Welcome

Honorable speakers of the panel,

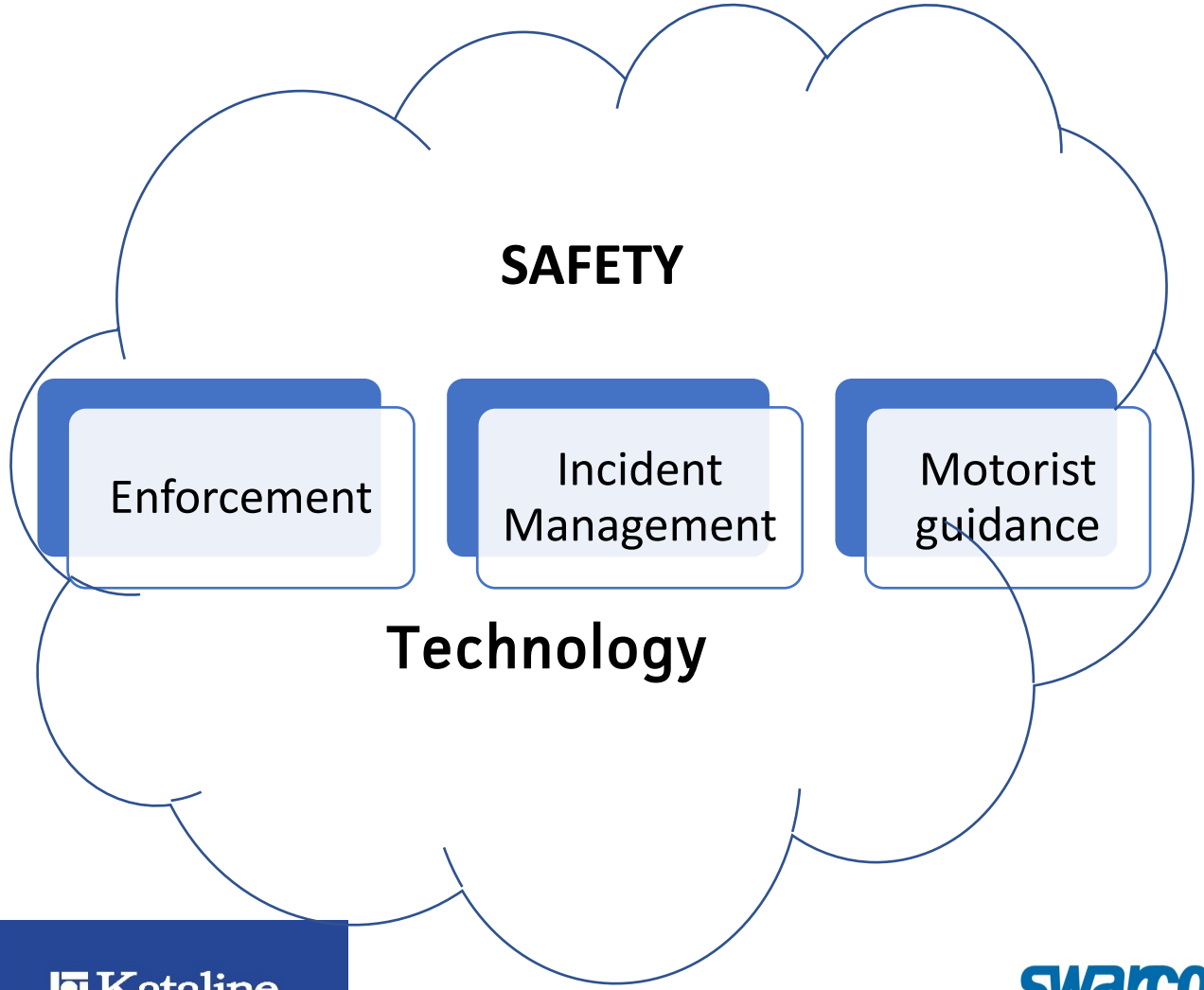
Dr Rohit Baluja.

other participants

Speaker: Dhaval Desai (Trafitek)

Amit Thatte (Kataline)

Agenda of the presentation



Public Private Partnership (PPP) model

Case Study

Nagpur Amravati Highway (NH6)- 150 kms

- System design
- Issues with past and current Implementation.
- How PPP model will bring more accountability and quality of performance

