.

ROAD ACCIDENTS IN INDIA AND PUDUCHERRY



- Over the past 5 years (2018-2022), India has witnessed more than 21.7 lakh accidents, as per the "[Road Accidents in India - 2022](#)" (MoRTH). This amounts to more than 1800 accidents per day and an accident every 75 seconds. When it comes to UT of Puducherry, the number of accidents is 6,188.
- Fatalities, in the same period, are about 7.8 lakh in India and 839, in Puducherry.



Over the past 5 years (2018-2022), India has witnessed more than 21.7 lakh accidents, as per the "[Road Accidents in India - 2021](#)" (MoRTH).



Mr. Alwal informed that accidents in Puducherry had reduced from 1,597 in 2018 to 1,392 in 2019, indicating a 13% decrease in total accidents and a 25% reduction in fatalities compared to the overall average. He emphasized that this reduction was achieved through their efforts and was not influenced by the impact of COVID-19.

IRTE

- Elaborate effort taken by Puducherry Police, In the year 2019.
- We partnered with IRTE, Faridabad
- Focus on
 - traffic enforcement,
 - conducting road crash investigations,
 - data management,
 - training and coordination with various stakeholders, and
 - public awareness.

He further stated that they collaborated with IRTE, Faridabad, with a major focus on traffic enforcement, conducting road crash investigations, data management, training, and coordinating public awareness efforts. The objective was to enhance traffic flow efficiency and reduce the number of fatalities. Additionally, their aim was to minimize injuries in the event of accidents.

THE LAUNCH

SIGNING OF MOU

A MoU was signed between Puducherry Police and IRTE and the responsibilities of IRTE were as follows:

- IRTE will assist and give suggestions in the area of Traffic Engineering
- Complete analysis of Road accidents, including Road Crash Investigation, so that preventive steps may be taken to avoid such accidents in the future.
- Set up a data center in consultation and assistance from VIA of Holland in order to develop a need-based data management system.
- Developing techniques and identifying places where traffic enforcement can be effective.
- To prepare an action plan for Road Safety Awareness.

The responsibility on the side of the Police was to provide IRTE the space for setting up the office and also help the IRTE team conduct various studies, surveys, training, and coordination.



SETTING UP OF TRAFFIC ENGINEERING CELL (TEC)

- The project was funded by DIAGIO.
- The program was launched by Hon'ble LG, Dr. Kiran Bedi, in the presence of Ms. Sundari Nanda, IPS, DGP.
- Two resource persons were deputed, on a full-time basis,
 - a senior engineer and
 - a safety officer cum cameraman.
- The total expenditure in setting up the Traffic Engineering Cell, is borne by IRTE.

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Pillars of Project:

- Traffic Engineering
- Training

- Awareness
- Equipment
- Enforcement
- Data Management

TRAFFIC ENGINEERING

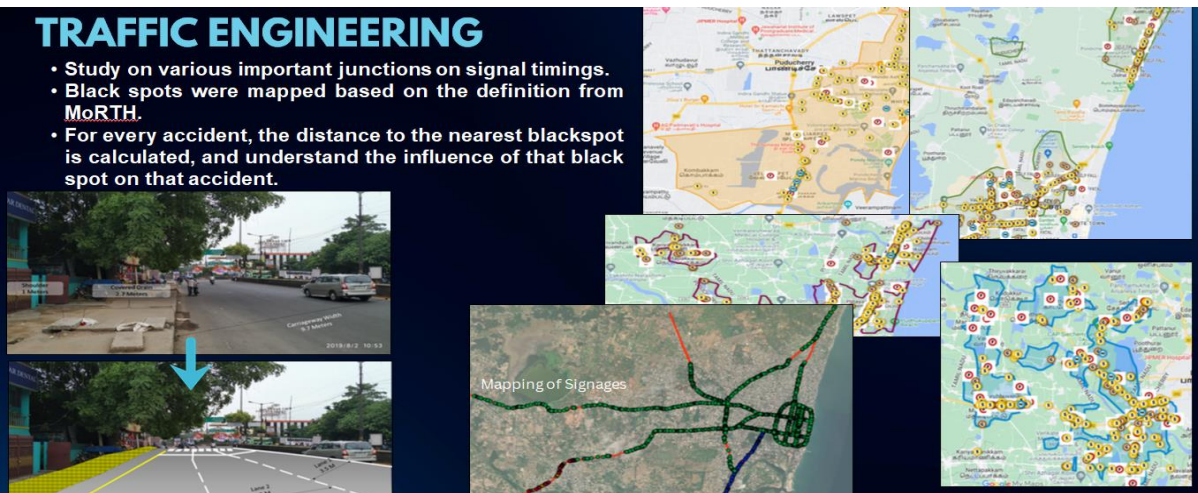
- Road Safety Management is directly dependent on the Road Environment.
- Regular road safety audits by IRTE engineers.
 - ❑ Surveys on NH 32 (from Puducherry to Cuddalore-Puducherry Border),
 - ❑ NH 332 (from Puducherry to Villupuram-Puducherry Border),
 - ❑ SH 49 (East Coast Road) (from Puducherry to Ganapathichettikulam, Puducherry)
- Spot Speed surveys are done to understand prevailing speeds on the highway
 - ❑ This helped in identifying scientific (85th Percentile) speed Limits.
 - ❑ Surveys for the identification of missing road signs, signals, and markings.
 - ❑ Based on surveys, recommendations are made
- Crash Investigation
 - ❑ Crash investigation is conducted for each fatal as well as grievously injury accident
 - ❑ Photographic evidence collected,
 - ❑ skid marks,
 - ❑ areas of damage to the vehicle and
 - ❑ Injury to the victim, etc.,
- Purpose is to understand the root cause of the accident
 - ❑ All stakeholders including traffic police were part of it
 - ❑ Road engineering recommendations are made, if any.
- Surveys for the identification of unauthorized median openings in the city area
- Study for provisions of U-turn location and closing of unauthorized medians.



Mr. Alwal stated that one of the major pillars of the project was to enhance the focus on traffic engineering. He mentioned that through this experience, he learned the importance of shifting the focus from the driver to road engineering conditions in the case of any accident. While it is common to blame the driver for not being observant or not following rules, the engineering aspect was a significant focus of the project.

TRAFFIC ENGINEERING

- Study on various important junctions on signal timings.
- Black spots were mapped based on the definition from MoRTH.
- For every accident, the distance to the nearest blackspot is calculated, and understand the influence of that black spot on that accident.



TRAINING

Training was given to Police personnel regarding

- Utilization of Breath Alcohol Analyzers.
- Hand signal drill training
- Utilization of e-Challan equipment
- Using VIA software for data entry
- And various other trainings were given

Training was also given to other stakeholders like the Transport department, PWD department, Municipalities and others

Special training was given to teachers in schools on how to inculcate road safety behaviors among the students.



Sr. No	Training Program	Date
1	Training Program on Accident Recording Software	22 nd Feb 2019
2	Training Program on Use of Interceptor for Enforcement	08 th May 2019
3	Use of Breath Alcohol Analyser Training Program	02 nd June 2019
4	Hand Signal Drill Training Program	17 th to 22 nd June 2019
5	Training Program on Filling-up of Accident Recording Form	12 th October 2019
6	Use of Breath Alcohol Analyser	30 th November 2019



He further stated that another important pillar of the project was providing adequate training not only to the police department but also to other stakeholders such as the PWD department, municipalities, schools, children, and school teachers. He particularly emphasized the importance of training school teachers in this regard. The focus was to integrate road safety habits into the school curriculum. For instance, even though there might not be a dedicated curriculum for road safety, it could be incorporated into regular classes.

EQUIPMENT

- The police did not have most of the much needed equipment for effective enforcement.
- "Puducherry Road Safety Fund Rules"
 - Set up in 2015
 - "Road Safety Committee", headed by Transport Secretary,
 - Representation from all stakeholders, which are concerned with Road Safety.
- All the enforcement amount goes into this fund and the committee can decide how to utilize it.
- Police being the major contributor, the committee was requested funds for equipping Traffic Police for better road safety and enforcement.

Sl.	Items proposed
1	Interceptor vehicle
2	Ambulance
3	Traffic Cones
4	Poncho
5	E-challan Machine
6	Body-worn cameras
7	Airtel SIM cards
8	Office Expenditure
9	Noise Level meter
10	Breath Alcohol Analyzer
11	Cranes
12	Iron Mobile barricades
13	Megaphones
14	Torches
15	Water Filled Barricades
16	Convex mirrors
17	First Aid Kit
18	Wheel locks
19	Reflective hand gloves
20	LED Batons
21	Reflective stickers
22	Ropes



AWARENESS

- Wide awareness campaign
 - educational institutions, officers, markets, villages, etc.
- Street plays
- Posters were made and pamphlets were circulated.
- Traffic awareness videos were made and widely circulated.
- Puducherry Traffic Police opened social media accounts
 - Various awareness materials published.
- Based on the testimonies of the family members of the deceased in the traffic accident, videos were made and circulated.
- The awareness materials made by various organizations like NHAI, MoRTH, etc. were translated into the local language and circulated.
- Traffic personnel on the ground were providing counseling to violators
- Since the government was not supporting enforcement, we ask violators to mandatorily watch one-hour awareness videos, to waive off challans.
- Bike rallies and walkathons were conducted to spread awareness
- Road Safety Month was celebrated



Mr. Alwal mentioned that various awareness programs, such as street campaigns and the distribution of awareness materials, had been conducted. Children were also integrated into the system and provided with uniforms similar to those worn by traffic policemen. These children distributed pamphlets among their peers and others, and stood in front of their schools during closing hours. If any parent arrived without a helmet, the children would make efforts to educate them by reminding them to wear helmets and follow traffic rules.

ENFORCEMENT

- The TEC has regularly held training sessions for educating and raising the awareness.
- Six official programs were held.
- Routine traffic inquiries are also handled there.
- Prior to this project, enforcement was sporadic.
 - Overspeed, drunk driving, and other violations that depended on evidence-based systems were never enforced since there were no instruments or enforcement systems.
 - IRTE has provided an interceptor vehicle, by temporarily attaching it with the TEC.
- Interceptor vehicle = mobile traffic enforcement platform + mobile crash investigation laboratory.
- Also used for conducting road safety audits
- Enforcement was done randomly but with a focus on
 - black spots
 - wrong side movement
- Enforcement focus on
 - overspeeding, dangerous driving, stop line violations, signal violations, driving without a seatbelt, riding without a helmet, and drunken driving.



He further stated that they adopted a balanced approach toward traffic enforcement, prioritizing awareness alongside enforcement. This approach aligned with the government's directive to emphasize awareness rather than strict enforcement. In cases of traffic violations, instead of solely focusing on enforcement, individuals were encouraged to watch a one-hour video in their traffic engineering cell. The video aimed to educate them on various issues related to accidents and raise awareness about road safety.

ENFORCEMENT

- The number of overspending offenses booked increased from 54 in 2018 to 2,228 in 2019.
- While 1,742 vehicles were stopped for inspection in 2019 and led to 202 prosecutions, there was no enforcement of drunken driving in 2018.
- Pondicherry traffic police prosecuted 91,350 cases of various traffic infractions in 2019, compared to the 50,428 breaches that were recorded in 2018.

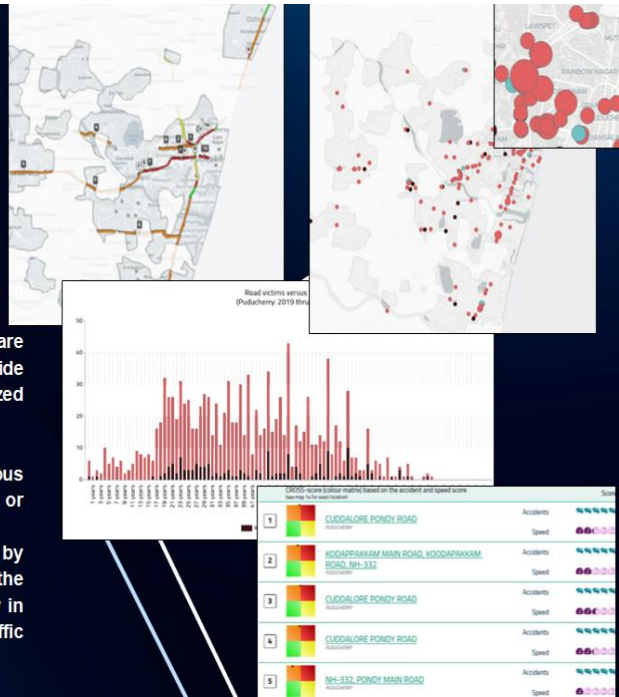


Mr. Alwal informed the participants that their primary focus was on black spots and driving on the wrong side of the road. Instead of targeting all types of traffic violations, they concentrated on those that directly contributed to fatalities and road accidents, such as speeding, dangerous driving, signal violations, driving without seat belts, and drunk driving. Their enforcement efforts aimed to reduce fatalities and accidents by prioritizing these aspects.

He further explained that their enforcement strategies involved patrolling random areas at random times, with a particular focus on black spot areas. In terms of enforcement vehicles, they utilized a sector vehicle, which offered significant advantages due to its built-in speed guns and recording capabilities.

DATA MANAGEMENT

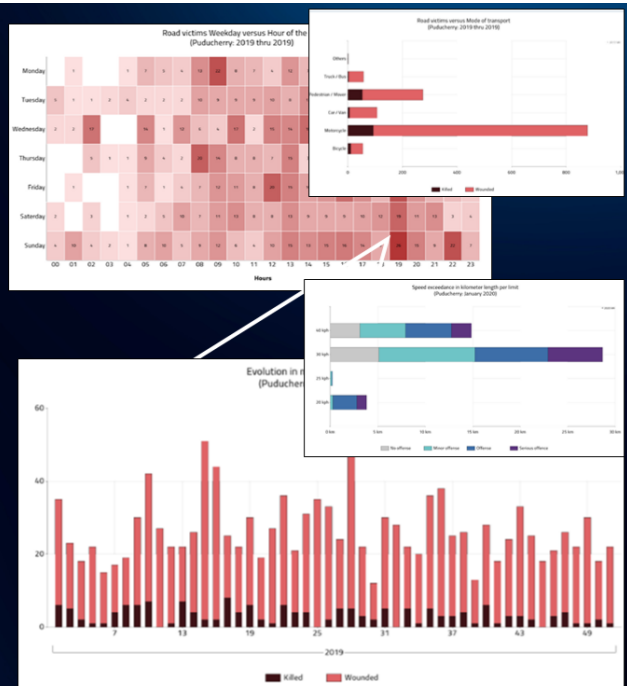
- Data helps in
 - identify issues,
 - risk factors, and
 - priority areas,
- Also helps to develop strategy, set goals, and assess performance.
- Helps in effective resource allocation.
- Without it, there won't be any significant, long-lasting decreases crash risk exposure or crash severity.
- In most parts of our country, statistics pertaining to road safety are gathered every day, but before these data can be used to guide practice, they must be correctly classified, processed, and analyzed in a computerized database system.
- Prior to this project, road accident data was manually maintained.
- Upon verification, it was observed that there were numerous differences and the data couldn't be used to make a diagnosis or identify an issue.
- The Netherlands' VIA traffic solution organization was contacted by the IRTE. A team from VIA, which has 30 years of experience in the field of road safety data management, was invited to Pondicherry in order to better understand the issues surrounding traffic management, road accidents, and enforcement.



He stated that there is little more to add regarding the importance of data. To enhance their data-driven approach, they partnered with a Netherlands-based space company that has been operating in this sector for 30 years. Through this collaboration, they utilize data collected from enforcement activities and traffic accidents to improve their traffic management and safety strategies.