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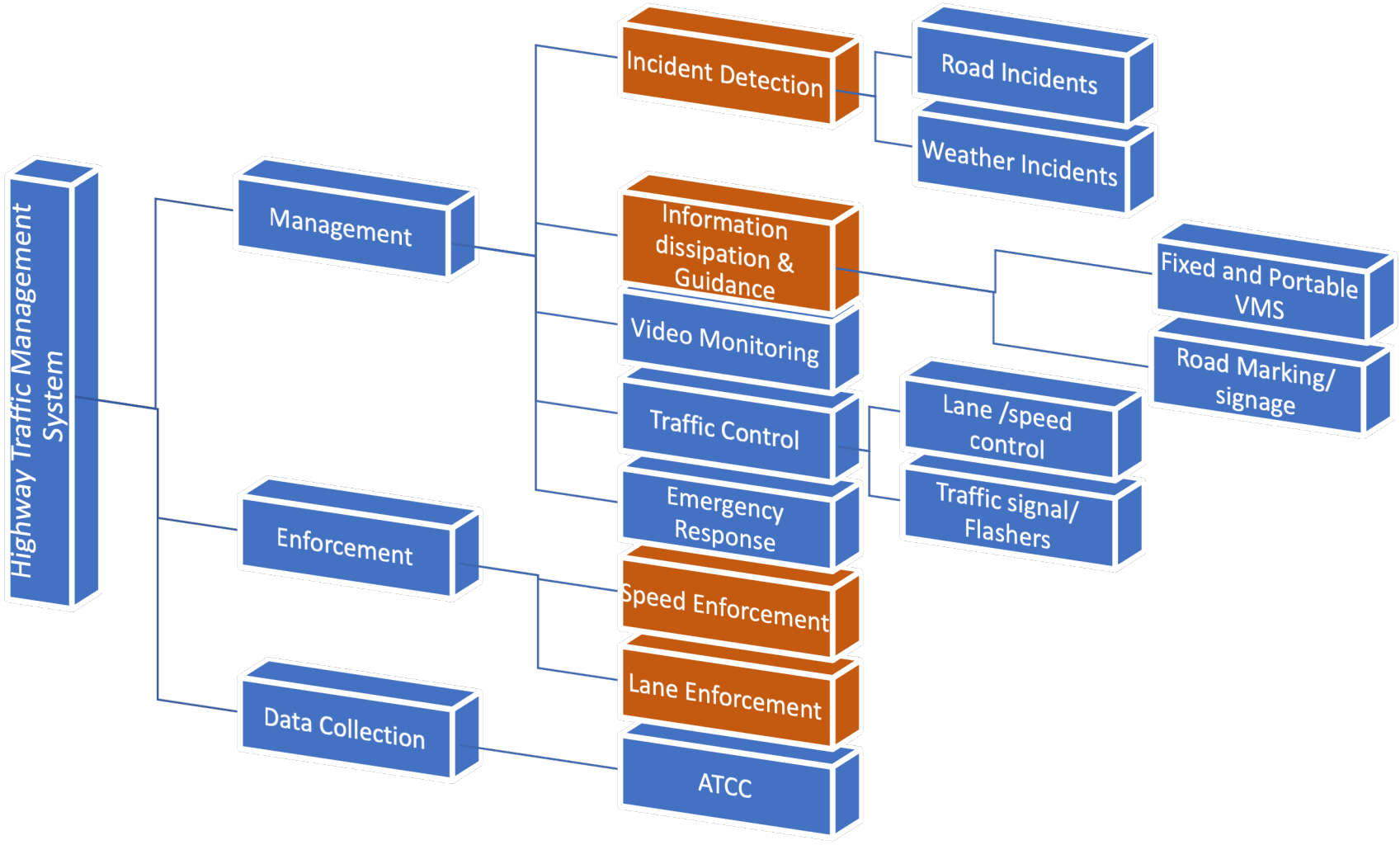
Need for Technology on Highways ?

- Increase in safety .
- Road discipline .
- Motorist guidance.
- Emergency response .
- Bye-product – Revenue generation

Typical Traffic Management System on Highways



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SYSTEM ARCHITECTURE

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Vehicle Speed Detection System (VSDS)

Speed detection is necessary as around 24% of the overall accidents reported are due to over speeding. VSDS system is to help in speed enforcement with greater consistency and accuracy, helping authorities to better manage this menace effectively.