DATA MANAGEMENT

- In collaboration with IRTE, VIA has created a data management system that complies with national requirements.
- A dossier management table was created for introducing the dossier on a daily basis.
- Additionally, experienced police officers from each of Pondicherry's four zones regularly register and exchange files.
- This tool keeps track of the type of prosecution as well as the precise location where it takes place. A project like this would aid the police in understanding the necessary steps for changing behavior.
- Accident Data reports
 - Yearly accident data analysis was done and analysis was done on the trends, and patterns of accidents.
 - It was started for the first time in Puducherry



He explained that various aspects are analyzed during investigations, including the location, type of junction, vehicle damage, individuals involved, and vehicle types. These parameters are meticulously documented and stored in a database. From this data, different heat maps are generated, identifying hotspots and providing insights based on factors such as age, time of day, and day of the week. This detailed information allows them to refine enforcement strategies, allocate resources effectively, and address traffic-related issues comprehensively.

COORDINATION WITH STAKEHOLDERS

- Project included all the stakeholders
- Need to shift the perspective.
 - ❑ The conventional perspective - Driver is responsible
 - ❑ Change to - Road Engineering issues are the main cause of the accident
- Traffic Inspection Teams - tasked to visit all the fatal accidents.
 - ❑ Headed by a concerned Traffic Inspector,
 - ❑ Members are PWD, Transport, and others.
 - ❑ After every such inspection, an Accident Analysis Report is made which highlights the road engineering and enforcement related issues and circulated to all concerned.
- “Traffic Hazard Report”,
 - ❑ Made every week
 - ❑ documents various traffic hazards like potholes, piled up construction material on road, low hanging electric wires, dark areas, signage, road markings, sharp edges on the side of the road, and anything which may cause an accident or may increase the vulnerability in case of an accident
 - ❑ a copy is sent to all concerned to take necessary action.



Mr. Alwal further stated that it is not solely the responsibility of traffic police personnel to ensure road safety; it is a collective effort that involves all stakeholders.

COORDINATION WITH STAKEHOLDERS

Hospitals.

- Audit - travel time from the time of accident and taking them to the hospital.
- Historical data of all the accidents was taken
- Analysis on which hospital they reached first and then subsequently to other hospitals, time taken to reach, mode of transport, along with day and time of the day analysis.
- Based on this, strategic locations were decided, where the ambulances would be able to reach hospitals better.

Issues with Ambulances

- Before, the ambulances were staying at the concerned hospital or PHC and they didn't have paramedics and equipment to provide timely intervention.
- Also, it was found that there was no proper check on night drivers, and hence the service during night hours was not available most of the time.
- Also, the ambulances were utilized as a conveyance for PHC/hospital staff and also for the movement of store items). This was sent to the Health Secretary to place ambulances at strategic places, along with other observations which we got to know.



COORDINATION WITH STAKEHOLDERS

- Traffic Signals
 - Privately owned and maintained.
 - Host advertisements on them to generate revenue.
 - This was against the High Court orders. After much deliberation, the next government decided to allocate a budget signals.
- Traffic Volunteers
 - System was revamped and much publicity was given.
 - They were given fluorescent jacket, whistle, and light baton.
 - They used to help manage traffic during peak hours, weekends (increased traffic due to surge in tourists), and major events.
- Public Transportation
 - Private buses - controlled by Transport department.
 - Routes and timings for the route were decided way back and they have to adhere to these routes and timings.
 - Hence, they overspeed and do other traffic violations.
 - The transport department was requested to update these routes and timing according to current traffic conditions.



In this regard, they established a traffic inspection team led by a traffic inspector and comprising members from the PWD and transport departments. This team regularly visited accident spots and compiled reports. Additionally, they implemented a traffic hazard report system, exclusive to the traffic police, who were always present on the streets. The police would identify potential hazards, such as low-hanging electric wires or construction materials obstructing the road, which could lead to

accidents.

COORDINATION WITH STAKEHOLDERS

• Major events

- like New Year Celebrations, major temple festivals, etc., attract lots of crowds from within Puducherry and even outside Puducherry.
- These events were the cause of some accidents, including a few fatal accidents.
- To counter this, new traffic plan were made, after getting feedback from ground level staff, public and other stakeholders.
- This ensured no accidents during the New Year Celebrations, which usually record many accidents and few fatalities, due to drunken driving.



Major events such as New Year celebrations and major temple festivals were associated with some accidents, including a few fatal ones. To address this, new traffic plans were developed based on feedback from ground-level staff, the public, and other stakeholders.

REGULAR MONITORING AND MEETINGS

- Regular review at the level of DG, IG, and SSP level to ensure coordination issues, any requirement for equipment, ensuring adequate enforcement, awareness activities, etc.
- Weekly review by Hon'ble LG
 - Hon'ble LG, Dr. Kiran Bedi, took a special interest in this project, and knowing that ground-level motivation is the key, she used to conduct reviews every Friday.
 - The lower subordinates were under political pressure not to do more enforcement. This was causing reduced enforcement, which was affecting the project.
 - To motivate staff for regular enforcement, Hon'ble LG used to conduct weekly reviews of enforcement with all the Inspectors and above, and the best Inspector was given some token of appreciation.
 - This created a competitive environment for effective and enhanced focus on the enforcement



He further stated that all these achievements were possible due to regular monitoring and the motivation of their staff. The teamwork

exhibited was commendable, with ground-level staff executing their duties diligently. Despite challenges, such as working in a small area with a close-knit community where everyone knew each other, the staff remained dedicated to their enforcement tasks. Regular motivation sessions, often led by senior officials like LG Mam and DG Sir, played a crucial role in boosting morale and fostering a sense of commitment among the staff.

These activities helped to motivate the staff to perform their duties consistently. Additionally, they held weekly review sessions at the LG Mam level, during which all stakeholders—including the secretary of transport, the secretary of health, other PWD officials, and various people—gathered to discuss problems and find solutions.

CHALLENGES FACED DURING PROJECT

The newly amended MV Act was notified by the Central Government in September, 2019. However, the local government of Puducherry has not taken steps to notify the act in Puducherry.

- Since we cannot use the old rates (since the Act has changed) and the new fines were not notified, we could not do any compounding of the traffic violations.
- We could only do Police Notices for any traffic violation and send the notices to the court, who have to take cognizance.
- Police Notice.
 - ☐ Courts were overburdened.
 - ☐ No dedicated court for traffic cases.
 - ☐ Hence, we didn't have any effective enforcement.
 - ☐ On multiple occasions, request for "Special Courts" and "Mobile Courts" has been made to the Law Department, Puducherry.

- IRTE generated as many as 45 reports for improvement in road engineering. But out of them only 6 were executed.
- There were only 2 Towing machines available and they were too old to actually tow any improperly parked vehicle. To solve this, a study was done on collaborating with private persons, and various charges of towing were tentatively decided, after meeting all such private players. A proposal in this regard was sent to the Transport department. Since the government of Puducherry was not encouraging this project, the notification of rates was never taken up.
- The parking issue in the main market area (Big Bazar) raised concerns about traffic jams and reduced usable road width for commuters. The market association had its own vested interest in keeping the status quo. The solution was to charge parking fees by the municipality. This again met a roadblock in 2019. Only much later, this was taken up and this eased some traffic. But as a stopgap measure, we ensured parking only on one side of the road.



Mr. Alwal also highlighted the challenges faced during the project, including the issue that while the newly amended MV Act had been notified by the Central Government, the local government of Puducherry had not taken steps to implement it. Additionally, parking issues in the main market area raised concerns about traffic jams and other related problems.

Key Takeaways:

- Road safety involves multiple stakeholders; traffic police should not bear the entire responsibility alone.
- Liaison with private organizations can provide valuable expertise and resources to enhance road safety.
- Government support significantly boosts the effectiveness of road safety projects.
- Road safety is influenced by various factors; issues identified on the ground should be communicated to the relevant parties for corrective action.
- Many interdepartmental issues can be resolved through face-to-face meetings and coordination. “Get your work done by having their cup of coffee.”
- Be actively present with your staff on the field. Motivate them, address their concerns, and reassure them of your support.
- Avoid making assumptions. Ask questions, seek answers, and clarify doubts to address issues effectively. Never hesitate to ask and learn.
- Utilize available technology. Although implementing it on the ground can be challenging, regular monitoring and motivation can facilitate its use.
- Many citizens are willing to help but may not know how. Make your volunteering schemes widely known to attract more volunteers.

Mr. Rahul Alwal wrapped up his presentation by summarizing the key takeaways from the case study.

He answered the queries of participants after his presentation.

Session 2: Techno reforms in transport related to road safety.

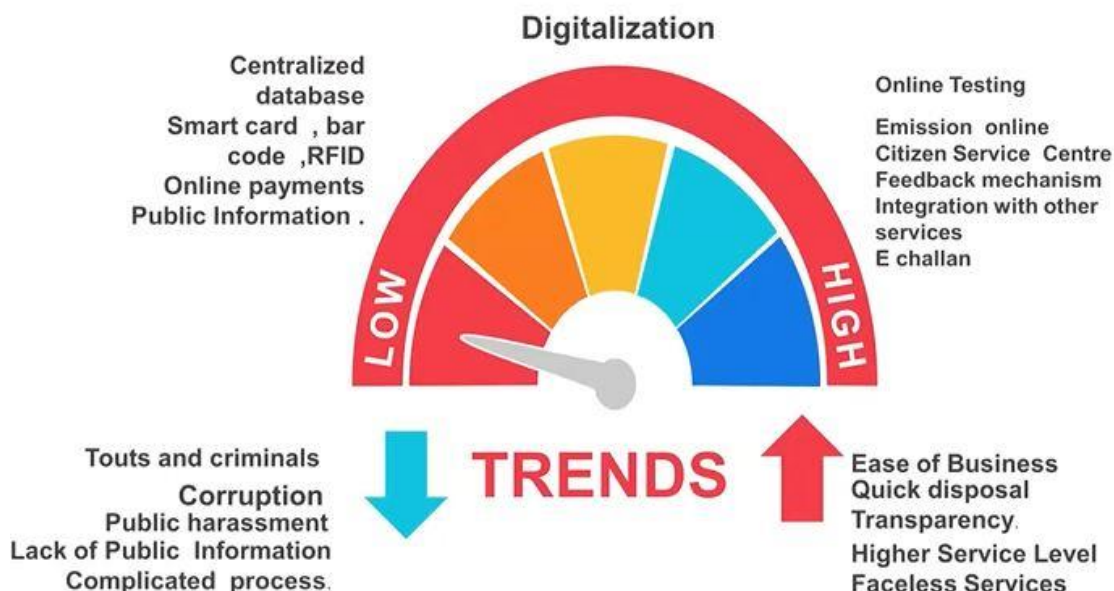
Mr. Anil Chhikara,

Former Dy. Commissioner (Transport), New Delhi

A brief introduction of the second speaker, Mr. Anil Chhikara. He stands as a distinguished figure in the realm of transport regulation and road safety, with a career spanning over three decades. With his wealth of experience and expertise, He has played a pivotal role in shaping and reforming transportation systems, particularly in the dynamic environment of Delhi.

Sh. Anil Chhikara while delivering his talk during the webinar informed that over the past five years, significant changes have occurred within the transport department, with reforms aimed at rapidly improving enforcement, road safety and RTO services with transparency.

Reforms at RTO services



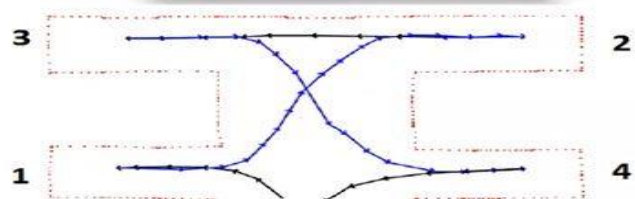
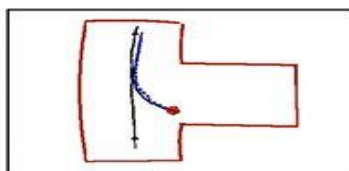
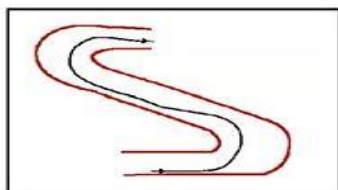
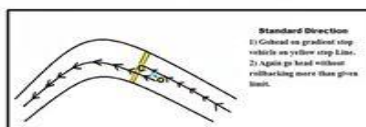
The vision was to develop RTO services based on performance, with a mission to absorb technology into procedures for application disposal and evaluation, utilizing digital database infrastructure.

Automated test tracks



He further mentioned that automated driving test tracks were implemented for conducting driving tests. In this setup, the tests were carried out without human intervention, ensuring an authentic evaluation process and eliminating any room for bias. This approach ensures transparency and accuracy in the evaluation process, ultimately producing competent drivers and contributing to enhanced road safety.

Various Formations



Various formations such as reverse S-bend, serpentine band, H-bend, U turn, parallel parking, gradient, overtaking etc. are used to evaluate the driving skill in these tracks.

Automated Vehicle testing

- The vehicle is tested through simulation infrastructure and test value are digitally captured upon live performance .
- The testing of Brakes , emission , suspension , steering , joint play head lamp , speedometer test , speed governor , suspension , under body , noise level, side slip are measured accurately .
- The test report is also handed over to the public about vehicle performance and deficiencies.
- The testing of vehicle is performed much better than workshops at much less time.

Mr. Chhikara further informed that vehicle testing has also been automated, and infrastructure has been established to simulate vehicle operations. This ensures that the vehicle's performance in terms of safety is accurately assessed.

Automated test lanes VIU Jhuljhuli



Parameters such as braking, emissions, suspension, joint speedometer testing, speed governor, under body inspection, noise levels, and side slip are meticulously measured. These tests replicate real-world driving

conditions and are conducted using specialized machinery. Results are then captured in software, and a detailed test report is provided to the vehicle owner, outlining performance and any deficiencies. Based on these results, owners are advised to make necessary adjustments or repairs.

He further informed that MORTH and NIC along with various states have developed a national common software called as www.parivahan.com. There are two aggregates in software one is Sarathi and another is Vahan.

- Sarathi deals with driving licensing and other associated transactions including prosecution.
- Vahan deals with vehicle registration related transactions including fitness, prosecution.