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Speed/ Lane Enforcement

Consistently deliver tangible results

High Accuracy

Low calibration requirements

Decision made on traceable incidents

Global Track Record of the solution

5 Point Programme

speed detection

Lane detection

operator viewing under adverse conditions

imaging synchronised with speed/ Lane detection

acquisition of court ready evidence

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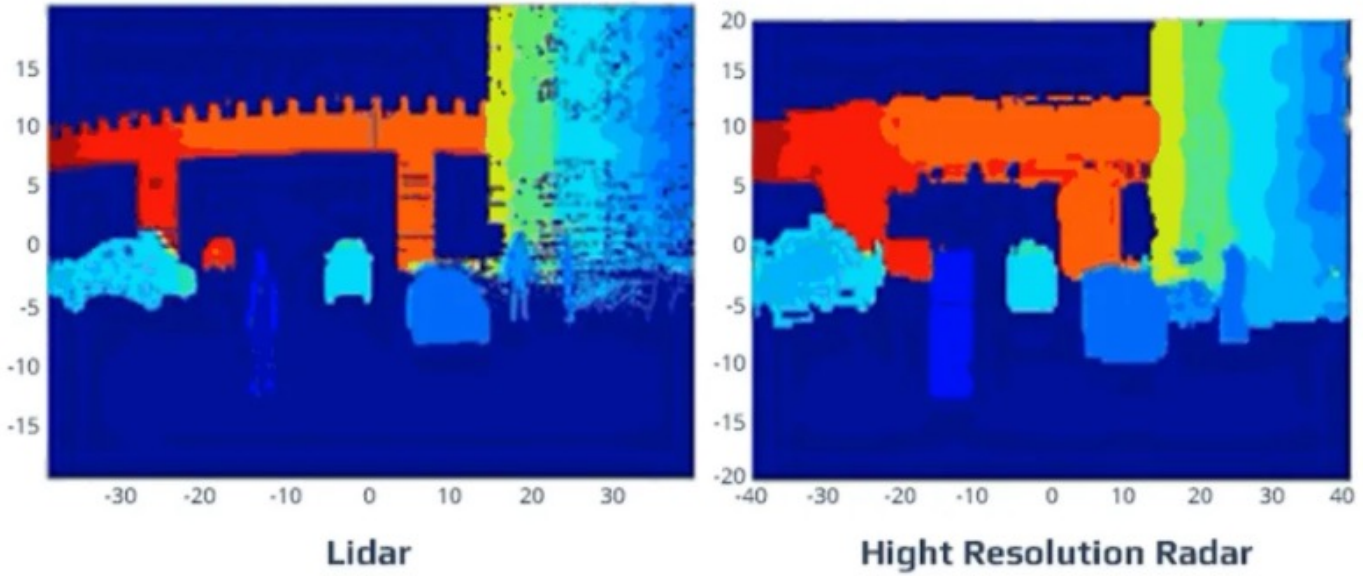
Lidar Vs Radar

- LiDAR (Light Detection And Ranging) and RADAR (Radio Detection And Ranging)
- Wavelength of Radar is in Centimetres while Lidar is in Micrometres giving greater accuracy of Lidar vs Radar
- Radar can see long distances with lower resolution while Lidar can see shorter distances but with greater resolution.
- Lidar can do 3D mapping while Radar can do 2D mapping giving more accuracy by Lidar and also provide geospatial data evidence.
- Long Range Radar is better while Short Range Lidar is better. Enforcement needs short range and hence Lidar is better.
- Single Lidar unit can do both sides of the Road
- Radar Detectors can be jammed and Jammers can operate from a longer distance.
- Detecting the LIDAR signal in advance is difficult due to tight beam, short signal duration compliant to IEC 60825-1 Edition 2.0

Accuracy

- Greater Resolution of Lidar provides for better detection at short ranges
- Technology of Future
- Drones can be fitted with Lidar for geospatial mapping



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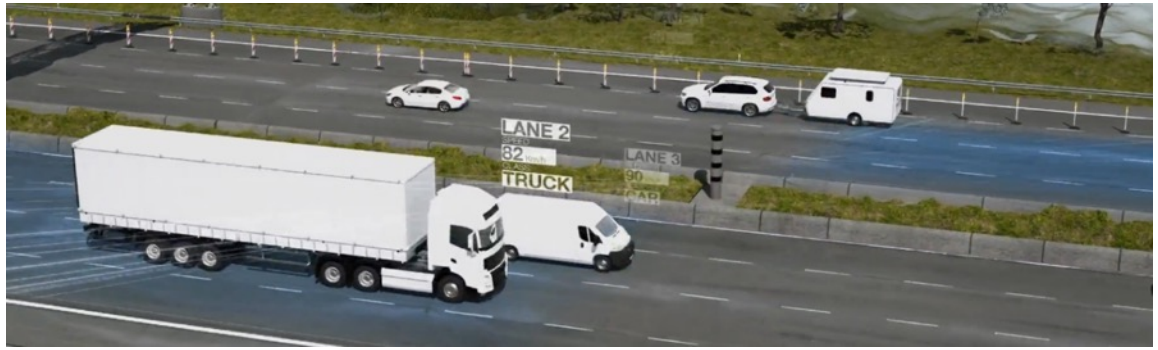
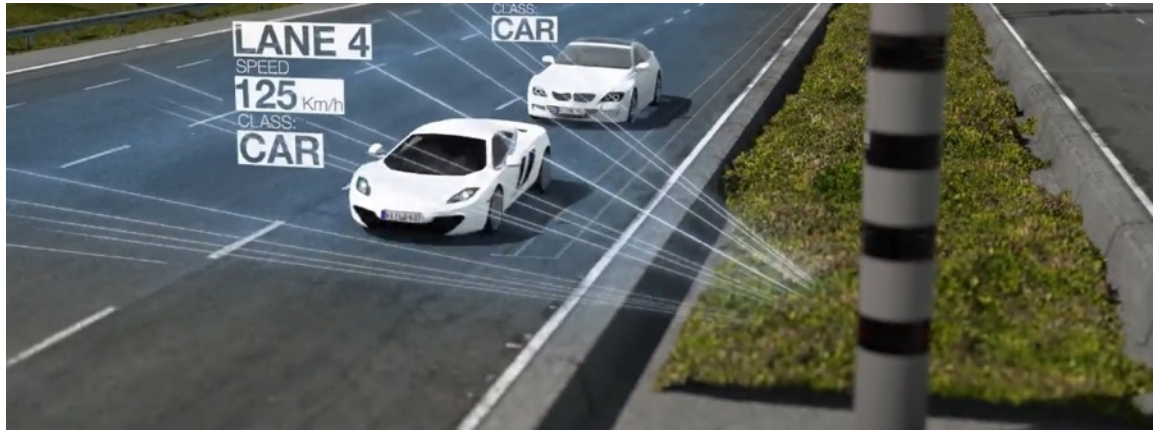
Lidar Detection





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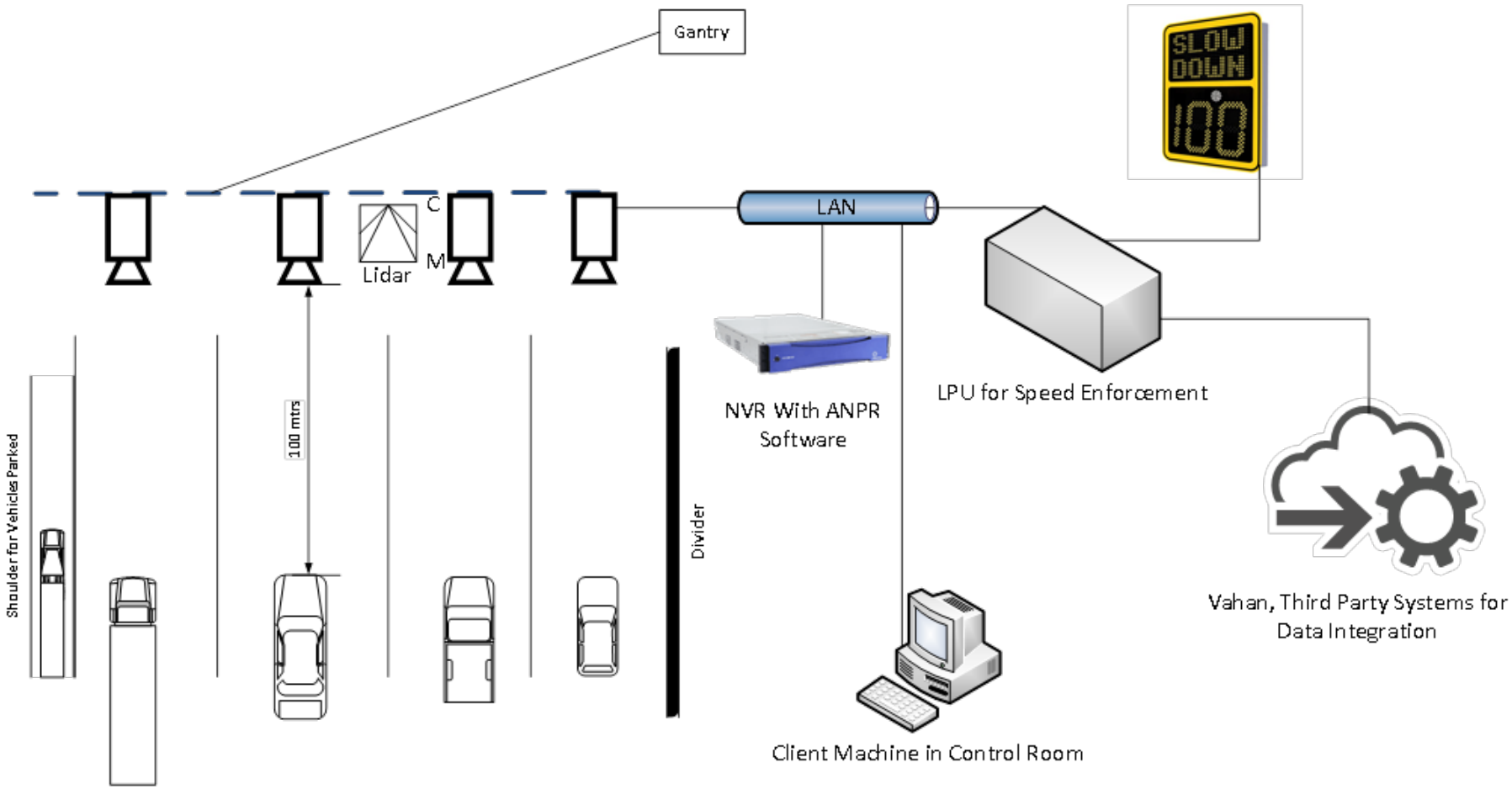