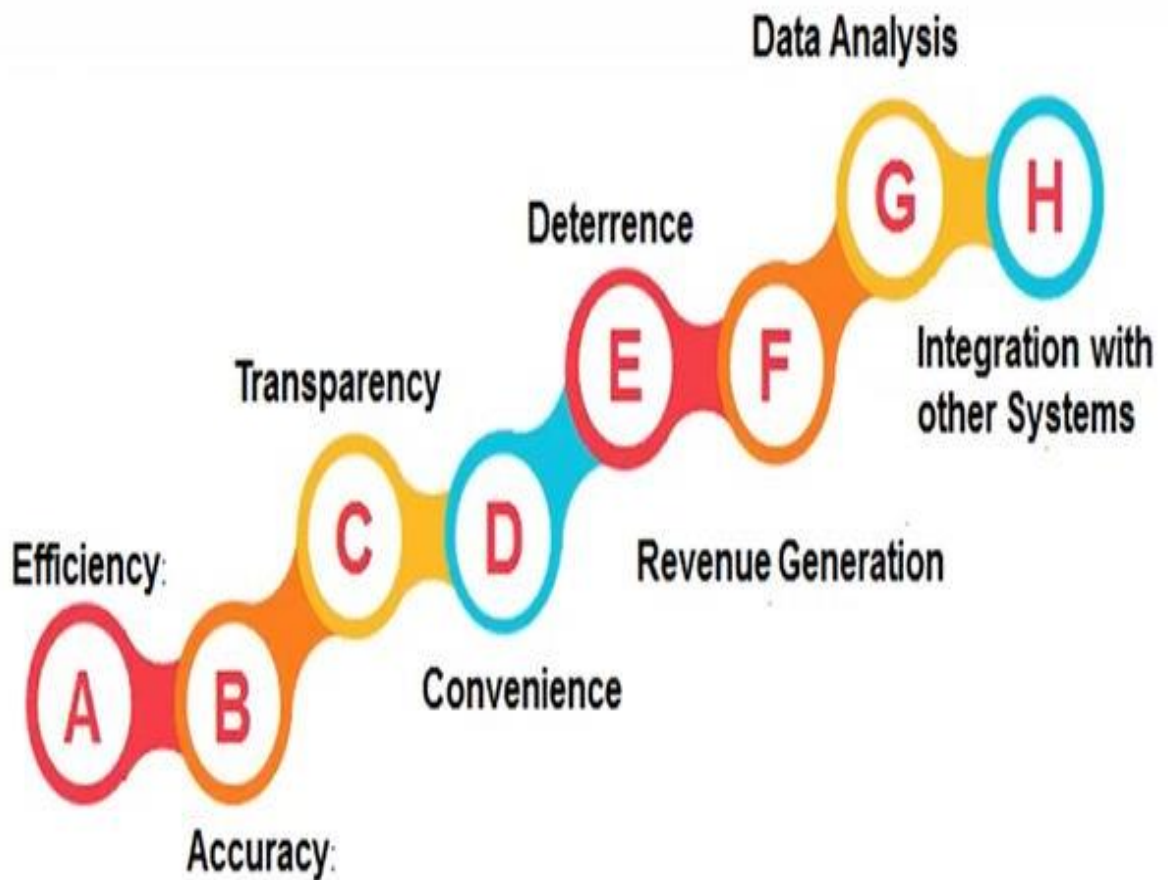
E challaning

E-challaning is done through hand held machine having Vahan and Sarathi on line data. Any vehicle found having offence, the same is prosecuted instantly, also the control room also get the same incidence recorded. The staff needs not to write a lot of information as all are available on just feed of registration number. The correct MV section is also self-picked and printed.

Hand Held Device update the result to central server from field



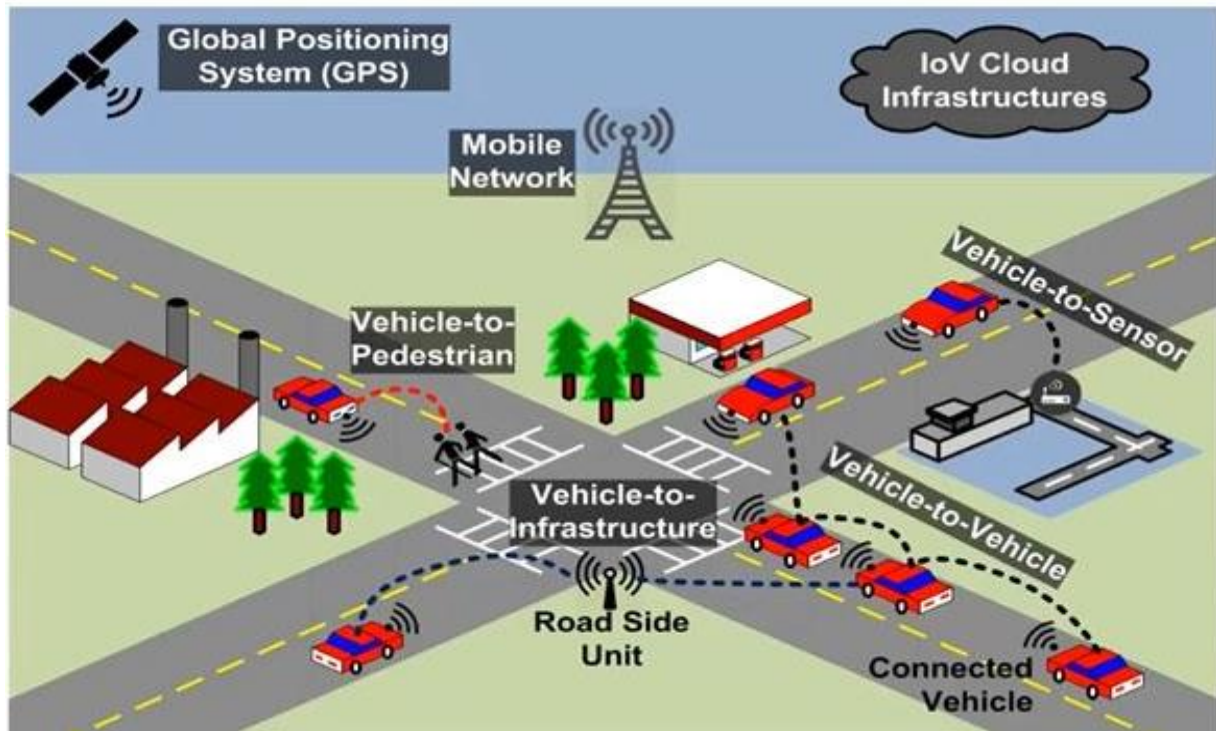
E challan a futuristic enforcement



An Introduction of Intelligent Transport System (ITS)

An ITS is an advanced application which aims to provide innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more coordinated, and smarter use of transport networks.

ITS Networking



Intelligent Transport System applications

- Car navigation traffic;
- Signal control systems;
- Container management systems;
- Variable message signs;
- Automatic number plate recognition or speed cameras to monitor applications, such as security CCTV systems;
- Automatic incident detection or stopped vehicle detection systems;
- Parking guidance and information systems;
- Weather information;
- Advanced modeling and comparison with historical data;

Central control room



- Under the ITS a central control room is established which have vehicles live positioning, CCTV and other sensors which gives continuous data to control room about offences and vehicle history.
- The challans are dispatched automatically to registered address.
- The density of traffic and de-congestion solution is also available through software and IT solutions.

ITS Traffic Signal Control

It is a system that uses IoT infrastructure to manage traffic signals in real-time . The system consists of inductive loops and a programmable micro-controller to determine traffic density. Inter-communication in the centralized control unit sets the timer of the traffic light and synchronizes with the traffic density in real-time for smooth mobility of vehicles with less delay . Additionally, to prioritize emergency vehicles over other vehicles in the same lane, a pre-emption mechanism has been integrated through infrared sensors .The result of traffic density determines the timer of the light post in real-time, which in result enhances the smooth flow of vehicles with reduced delay for travelers.

Monitoring traffic

Dynamic programming for priority



Automated Signal Traffic Control

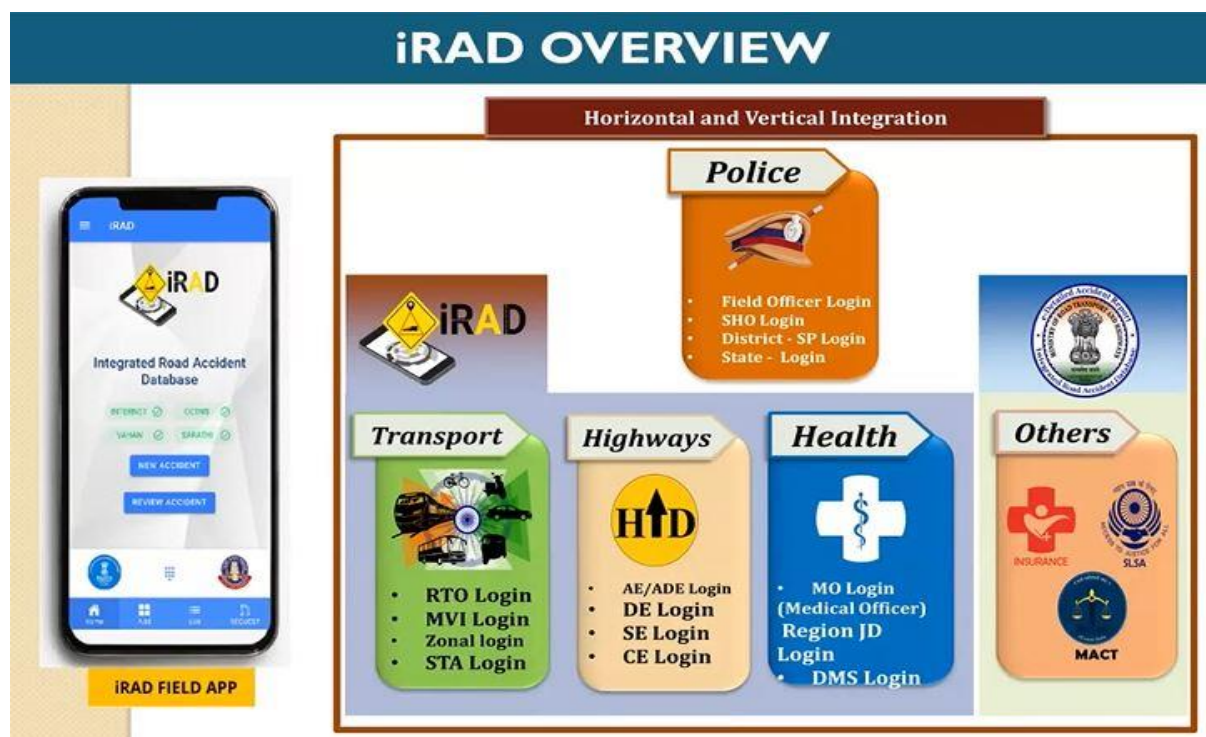
Artificial Intelligence AI Enforcement

10 Leading Applications of AI in Transportation



Intergrated Road Accident Database (IRAD)

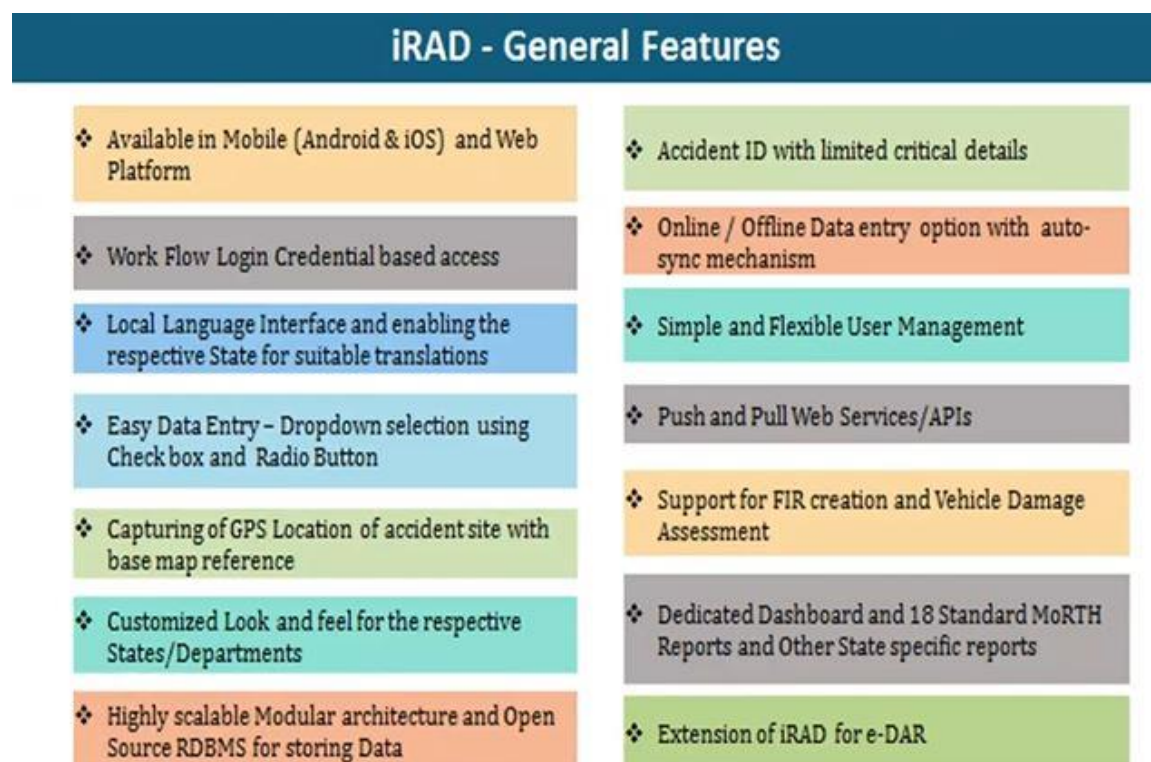
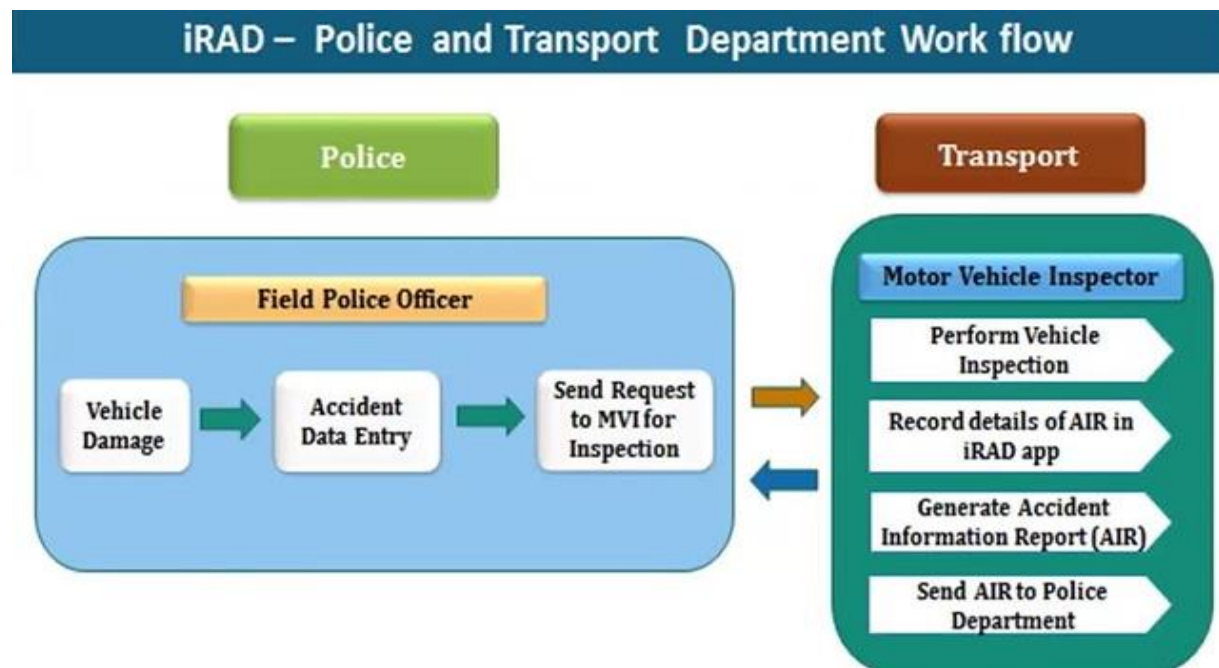
It is a software made by Ministry of Transport with the help of WHO. When an accident takes place, Police Officers make accident report and they also notify the transport department, which conducts physical inspections of vehicles and endorses their reports. The reports adhere to standardized formats and data protocols, ensuring that each accident is assigned unique ID containing comprehensive information.



A dashboard facilitates the selection and categorization of accidents, enabling analysis of accident frequency in specific locations, including highways. It also alerts relevant authorities such as the Public Works Department (PWD) regarding necessary improvements. The system coordinates with the health department, ambulances, and hospitals where victims receive treatment, ensuring seamless information flow.

Moreover, legal services, including representation in courts, are also integrated into the system. This automated process has been implemented nationwide, with designated officers at each district or under the District Magistrate (DM) responsible for data maintenance.

They liaise with relevant entities such as the police, transport department, highways, and health authorities, ensuring comprehensive national-level data accessibility.



Mr. Anil Chhikara ended his talk by replying the queries of participants.