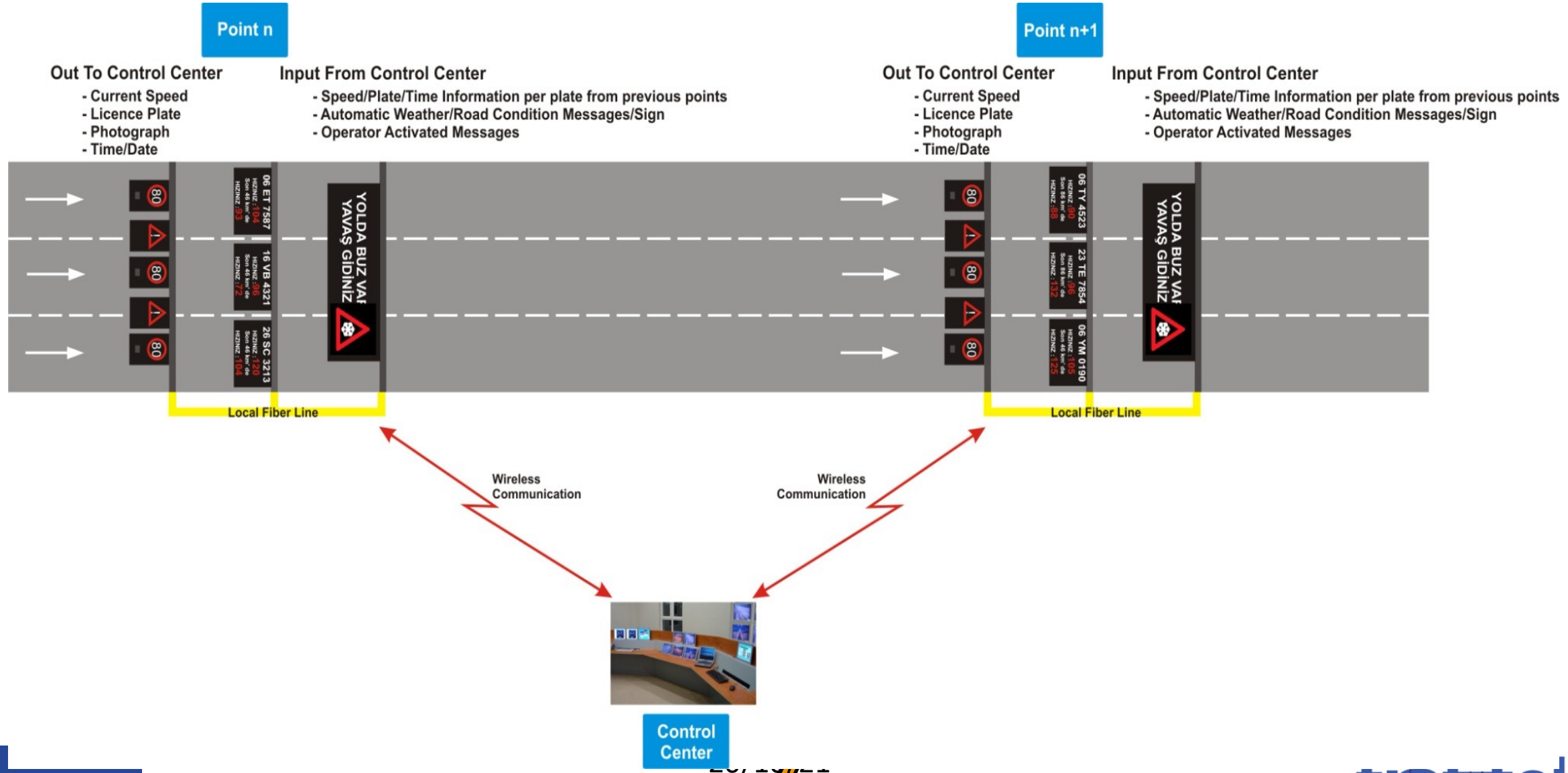
Typical architecture



Some pictures

Average speed detection and warning system



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Video Incident Detection System (VIDS)

Provides accurate and reliable vehicle tracking with automatic incident detection for highways and expressways. The system helps providing safety on highways.

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Video Incident Detection System (VIDS)

•Functionality

To make our roads safer and ensuring a smooth traffic flow, our VIDS can detect:

- Stalled/stopped vehicles
- Vehicles coming from the opposite direction
- Over speeding and under speeding
- Traffic status like congestion, dense, delay, stop and go, normal, etc.

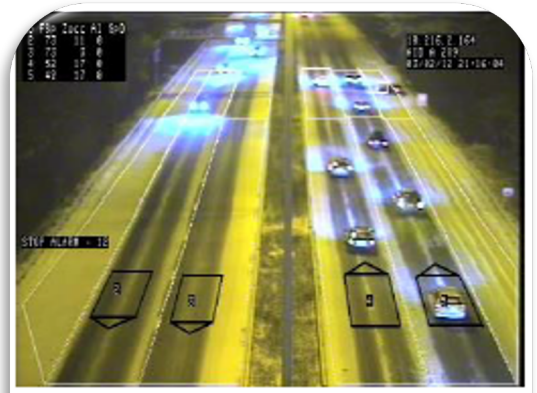
• Specific solutios components

- Various Camera and sensors
- Software for intelligent video processing in real-time

Video Incident Detection System (VIDS)

Problems Faced	Solution	
1. Slow-moving vehicle 2. Stopped vehicle 3. Reverse traffic 4. Fallen object 5. Poor visibility 6. Vehicle running in opposite direction	Incident Detection	✓ Vehicle Speed Detection ✓ Stalled Vehicle ✓ Reverse Movement of Vehicle ✓ Stalled Object ✓ Vision Clarity ✓ Vehicle Flow in in opposite Direction

Detection of a pedestrian on a highway. Video detection can distinct vehicles, persons and objects (lost cargo, debris)



Detection of stopped vehicle on highway at night in bad weathe

Detection of wrong way drive

etection of fallen object in tunne

Outdoor data collection on highway: speed, occupancy, count, classification

Variable Message Sign (VMS)

Large-size, dynamic and programmable variable message signs (VMS) inform the road users about alternative routes and congestions and other necessary information on weather and road conditions.

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Variable Message Sign (VMS)

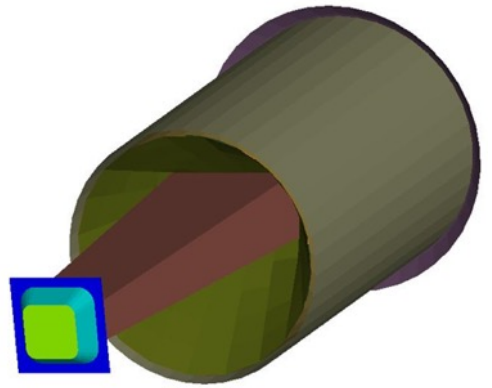
Objectives met by VMD:

The Concept of 3D Optics

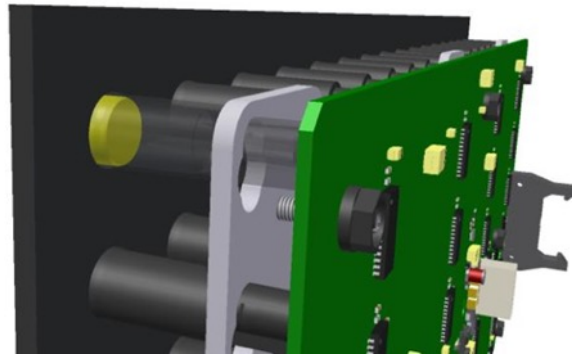
What is the purpose of the “Precision Optic?”

The “Precision Optic” combines the color, focuses the light and redirects incoming light.

By combining the 3-in-1 RGB SMD LEDs with “Precision Optic” technology, our signs provide extremely sharp and vivid images, graphics and text.



THE CONCEPT OF 3G OPTIC



Variable Message Sign (VMS)

VMS: Salient Features

- In case of network failure, the content from the local storage can be played on the screen.
- The VMD adjusts its brightness automatically based on the ambient light conditions.
- Fault detection of LED Open and Short condition.
- Sensors for Temperature, Humidity, Brightness, Smoke, Open Door and Vibration.
- External Alerts from other subsystems can be interfaced to the GPIOs of the control card.
- Interface with other subsystems such as Parking Management and ANPR is feasible with the inbuilt URL search.

VMS: Key Benefits

- Long Life - Conformity to EN 12966 for color, luminosity, contrast, beam width, etc.
- Power saving due to Dimming functionality.
- Low power due to Optical engineering.
- Long life of LEDs due to Secondary Protective Lense.
- Each LED failure is monitored & reported to central system.
- Low maintenance – Cost effective.
- Robust Aluminum Cabinet construction.

Public Private Partnership (PPP) model
Case Study
Nagpur Amravati Highway (NH6)- 150 kms