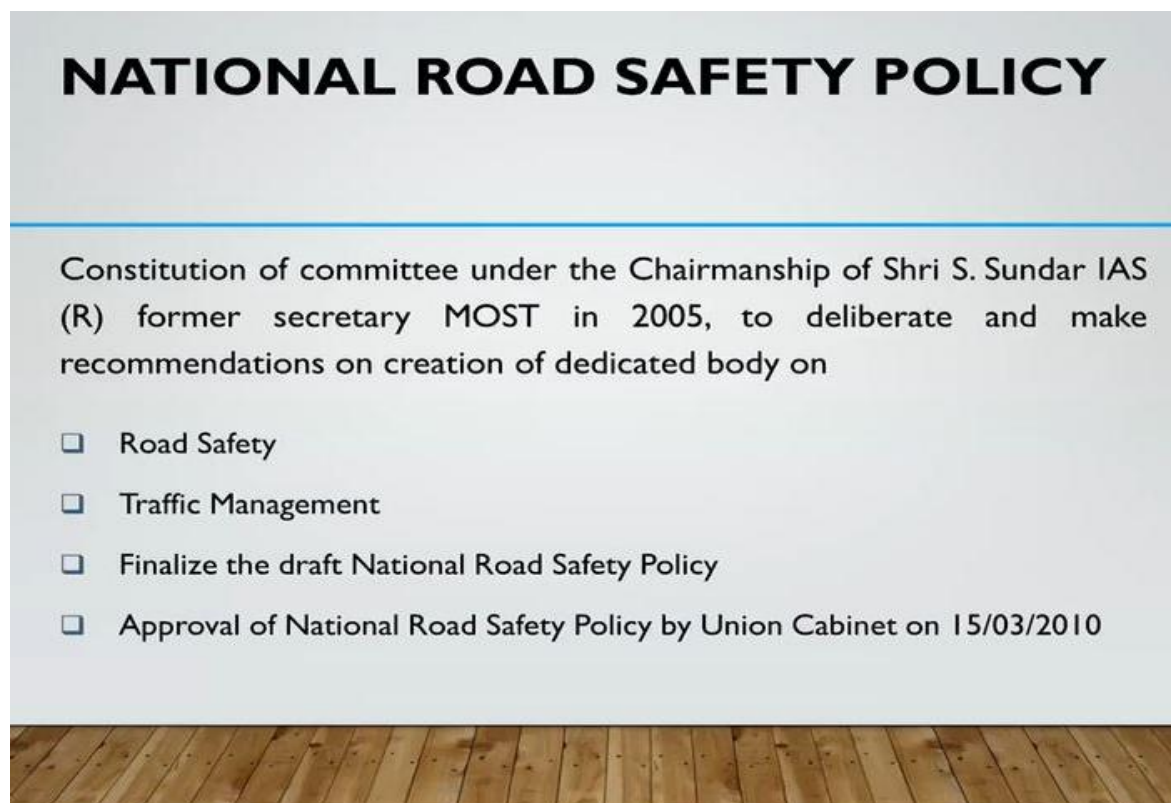
Session 3: Legal Aspects of Road Safety Policy

Mr. M.S. Upadhye,

Ex. Joint Commissioner (Traffic), Delhi Police

A brief introduction of the third speaker, Mr. M.S. Upadhye. His illustrious career is a testament to his unwavering dedication and profound expertise in various fields, with a notable focus on road safety and traffic management. His extensive knowledge and innovative approaches have significantly contributed to enhancing safety measures on roadways and ensuring efficient traffic flow. He has consistently sought to integrate cutting-edge solutions to address road safety challenges. He delivers talks on legal aspects of Road Safety Policy.

Mr. Upadhye initiated the third session with a warm welcome to all the participants and expressed gratitude towards the organizers of the webinar. Following that, he delineated his professional profile and delivered talk on the legal aspects of Road Safety Policy.



He informed that the National Road Safety Policy was written and prepared by Shri S. Sundar, Former Secretary of MOST. It received approval from the Union Cabinet on 15.03.2010 and was put into effect on 01.09.2019.

NATIONAL ROAD SAFETY POLICY

PREAMBLE

- ☐ Govt. of India is deeply concerned about the growth in number of road accident/ injuries / fatalities.
- ☐ Govt. of India recognized that accidents have become a major public health issue and victims are mainly poor & vulnerable to road users.
- ☐ Road safety needs to be addressed on a holistic basis.
- ☐ Central & State Govt. have a Joint responsibility in reducing the incidence of road accidents, injuries & fatalities.
- ☐ Govt. of India is committed through its National Road Policy to bring about significant reductions in mortality & morbidity resulting from road accidents.

Mr. Upadhye emphasized the Government of India's deep concern regarding the rising number of road accidents, injuries, and fatalities. This concern was highlighted in the Brasília Declaration of 2015, where India pledged to reduce road fatalities by 50% by the year 2020. Unfortunately, this commitment has not been fulfilled. While Himachal Pradesh and Tamil Nadu have made notable progress in reducing fatalities, the majority of states have experienced a consistent increase in road accidents and casualties throughout 2019 and 2020.

NATIONAL ROAD SAFETY POLICY

POLICY STATEMENTS

- ☐ In order to achieve a significant improvement in road safety the Government of India is committed to
- ☐ Raise awareness about safety issues.
- ☐ Social & economic implications of road accidents.
- ☐ Measures to be taken to curb the rising menace of road accidents.
- ☐ Enable & empower stake holders to play a meaningful role in promoting road safety.
- ☐ Establish Road safety information data base.
- ☐ Assistance to local bodies, UT & State Governments to improve quality of Crash Investigations & data collection & analysis.
- ☐ Development of National Road Safety Information System.

He further emphasized the importance of collaboration to significantly reduce the number of accidents. Preventable accidents cannot be tolerated, and it is imperative to recognize the collective responsibility in achieving this goal, as shown by Sweden's accomplishment of reducing fatalities to single-digit numbers by 2020.

Furthermore, Mr. Upadhye highlighted the necessity to establish standards for design, construction, and maintenance, aligned with international best practices, tailored to the country's needs due to varying traffic conditions.



Additionally, he mentioned the significance of implementing Intelligent Transportation Systems (ITS) to ensure the establishment of a safe and efficient transport system. ITS encompasses various technologies such as sensing, communication, and advanced technologies readily available in the country, making it feasible to implement these activities effectively.

Ensuring vehicle safety is paramount, alongside educating drivers and enforcing safety laws by both transportation and police departments. The police must prioritize safety over traffic flow, as excessive smoothness can lead to more accidents. Balancing safety and smooth traffic is essential, with the police primarily responsible for enforcement, focusing on preventing drunk driving, wrong overtaking, and ensuring safety gear usage. The Supreme Court committee on road safety has

highlighted these issues, directing governments to implement existing safety laws.

NATIONAL ROAD SAFETY POLICY

SAFER DRIVERS

- ☐ Strengthening of system of driver licensing and training to improve competence & capability of drivers.
- ☐ Safety of vulnerable road users.
- ☐ Design & construction of rural/ urban roads to fulfil the needs of non motorized transport and the vulnerable (including specially- abled) road users in appropriate manner.
- ☐ Disseminations of best practises to planners, architects and highway / traffic engineers.

ROAD TRAFFIC SAFETY EDUCATION & TRAINING

- ☐ Organisation of training and publicity campaigns for creating awareness amongst for creating awareness amongst citizens.
- ☐ Focus on school & college students.
- ☐ Encourage professionals associated with road design, construction & maintenance and law enforcement agencies to attain adequate knowledge on road safety issues.

Mr. Upadhye emphasized the need to develop Emergency Medical System for road accidents because accidents inevitably occur, potentially resulting in injuries to road users & drivers. However, prompt aid can significantly reduce the number of fatalities and lessen the severity of injuries.

NATIONAL ROAD SAFETY POLICY

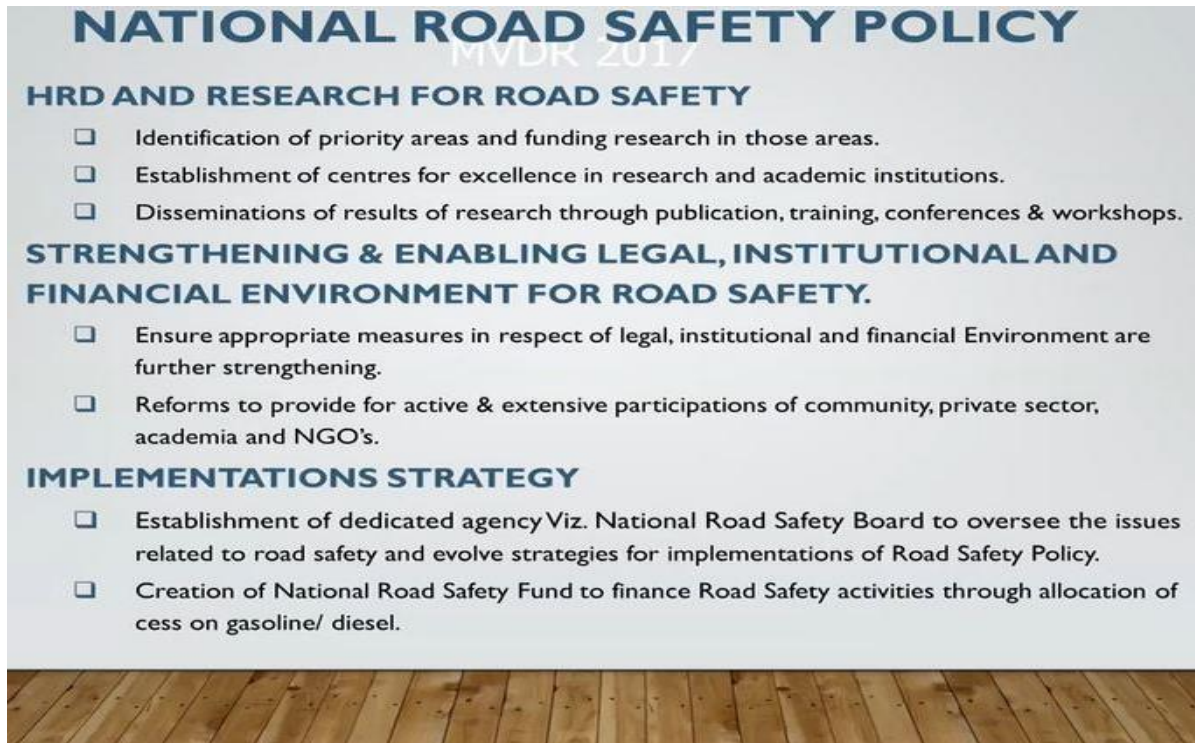
ENFORCEMENT OF SAFETY LAWS

- Assistance to State Governments to strengthen & improve the quality of enforcement to ensure effective and uniform implementations of safety laws.
- Establishment & strengthening of highway patrolling to assist victims & ensure compliance with laws & rules.

EMERGENCY MEDICAL SERVICES FOR ROAD ACCIDENTS

- Ensure that all persons involved in road accident benefits from the speedy and effective trauma care management.
- Rescue operations
- First Aid at Site of Accident
- Transportation to nearby hospital
- Establishment of well equipped and staffed trauma care and rehabilitation centres alongside highways.

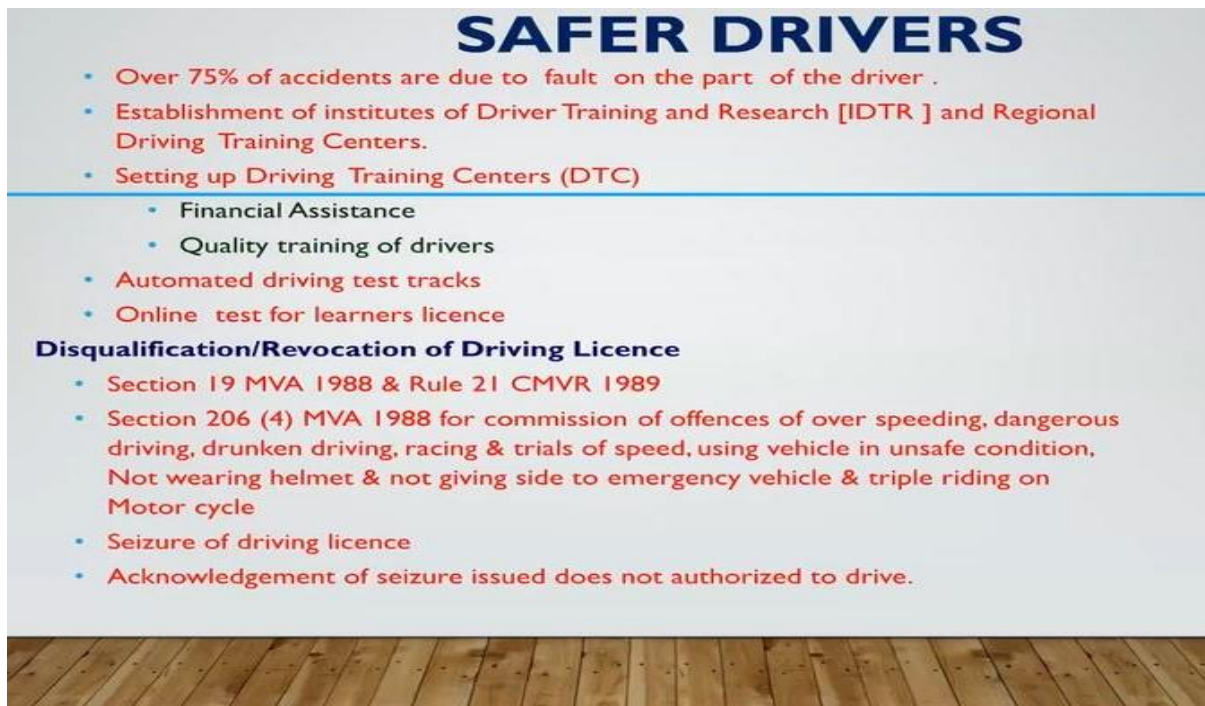
The Government of India has made adequate provisions for this in the amendment to the Motor Vehicle Act. Furthermore, he stressed the importance of continuing research on road safety to further improve preventative measures and emergency response protocols.



Mr. Upadhye stated that whenever there is an accident, it is presumed that the victim is innocent, whether they are a pedestrian or in a non-motorized vehicle. In accidents involving a motor vehicle and a non-vehicle or pedestrian, the fault is typically attributed to the motor vehicle driver. Similarly, in accidents between two motor vehicles, the driver of the larger vehicle is often considered at fault. However, such assumptions can result in flawed data analysis. Research efforts rely heavily on this data, hence there is a need for a separate system to collect accident data to enable accurate analysis for preventing and reducing accidents in the future.

He further emphasized the need to strengthen legal institutions, a task that the Government of India has undertaken. Laws are continuously reviewed to ensure alignment with international standards and to reduce the number of accidents. Efforts are being made to secure cooperation from the community, private sector, and NGOs. Lastly, a proper implementation strategy is essential to effectively enforce these laws and initiatives.

Mr. Upadhye further stated that it is often noted that 75% of accidents occur due to the fault of the driver, with very few cases attributed to weather conditions, road conditions, pedestrians, or other road users.



SAFER DRIVERS

- Over 75% of accidents are due to fault on the part of the driver .
- Establishment of institutes of Driver Training and Research [IDTR] and Regional Driving Training Centers.
- Setting up Driving Training Centers (DTC)
 - Financial Assistance
 - Quality training of drivers
- Automated driving test tracks
- Online test for learners licence

Disqualification/Revocation of Driving Licence

- Section 19 MVA 1988 & Rule 21 CMVR 1989
- Section 206 (4) MVA 1988 for commission of offences of over speeding, dangerous driving, drunken driving, racing & trials of speed, using vehicle in unsafe condition, Not wearing helmet & not giving side to emergency vehicle & triple riding on Motor cycle
- Seizure of driving licence
- Acknowledgement of seizure issued does not authorize to drive.