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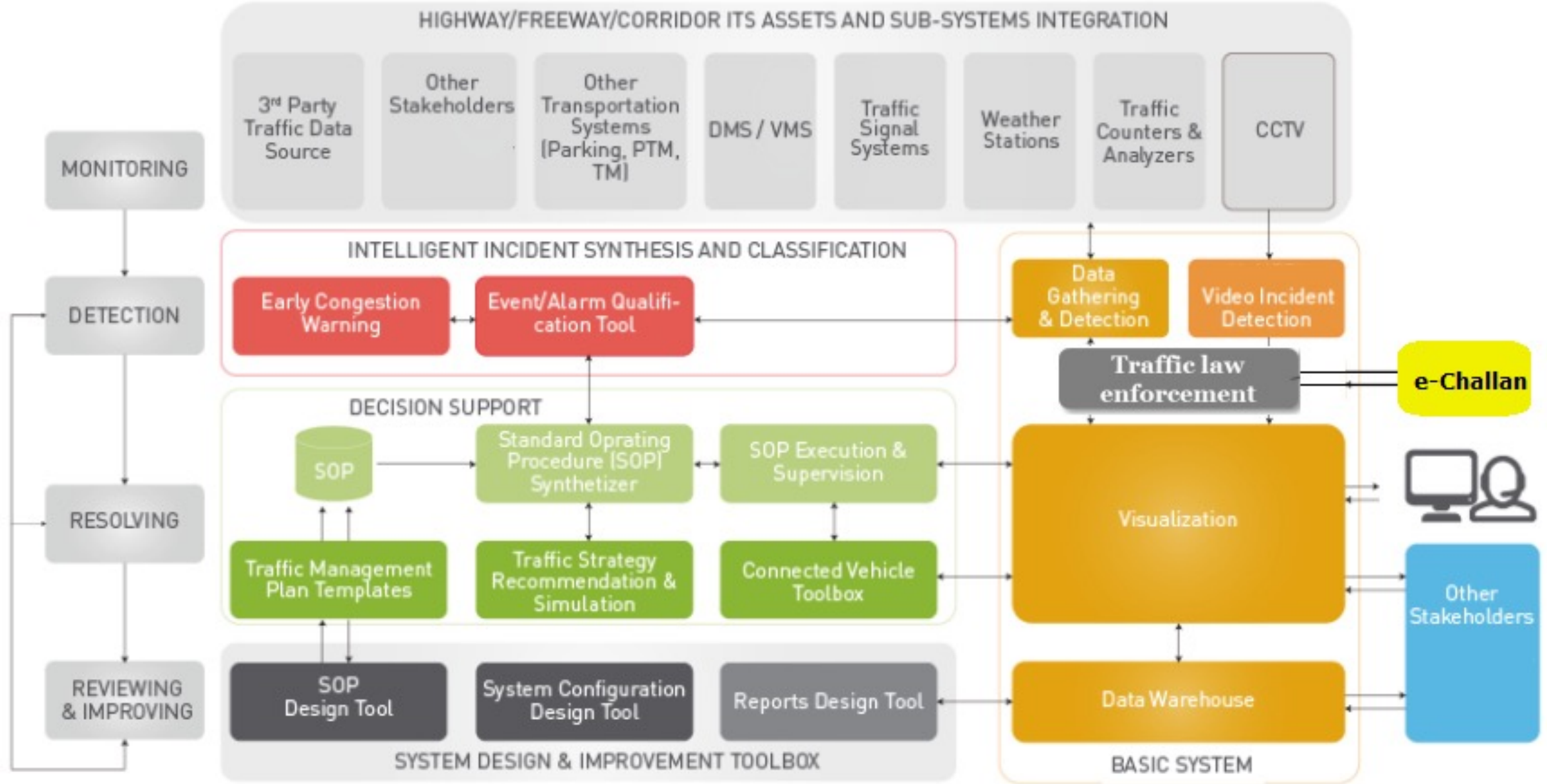
Highway Traffic Management System-HTMS



Highway Traffic Management System- Case Study

HTMS Requirments	Real-time traffic monitoring and control
	Traffic signal monitoring and control
	Ramp meter monitoring and control
	Provide traffic control information
	Speed violation vehicle enforcement
	Variable Message Signs (VMS)
	Illegal parking enforcement
	Incident detection/monitoring
	Traffic facility maintenance/operation/management support
	Tunnel Traffic Management System (TTMS)
	Bridge Traffic Management System (BTMS)
	Safety control of reduced speed road
	Provide road surface status information
	Weather Information System (WIS)
	Advanced Traveler Information System (ATIS)

Main barriers to providing more and better ITS services?	Lack of Financing/Funding
	Lack of Knowledge/Skills
	Lack of Human Resources
	Lack of Available Data
	Lack of Guidance/Best Practice
	Lack of Socio-economic Benefits
	Lack of Political Willingness
	Lack of Cooperation among Relevant Entities

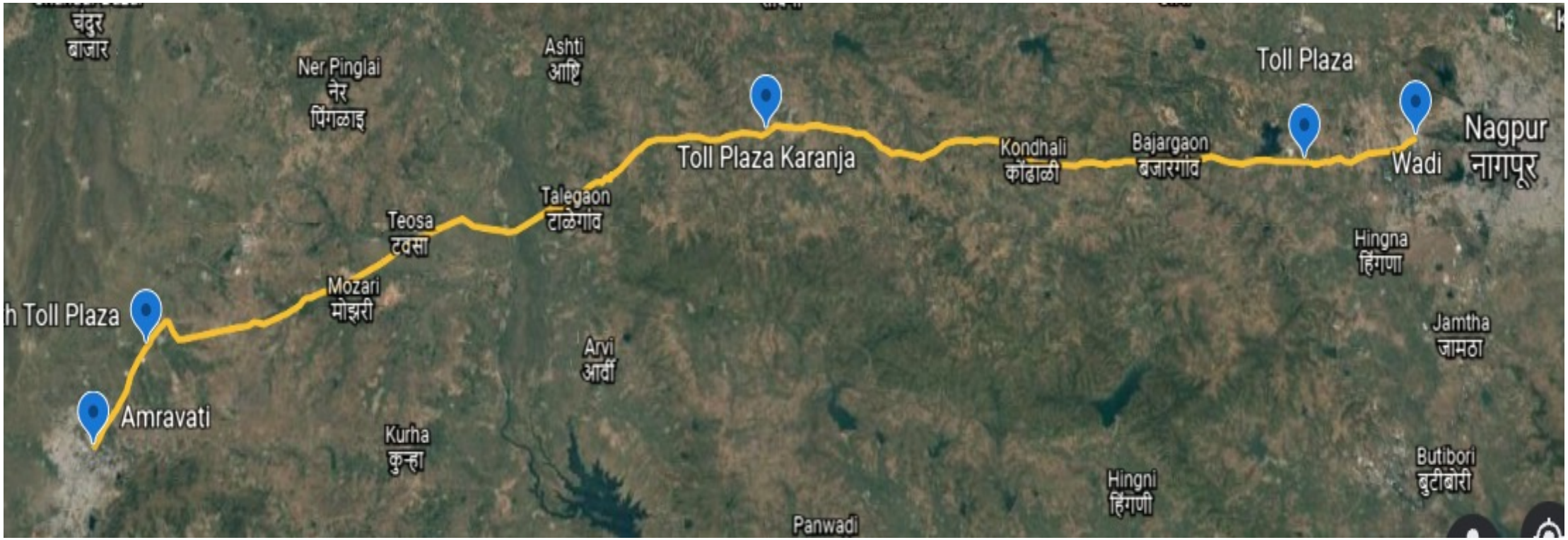
Current Implementation Issues

- Only Few Concessionaire/ Road contractor (C/RC) looks at this as the least/ lowest priority.
- The only motivation for the concessionaire to implement ATMS is to begin tolling and collect money.
- C/RC considers ATMS as an expense and not as a valuable life saving and mobility asset.
- Low price systems are given priority.
- All the big players in the world are not able to enter the Indian Market due to the Price Block and lack of technological awareness.
- Only few of the consultants have ITS experts who are exposed to Global technologies.
- Minimum time with minimum quality becomes the order of the day
- There is no long-term commitment of the OEM/SI as the rule is “ Put it and leave it”.
- Lack of audit and regulatory mechanisms .
- Morth Guidelines on System/solution specifications and functional requirements need to be updated to attract the best technologies in the world

Public Private Partnership with Solution provider

- Skin in the game for both the Government and the Solution provider as it makes it a long term engagement for both.
- It creates a direct relationship and accountability between the Technology company and the governments.
- Allows Audit procedures to automatically set in using Experts form the industry.
- System performs over a 5-10 year period with proper upkeep.
- PPP can be 60-70% of capex paid against delivery of the system and the balance in equal installments across the PPP period.
- PPP will cover the O&M costs including Software/ Technology upgrades.
- Government should safeguard the financial commitment to the Technology company through long term payment guarantees unaffected by Political changes.

Highway Traffic Management System- Deployment (150KM)



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Highway Traffic Management System- Deployment (150KM) Budgetary costs (Approx)

Sr. No.	Item Description	Amount Without GST
1	Field Equipment / Products	15,00,00,000.00
2	Poles, Structure and Gantries	4,00,00,000.00
3	Traffic Management Command Centre IT and Non IT	2,00,00,000.00
4	ATMS Software - 1 (Control, Monitor and Visualiazation)	2,00,00,000.00
5	Digital Transmission System(OFC)	5,00,00,000.00
6	Installation, and Testing	3,00,00,000.00
8	Operation and Maintenance for 20 quarters (20 L per qtr)	4,00,00,000.00
9	Solar System at Each Location (optional)	5,00,00,000.00
	Budgetary Total for ATMS Deployment for 5 years	40,00,00,000.00

Highway Traffic Management System- Deployment (150KM) PPP model (70:30 over 5 years)

Sr. No.	Description	Non PPP	PPP model	Remarks
1	Payment against project delivery	36,00,00,000.00	25,20,00,000.00	70:30 ratio for PPP
2	Opex payment made per Qtr	4,00,00,000.00	14,80,00,000.00	30% paid along with the quarterly opex
3	PPP payment finance costs over opex	0	2,70,00,000.00	Finance cost to support the PPP model over 5 years
3	Total cost of ownership over 5 years	40,00,00,000.00	42,70,00,000.00	
4	BG Liability	3,60,00,000.00	3,60,00,000.00	

Highway Video

We Do Not Inherit the Earth from Our Ancestors; We Borrow It from Our Children …

Thank You!

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