Referring to the Motor Vehicle Driving Regulations of 2017, which serve as a guide for safe driving practices, it is akin to a religious scripture for adherents of road safety. Rule 5 explicitly states that the driver of a motor vehicle must always operate their vehicle with full physical and mental concentration, ensuring the safety of all other road users. Therefore, in any accident scenario, it would be presumed that the fault lies with the driver for failing to maintain full concentration, exhibiting negligence, and not adequately considering the safety of others on the road.

He suggested that in addition to testing driving skills on a simulated track, software and cameras could be installed, including front and rear cameras, to monitor the driver. This would provide real-time feedback to the driver while driving on the road, allowing for an assessment of actual driving behavior and knowledge of safety laws. This software could be utilized both during simulated testing conditions and while driving on actual roads, providing a comprehensive evaluation of driving skills and adherence to safety regulations.

After that, he elaborated and explained the important sections of the Motor Vehicle Act. The key points of these sections are as follows:

Important Section for Safer Drivers:

SAFER DRIVERS

- **Fines under MVA 1988**

- Increased minimum Rs.500
- Section 199B MVA Revision of fines every year on 1st APRIL by 10% of fine prescribed
- Section 210B MVA Double penalty for officials of enforcement authorities
- Section 184 MVA Red Light Jumping, Wrong Over Taking, Driving against authorized flow, Violation of Stop Sign, Using mobile while driving shall amount to dangerous driving.
- Section 199A MVA Driving by Juveniles, punishment to Owner, Cancellation of Registration & Juvenile to wait till completion of 25 years of age for applying for D/L

- **Section 200 MVA**

- Compounding of certain offences
- Compounding would amount to conviction for
 - Imposing enhanced penalty for commission of subsequent offences
 - Disqualification/Revocation of Driving Licence
- Undergo refresher training course
- Undertake community service.

SAFER DRIVERS

- **Section 200 MVA**

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- Compounding would amount to conviction for
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 - Disqualification/Revocation of Driving Licence
- Undergo refresher training course
- Undertake community service.

Important Section for Safer Roads:

SAFER ROADS

- **Section 210C MVA & Section 210D MVA**

- Central/State Governments to make rules for standards for
 - Design
 - Construction
 - Maintenance
- Of National Highway & other roads respectively.
- Central Government has issued a Draft notification vide GSR 53 (E) dated 28.01.2020
- Design, Construction and Maintenance of all roads shall be in accordance with standards and specifications of the Indian Road Congress (Rule 166 CMVR 1989)

SAFER ROADS

- **Section 198A MVA**

- Failure to comply with standards prescribed by the Designated Authority, Contractor & Concessionaire responsible, to be liable to pay a fine of Rs. 1 lakh on account of death or grievous hurt caused to a person in the accident on road.
- Amount of fine shall be deposited in Motor Vehicle Accident Fund created under section 164B MVA.
- Court while awarding fine shall take into consideration certain factors like characteristics of road, nature & volume of traffic, maintenance standards, knowledge of the authority responsible, time required for repair, placement of warning signs etc.

- **Section 136A MVA**

- Electronic Monitoring & Enforcement of Road Safety
- Implementation for National/State Highway, roads in urban areas
- Installation of CCTV Cameras/Speed Cameras
- Providing Speed Guns, Body Wearable Cameras to enforcement officers.

- **Section 135 MVA**

- **Schemes to be framed by State Government**
 - In depth study on causes & analysis of MV Accidents
 - Way Side Amenities
 - Traffic Aid posts
 - Truck Parking Complexes
- **Vision zero**
 - Life and death can never be exchanged with other benefits in the society
 - Accidents are preventable & hence not acceptable
 - Duty & Commitment of all Stakeholders
 - A person may fail but system should never fail.

Important Section for Safer Vehicles:

SAFER VEHICLES

- **Section 110 MVA**

- Rules made for Construction, Equipment & Maintenance of Motor Vehicles and safety components

- **Section 110A MVA**

- Recall of vehicles

- **Section 110B MVA**

- Type approval & Testing Agencies
- ARAI, ICAD etc.
- Rules for Accreditation, Regulation and Registration of testing agencies for vehicles & components

- **Section 56 MVA**

- Fixing Age limit of Motor Vehicles

Important Section for Safer Road Users:

SAFER ROAD USERS

- **Section 138(1A) MVA**

- State Government to make rules for regulating the activities and access on Non Mechanically Propelled Vehicles (NMT) and Pedestrians to public places & Highways.
- Violation would be punishable under section 177 MVA
- Compounding of such violations

- **Section 164 MVA**

- Compensation in case of Death Rs. 5 lacs
- Compensation in case Grievous Injury Rs. 2.5 lacs
- No need to prove fault of driver of offending vehicle
- No need for Third Party insurance.

SAFER ROAD USERS

- **Section 164A MVA**

- Central Government to frame a scheme for providing interim relief of victims of accidents

- **Section 162 MVA**

- Central Government to make a scheme for cashless treatment of accident victims during golden hour

- **Section 134A MVA**

- Protection of Good Samaritan

- **Section 161 MVA**

- Compensation in Hit & Run accident case
- Death – Rs. 2 lacs
- Grievous injury - Rs. 50,000
- Central Government empowered to increase the amount.

- **Section 164 MVA**

- Establishment Motor Vehicle Accident Fund
- Purpose to provide compulsory insurance cover to all Road Users in India
- Utilization of Fund
 - Treatment of victims during Golden Hour
 - Compensation in Hit & Run cases
- Management of Fund

Mr. Upadhye concluded his presentation by summarizing the important sections of Motor Vehicle Act.

He answered the queries of participants after his presentation.

Presentation by Industries:

**Mr. Shailendra Singh,
Vice President of Sales and Marketing,
Vehant Technologies**

Mr. Shailendra opened the session with a warm welcome to all participants and expressed gratitude to the webinar organizers. He then outlined his professional background and introduced his company's products, emphasizing their relevance to road safety and traffic management. He highlighted that Vehant Technologies, founded in 2005 at IIT-Delhi and formerly known as Kritikal Securescan Pvt. Ltd., has emerged as a leader in intelligent traffic management and surveillance systems.

The company has launched innovative technologies such as UVSS, ANPR, and Traffic Analytics, along with video-based SVD and AI-powered platforms. With over 47 smart city projects and a 70% market share in ITMS, Vehant is a key player in security solutions, offering products like X-ray baggage scanners, explosives trace detectors, and 4D radars.

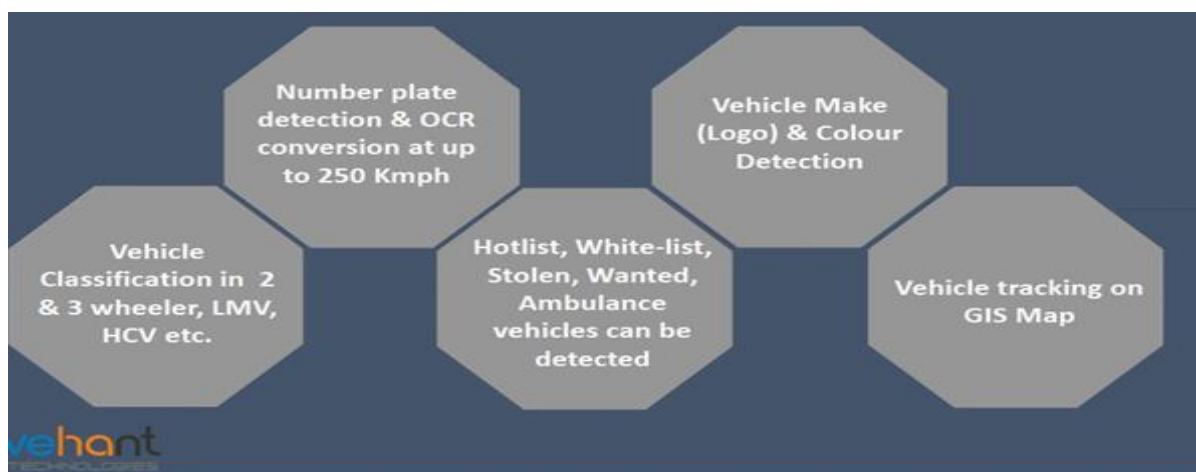
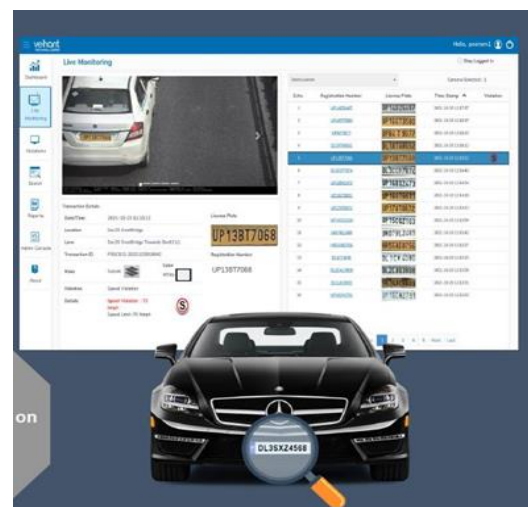
The company has also established key industry-academia collaborations, including an R&D center at IIT-Delhi, an MoU with IIIT-Delhi for AI and ML research, and a partnership with IIT Mandi for advanced AI and ML applications.





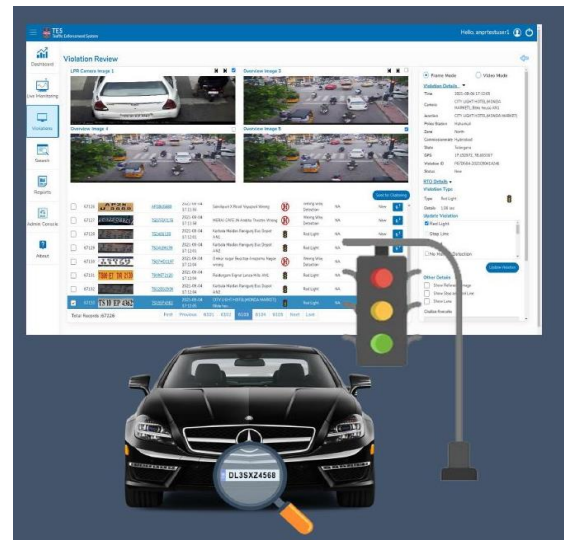
1. Automated Number Plate Recognition | VehiScan – ANPR

VehiScan is a state-of-the-art real-time Optical Character Recognition (OCR) based vehicle monitoring system that uses Automatic Number Plate Reading (ANPR) for tracking and identifying vehicles.



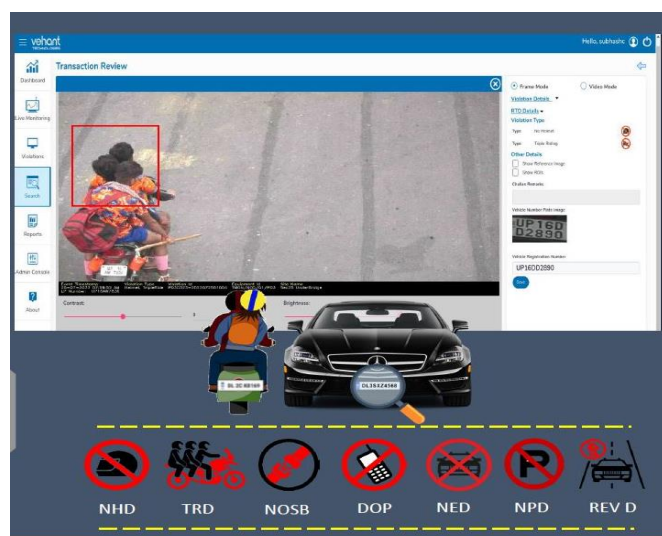
2. Red Light Violation Detection System | TrafficMon – RLVD

TrafficMon – RLVD is the best in class video based Red light violation detection system. Comprising of 2 types of cameras i.e. overview cum evidence camera & ANPR camera. The system takes input from Traffic Light and starts capturing red light violation by vehicles as soon as traffic signal turns red.

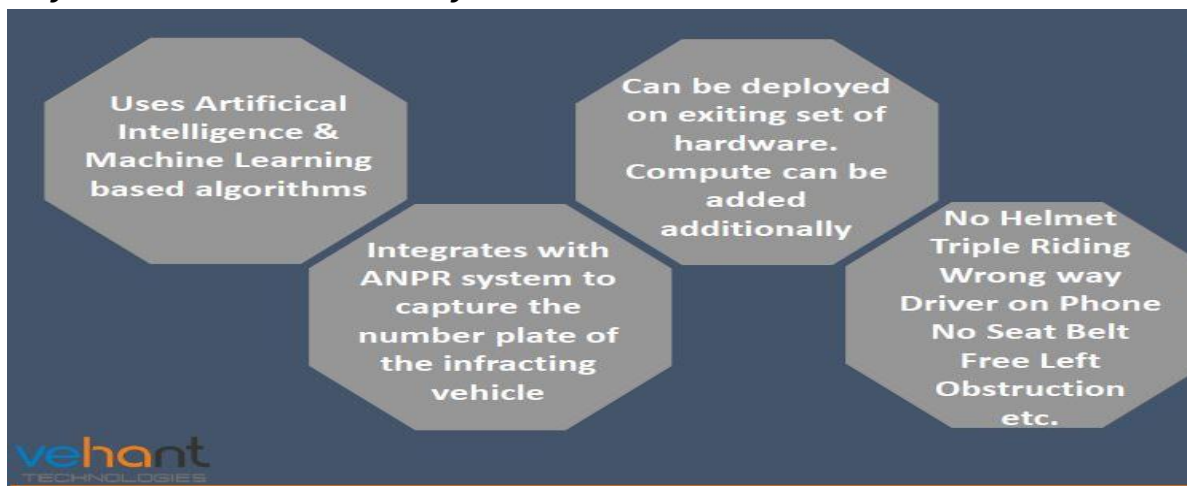


3. Traffic Analytics

Traffic analytics digs out patterns hidden and identify root causes and apply solutions to data driven actions. Vehant's state of the art traffic enforcement analytics solutions uses video analytics to enforce traffic rules & regulations.

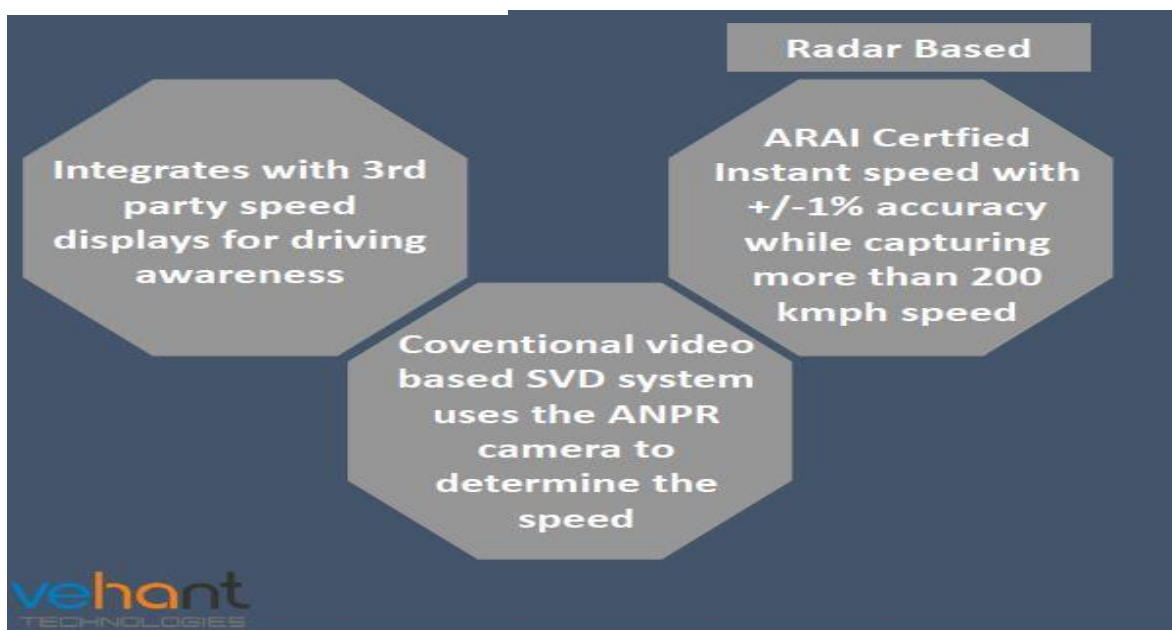
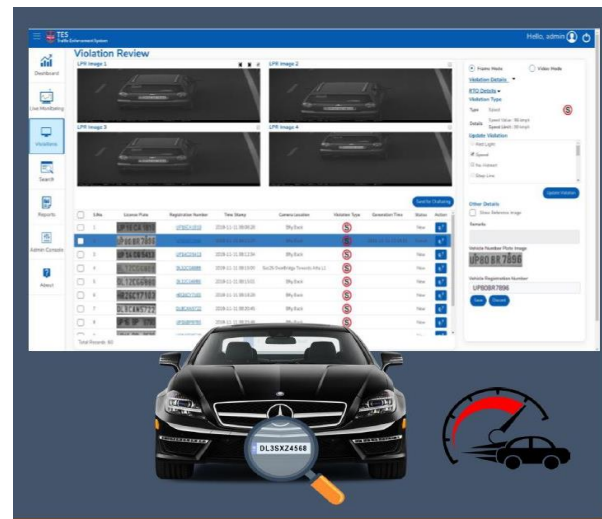


Key Features of traffic analytics:



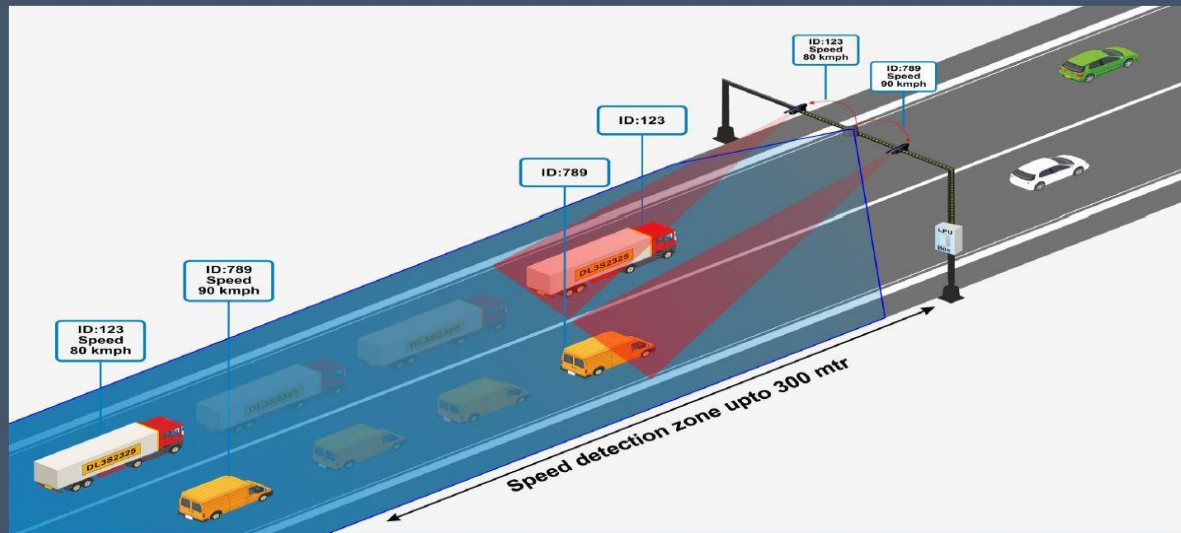
4. Speed Violation Detection

SVD is the state of the art Video & Radar based speed violation detection system which determines the vehicular speed and captures the image of the number plate of the violating vehicle.



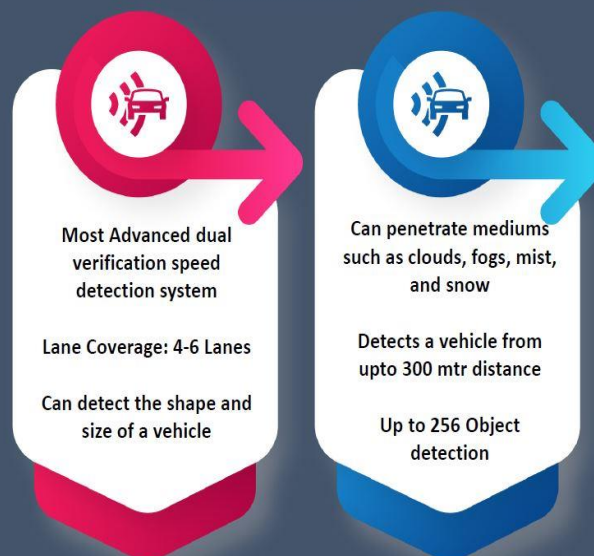
1.1 Radar Vehicle ID Mapping with ANPR

TrafficMon - SVD is the state of the art Video & Radar based speed violation detection system which determines the vehicular speed and captures the image of the number plate of the violating vehicle



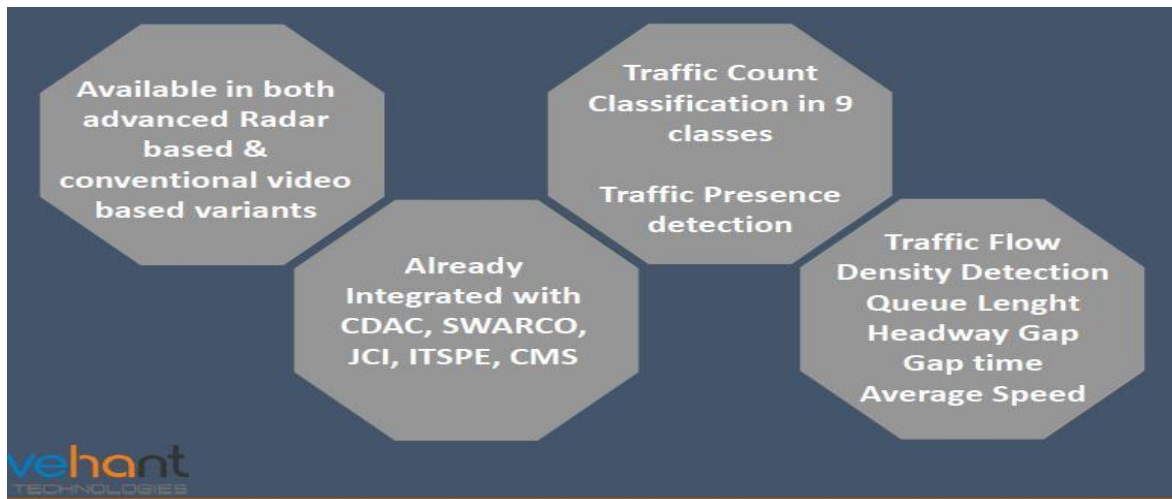
4.2 Benifit of advance Speed Violation Detection techonoliges

Radar Based



5. Vehicle Detection System & ATCC

Vehicle detection, count & classification system is used for detection and monitoring of moving and stationary vehicles at traffic signals as well as road stretches. System enables the exact verification of vehicle presence, count and classification into various classes.



5.1 Vehicle Detection System & ATCC | Different Technologies

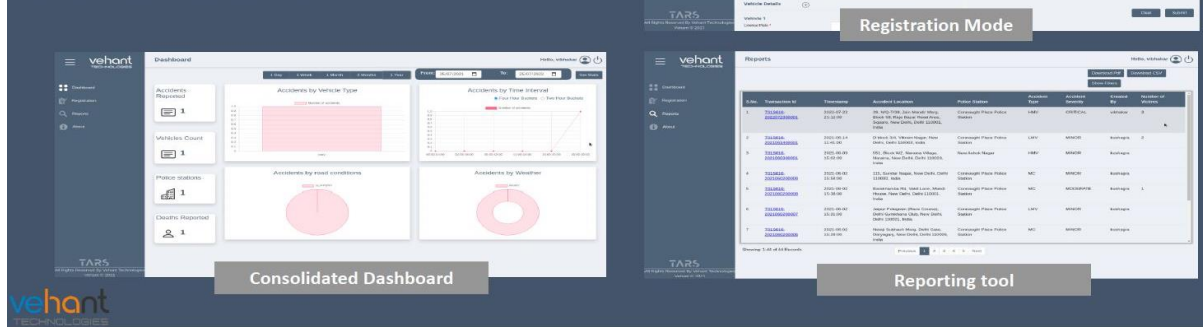


5.1 TrafScan Intelligent Vehicle Detection Dashboard | Statistical Insights

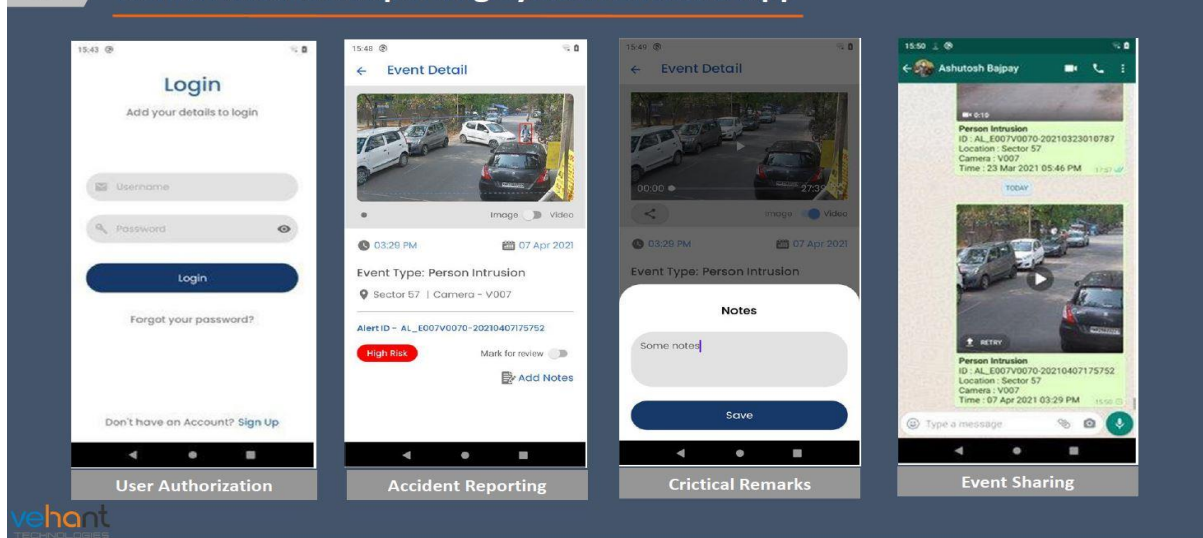


6. Traffic Accident Reporting System (TARS)

- ✓ High quality information on all aspects of road traffic collisions.
- ✓ Incorporate best practices of Road Accident Investigation.
- ✓ Support authorities in quickly and accurately reconstructing collisions.
- ✓ Analysing the data to develop standards to prevent future collisions or mitigate injuries.



6.1 Traffic Accident Reporting System | Mobile App



7. Vehicle Incident Detection System

Vehicle Incident Detection System automatically reports dangerous situations and irregular traffic conditions, such as smoke or fire, stopped vehicle, slow vehicle, wrong way driving, pedestrians in traffic lanes, fallen object, or traffic congestion etc. This system will be used for automatic incidents detection and generation of local visual alerts.



3.2.1 Vehicle Incident Detection System Use Cases & Dashboard

3.2.2 Vehicle Incident Detection System Use Cases & Dashboard

The dashboard displays several key features:

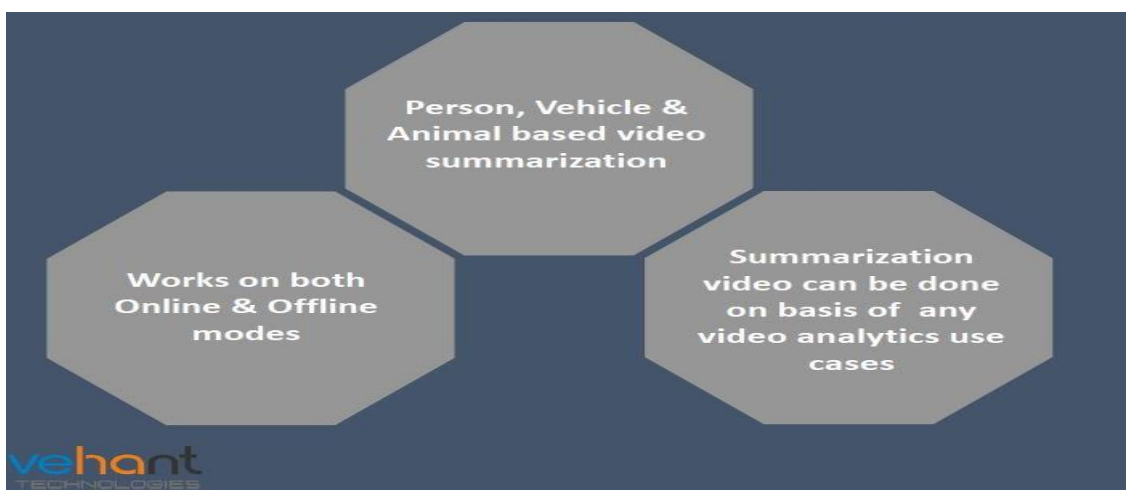
- Stopped Vehicle:** A video feed showing a vehicle stopped on a road.
- Alert View on Map:** A map view showing the location of detected incidents.
- Reverse Traffic:** A video feed showing traffic moving in the opposite direction.
- WebGUI Incident Details:** A detailed view of a specific incident, including its location, time, and status.

Video Analytics Use-Case (powered by AI and ML)

- Low Visibility
- Reverse Traffic
- Overspeed
- Slow Speed
- Stopped Vehicle
- Wrong Direction
- Unusual Congestion

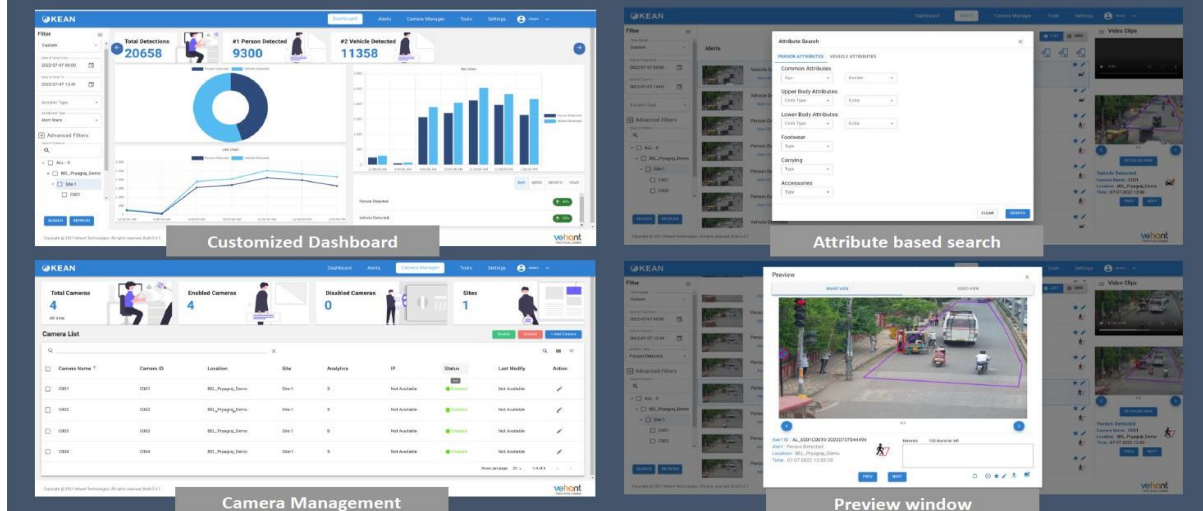
8. Video Summarization

Video summarization is a truly open platform that can rapidly transform video into actionable intelligence and improves safety, security, and operational efficiencies. Video Summarization system to make available live & recorded video surveillance feeds searchable, quantifiable, and actionable.

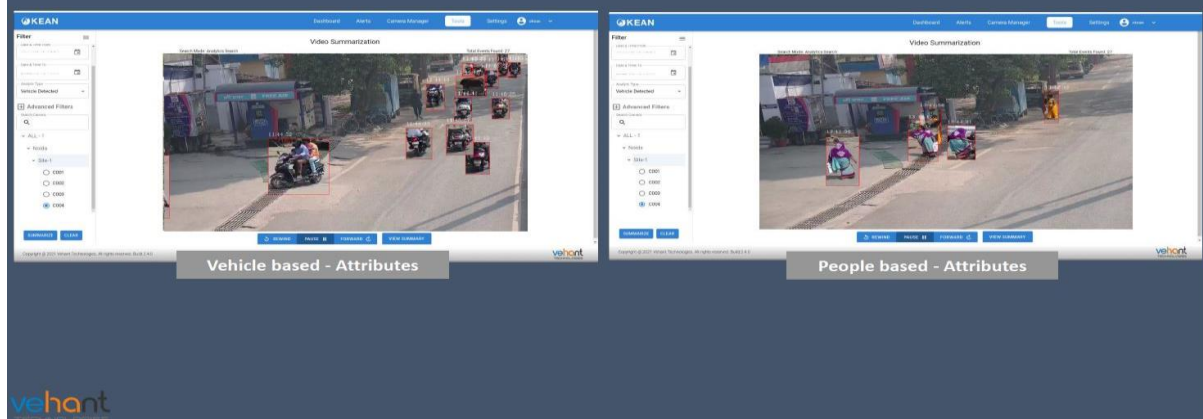


Some important slides of the presentation are as under:

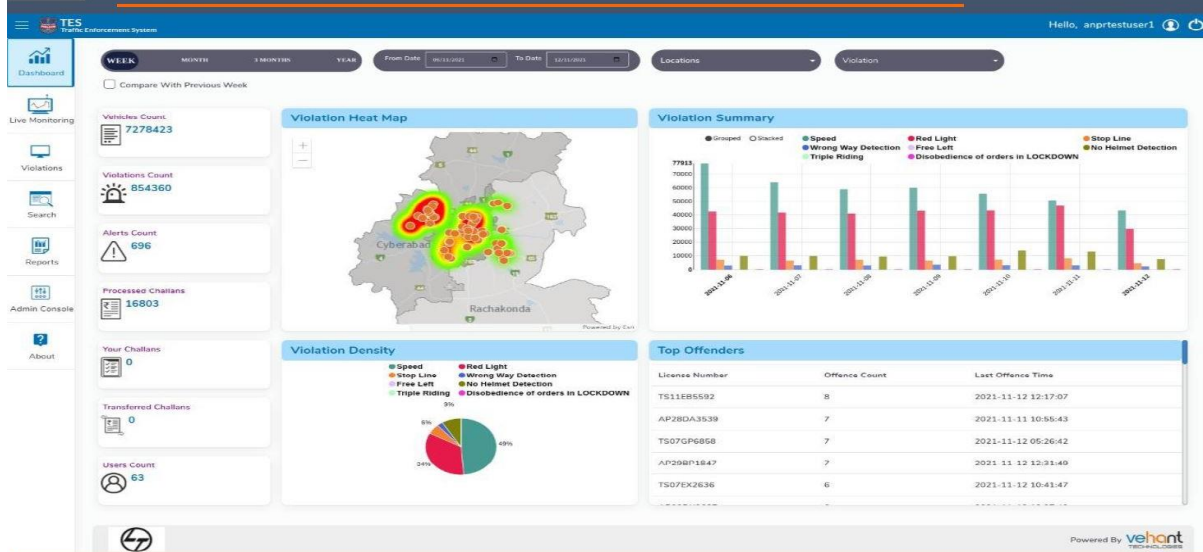
8.1 Okean - Video Summarization I User Friendly Dashboard



8.2 Video Summarization Intelligent Use cases



9 Traffic Command & Control Centre I Intelligent Dashboard



9.1 Traffic Command & Control Centre I Platform GUI

The screenshots display the following features:

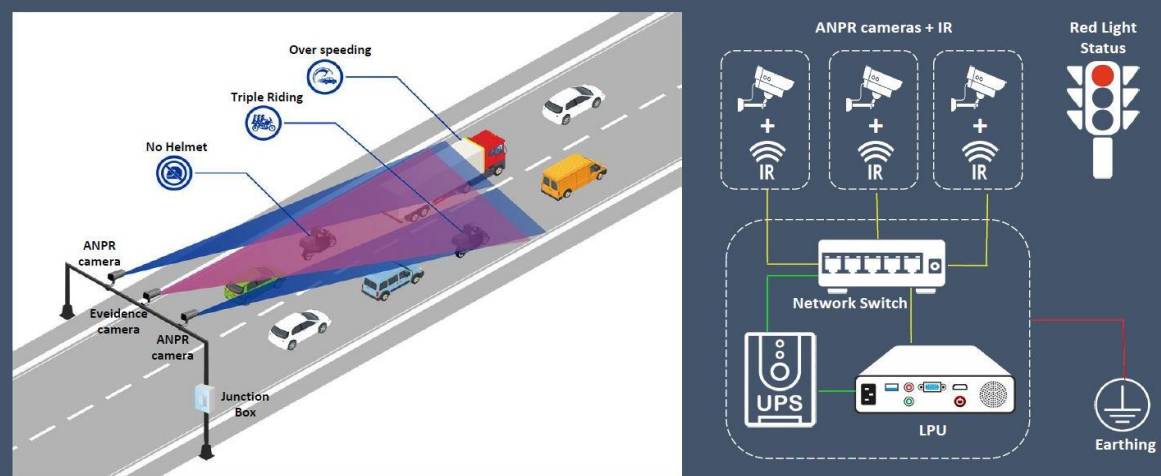
- Admin Console:** A dashboard with various management modules like Violation Management, License Management, Group Management, and more.
- Heat Map & Alert Map:** A map view showing traffic hotspots and alerts across a geographical area.
- Violation Detailed View:** A detailed view of a specific violation, including vehicle details, location, and violation type.
- On Demand Live Monitoring:** A live video feed of a vehicle at the time of the violation, with associated details like license plate and location.

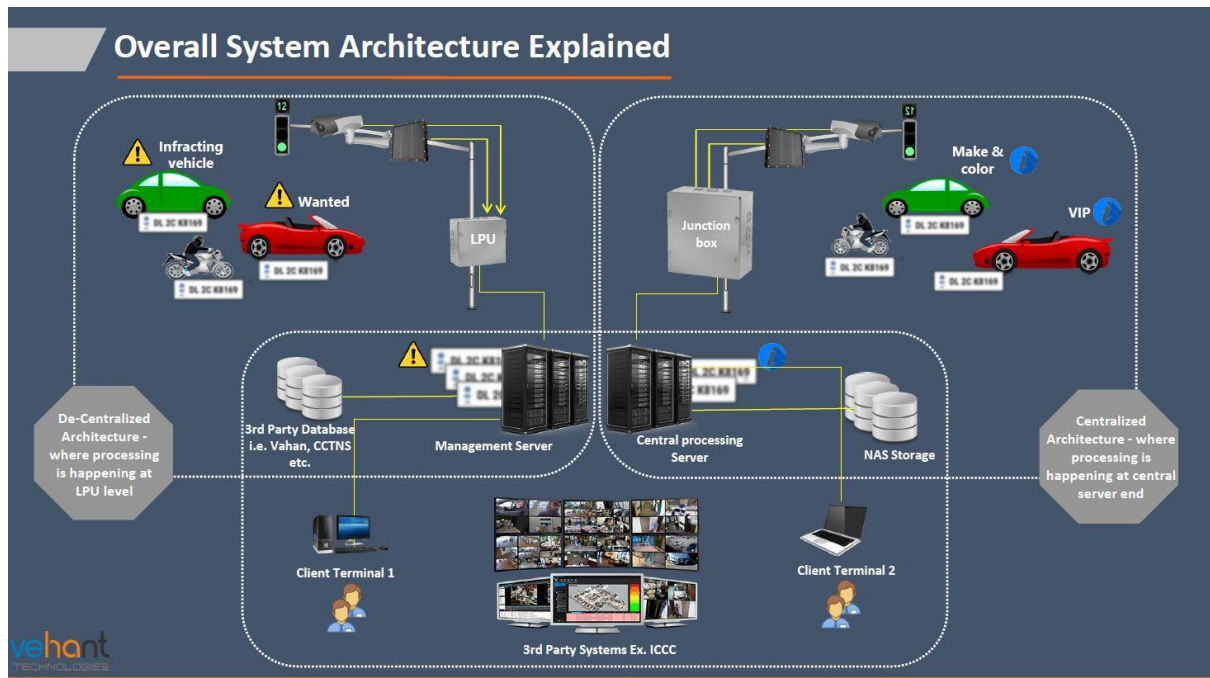
9.2 Traffic Command & Control Centre I E-Challaning

The screenshots show the E-Challan system interface in both Hindi and English. The Hindi version includes details like the violator's name (MANJEET SINGH BALUJA), vehicle details (Motor Cab(LPV)), and the violation (violation of parking rules). The English version provides the same information in English, including the violator's name (ADMAN ANSARI), vehicle details (Motor Cab(LPV)), and the violation (violation of parking rules).

Bi-Lingual printing of E-challan with Evidence screenshots. Already Integrated with Vahan database of NIC, following "One Nation, One Challan"

Junction Architecture





He summed up his presentation with the thanks to BPR&D for giving him such a respectable platform.

Presentation by Industries:

Mr. Yogesh Ray Co-Founder of SrivisifAI Technologies

Mr. Yogesh Ray commenced the session by warmly welcoming the participants and thanking the webinar organizers. He then briefly introduced his professional background and his company, Srivisifai Technologies Pvt. Ltd. Based in Pune, the company is a leading innovator in video surveillance solutions aimed at enhancing safety and security. In collaboration with IIT-Bombay under the guidance of Prof. Ganesh Ramakrishnan, Srivisifai Technologies holds the exclusive license to commercialize VA technology. The company is also aligned with the "Make in India" initiative, contributing to technological innovation and growth in India.

Mr. Ray introduced the AI-based video analytics solution, Suraksha Vyuh, highlighting its advanced features and benefits as the next level of safety and security. Suraksha Vyuh utilizes artificial intelligence to analyze video feeds from cameras, detecting pre-defined anomalies and generating real-time alerts.

Suraksha Vyuh: AI based video Analytics Solution:

The next level of Safety & Security

Suraksha Vyuh

The Artificial Intelligence based Video Analytics solution "Suraksha Vyuh" uses feeds from cameras to detect pre-defined anomalies and generate alerts in Real-Time

Benefits of Suraksha Vyuh

- Elevated Security of your premises and assets as the real-time alerts make the CCTV solution Proactive by averting incidences of thefts, pilferage and by maintaining compliances
- Existing infrastructure can be leveraged and can integrate with your enterprise systems to save cost on upgraded hardware/ software purchases
- Scalable and affordable Security Solution with high level on configuration options that saves upgrading cost of future.

Mr. Ray explained that the Traffic Police Department plays a vital role in maintaining the safety and smooth flow of traffic within the city. However, with the increasing complexity of traffic-related issues, there is a growing need to incorporate advanced AI technologies to enhance decision-making, optimize resource allocation, and improve overall traffic management. He emphasized that this proposal outlines key AI features that can significantly elevate the department's efficiency.

He further described the department's **current approach** as follows:

- Physically monitoring live streams from CCTV cameras to identify anomalies.
- Personally checking the identity and movement of subjects within quarantine facilities.

He also pointed out the **limitations of the current approach**:

- Continuous 24/7 monitoring of CCTV video feeds is constrained by human attention spans, causes stress, and makes it impossible to maintain a constant high level of alertness.
- Human-based monitoring is not easily scalable, making it difficult for individuals to monitor hundreds or thousands of cameras effectively.

Mr. Ray explained the various AI features and their usability in enhancing traffic management and law enforcement.

1. Traffic Violation Detection:

AI-powered surveillance is utilized for real-time detection of traffic violations, aiding law enforcement through automated alerts and challan generation. This helps improve road safety by curbing violations such as speeding, red light running, and illegal U-turns.

2. Non-Compliance and Criminal Detection:

The system integrates ANPR (Automatic Number Plate Recognition) and vehicle identification technology to identify lawbreakers and streamline the apprehension of vehicles with outstanding fines. It also enhances safety and revenue collection by identifying vehicles that are non-compliant with PUC (Pollution Under Control) and insurance requirements.

3. Incident Detection and Response:

AI detects traffic incidents like accidents and vehicle breakdowns in real-time, generating automatic alerts to personnel and emergency services. This improves response times, reduces roadblocks, and ensures efficient coordination during emergencies.

4. Smart Traffic Signals:

AI-based adaptive traffic signals adjust their timing based on real-time traffic data, reducing congestion and enhancing traffic flow within the city. The system optimizes signal timings according to changing traffic conditions to ensure smoother movement.

5. Traffic Flow Prediction:

AI predicts traffic congestion and flow patterns by analyzing historical data and weather conditions. This allows for proactive measures, such as signal adjustments, to manage traffic efficiently and prevent major congestion issues.

6. Data Analytics Das board:

The AI system provides a comprehensive dashboard for analyzing traffic data, assisting in resource allocation, traffic pattern analysis, and decision-making. This supports evidence-based policymaking and better urban planning.

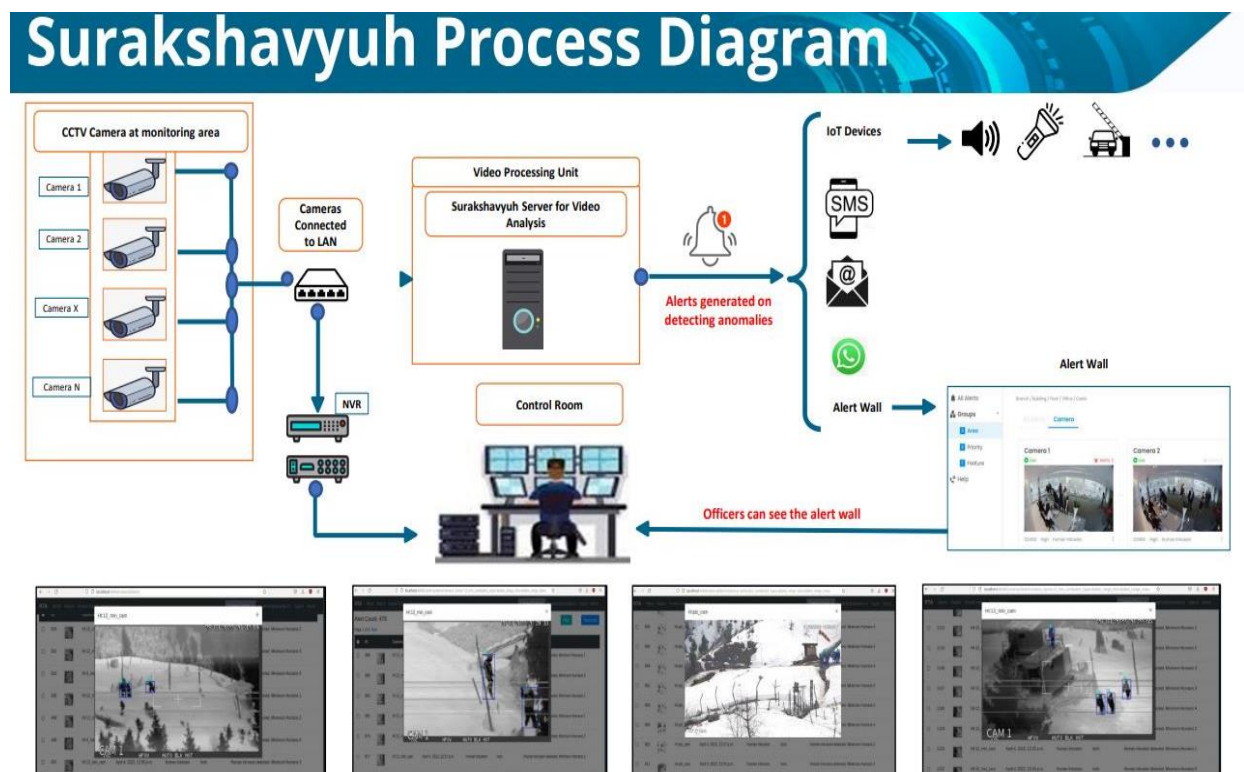
He highlighted that their AI-based video analytics solution includes the following capabilities:

Our Capabilities				
Face Recognition	Human Intrusion Detection	Human Absence	Human Loitering Detection	Expected Human count
People Count	Crowd Detection	Human Garment Color Detection	Motion Detection	Inactivity Detection
Automatic License Plate Recognition	No Parking Zone Violation	Vehicle Driving Direction	Vehicle Colour Detection	Vehicle Loitering Detection
Helmet Detection	Triple Ride	Speed Detection	Garbage Detection	Animal Detection
Pothole Detection	Fire Detection	Proximity Detection	Camera Offline	Camera Tampering

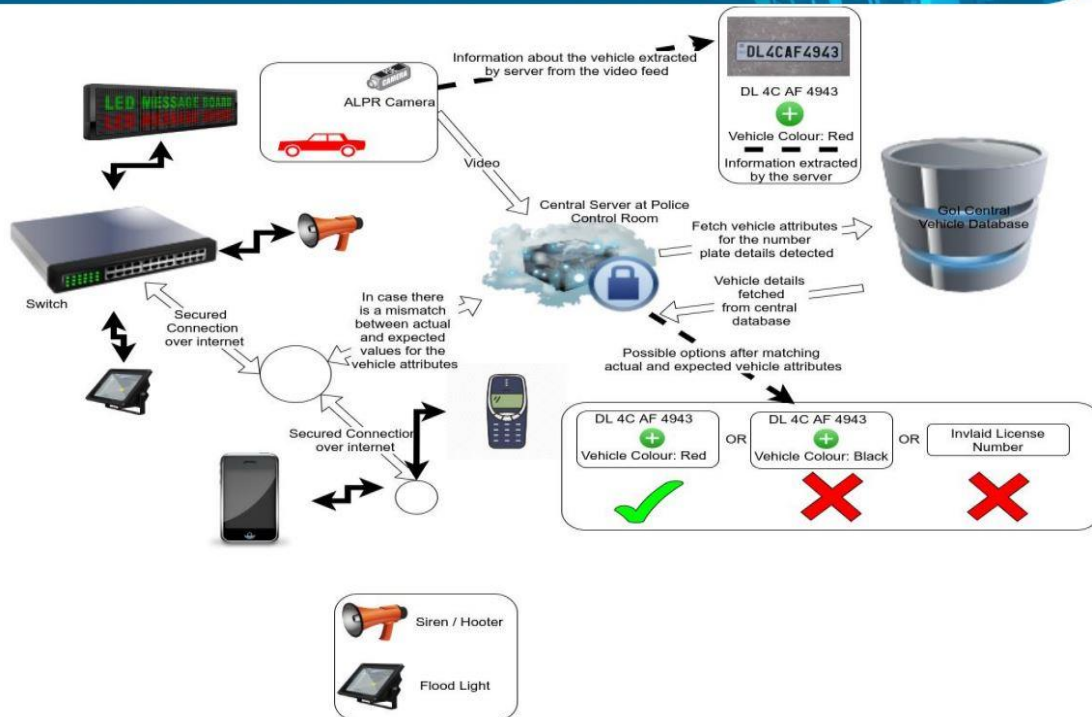
SrivisifAI



Further, Mr. Ray illustrated the Suraksha vyuh process and theft vehicle detection process with the followings diagram:



Theft Vehicle Detection Diagram

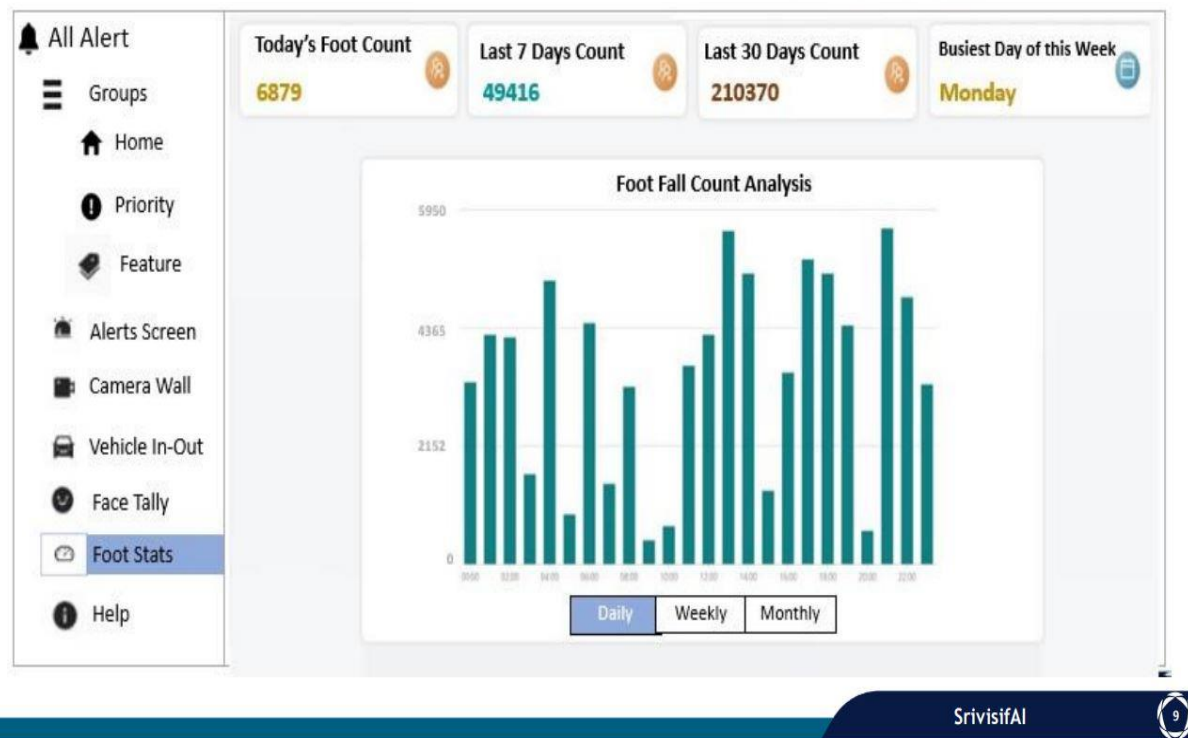


Suraksha Vyuh Dashboard

The Suraksha Vyuh Dashboard provides a comprehensive overview of security alerts and camera feeds. The left sidebar contains navigation links: All Alerts, Groups, Area, Priority, Feature, Alerts Screens, Cameras (selected), YUV Dashboard, Face Tally, Foot Stats, and Help. The main area displays six live camera feeds with their respective alert statuses and camera IDs.

Alert Type	Live Status	Alerts	Camera ID
WrongParking	Live	Alerts	2
CrowDetection_cam	Live	Alerts	3
PerimeterIntrusion_...	Live	Alerts	4
NoPeopleZoneAlert	Live	Alerts	5
RestrictedArea	Live	Alerts	5
FireAlert	Live	Alerts	7

MIS Report for Informed Decision Making



He detailed the hardware, software, and budget requirements for the Suraksha Vyuh.

Systems Required:

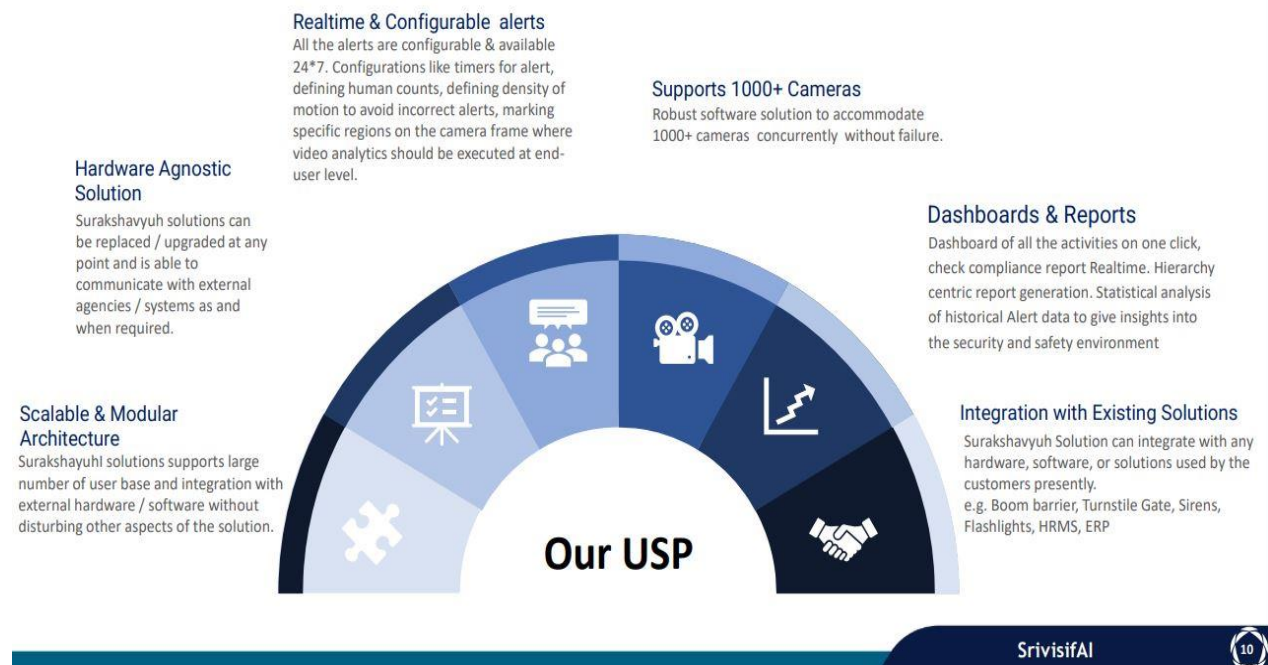
- CCTV Cameras Network
- CPU/GPU
- Servers and Storage
- Radar for Speed Violation
- LED TV in control room and display on road
- Access to necessary hooks to communicate alerts
 - Dashboard Alert
 - IoT Devices
 - Email/SMS

Budget:

The cost components include the aforementioned hardware, setting up VPN/broadband networks, software, user training, and on-going maintenance. The majority of the expenses are related to the hardware,

while the software costs are comparatively low. The budget varies based on the defined scope of work and execution requirements.

Key Considerations



Mr. Ray outlined the benefits of Smart Policing, emphasizing its transformative impact on law enforcement and public safety:

- Improved traffic management and reduced traffic congestion.
- Enhanced public safety through quicker incident response.
- Increased revenue collection through automated violation detection.
- Data-driven decision-making for resource allocation.
- Enhanced departmental efficiency and effectiveness.
- Continuous Monitoring with over 60% less human intervention.
- Centralized monitoring & reporting system.
- Integration with existing camera setup.
- Portable (plug & play) device for each use case can also be developed.
- All the alerts are shared with respective authorities at real time.
- All the alerts can be integrated with control room.

Mr. Ray explained that **Video Management Software (VMS)** is a crucial component of closed-circuit network camera systems, allowing users to view, record, and interact with video footage from connected network cameras. VMS enables the management of camera and recording settings, viewing multiple video streams simultaneously, detecting events, and generating alerts. Additionally, it provides advanced tools for analyzing video streams to detect and investigate incidents, improve safety, and increase operational efficiency.

Unlike traditional software that comes pre-installed on Digital Video Recorders (DVR) and Network Video Recorders (NVR), VMS is more powerful and flexible.

Mr. Ray introduced **SRIVISIFAI's Smart-Video Management Software (S-VMS)**, which offers 45 benefits. In addition to the standard features of a VMS, S-VMS is powered by artificial intelligence (AI) and smart search tools. Traditional surveillance systems require users to manually search through hours of footage, but with S-VMS's smart search, users can effortlessly search camera streams by date, time, or detected events.

S-VMS controls multiple video sources, allowing users to collect, manage, and present video in a clear and organized manner. It intelligently determines the capabilities of each subsystem across various locations, providing unified video management of all devices. Subsystems can include IP cameras, matrix switches, or digital/network video recorders, enabling both analog and digital inputs to be viewed on the same system.

Mr. Ray explained the **"Jigyasa" for Post Facto Analysis (WIP)**, a tool designed for searching events or objects from video data. He highlighted that searching through video data for anomalies is a monotonous and time-consuming task, often taking hours of valuable work time. Even missing a second of video can compromise the entire effort. "Jigyasa" aims to reduce the search process from hours to just minutes.

“Jigyasa” for Post Facto Analysis (WIP) – Searching events or objects from Video Data

Case Name: PrivateRoad2



1. Searching of events or anomalies from video data is very monotonous and taxing job that consumes hours of precious work time.
2. Even a second of missed video clips dislodge the whole efforts and time spent.
3. “Jigyasa” will minimize this search from hours to minutes.
4. 80% of the work is done and this is expected to be available for sale from March 2024.
5. Apart from searching, we plan to added video enhancement tools to make it global competitive.
6. The solution will be available on both formats; on-prem & on-cloud deployments.

SrivisifAI



He mentioned that 80% of the development work is complete, and the solution is expected to be available for sale by March 2024. In addition to its search capabilities, video enhancement tools will be incorporated to make the product globally competitive. The solution will be offered in both on-premises and cloud deployment formats.

He concluded his presentation by stating that implementing an AI-based Smart Traffic Management System could significantly enhance the ability to manage traffic, improve safety, and serve the community more effectively. He expressed confidence that investing in AI technology would yield substantial long-term benefits for the city's traffic management efforts.

Mr. Ray expressed his gratitude to BPR&D for providing him with an important platform.

Vote of Thanks:

At the conclusion of the webinar, Brig. Navrattan Joshi, PSO, BPR&D, extended his heartfelt thanks to all those who contributed to the event's success. He expressed gratitude to the Director General of BPR&D for his steadfast support and invaluable insights. Brig. Joshi also acknowledged the significant contributions of the Director (Mod), BPR&D, and the DIG (Mod), BPR&D, for their active engagement.

Special thanks were given to the distinguished speakers whose expertise and perspectives greatly enriched the discussions. Brig. Joshi conveyed appreciation to all the participants for their active involvement and thoughtful questions, which made the webinar both interactive and productive.

Finally, Brig. Joshi recognized the dedication and hard work of the organizing team, whose efforts were crucial in ensuring the smooth execution of the event.