

OFFICE OF THE TRANSPORT COMMISSIONER-CUM-CHAIRMAN,  
STATE TRANSPORT AUTHORITY, ODISHA, CUTTACK.

Lr No: LXVII-424/2022/

IT.C. 573 Dated-16/10/2023

**Invitation to Bidders**

(Master System Integrator / System Integrator / Original Equipment  
Manufacturer / IT Solution Provider)

**From:**

Office of the Transport Commissioner, Odisha  
6<sup>th</sup> Floor, Rajswa Bhawan,  
P.O- Chandini Chowk, Cuttack, Pin: 753002  
Odisha.0671-2507042,

**To:**

All Prospective bidders,

Dear Bidders,

It is with great pleasure that I extend this invitation to your esteemed organization to participate in a crucial discussion regarding the successful implementation of the Intelligent Enforcement Management System (IEMS) in our state.

The Transport Department of the Government of Odisha has given enforcement in road safety the highest significance. It is widely understood that severe enforcement of any traffic rule violations would result in more compliant, responsive, and disciplined drivers. The traffic rule violations like no seat belt in 4-wheeler driving & use of mobile phone while driving will be added as functionalities of the IEMS apart from violations detection like Over Speeding, Triple Riding, Wrong Lane movement, without Helmet, etc.

The IEMS project is a vital initiative aimed at modernizing our state's transportation management and operations. To ensure the project's success, we are seeking input from prospective bidders who can bring their technical expertise and innovative solutions to the table. This discussion will encompass both technical and financial

aspects, as well as the technical specifications of the project components and the selection criteria.

Therefore, the Transport Commissioner, Odisha invites interested bidders (Master System Integrator / System Integrator / Original Equipment Manufacturer / IT Solution Provider) from eligible reputed, competent, and professional Information Technology companies, who have experience in implementing large scale public infrastructure projects like City Surveillance, Traffic Surveillance, Intelligent Traffic Management System, Integrated Traffic Management System, etc. for discussion on Selection of Master System Integrator for Implementation of Intelligent Enforcement Management System (IEMS) for office of the Transport Commissioner, Odisha.

**Key Details of the Discussion:**

**Date** : 18 - 10 - 2023

**Time** : 16.00 P.M.

**Mode** : Hybrid Mode (Online & Offline. For Online participation link will be uploaded at the website (<http://odishatransport.gov.in/>), a day before the scheduled date.)

**Venue** : Office of the Transport Commissioner, Odisha  
6<sup>th</sup> Floor, Rajswa Bhawan, Chandini Chowk, Cuttack, 753002, Odisha.

The primary objectives of this discussion are as follows:

1. To provide an overview of the IEMS project's objectives, scope, and expected outcomes.
2. To discuss the technical specifications of the various project components, including hardware and software requirements.
3. To review the financial aspects, including budget considerations, and potential cost-saving measures.
4. To outline the selection criteria that will be used in the bidding process.
5. To address any questions or concerns from prospective bidders.

We believe that your organization's experience and expertise in electronic enforcement management solutions will greatly contribute to the success of this project. Your insights and innovative solutions are highly valued as we aim to create a state-of-the-art enforcement management system that will save lives and benefit our citizens and enhance the efficiency of our operations.

To confirm your participation in this discussion, please share your consent and below mentioned details at [staroadsafety@gmail.com](mailto:staroadsafety@gmail.com).

<i>Bidders Details:</i>	
<b>Name of the Organization:</b>	
<b>Name of the representative:</b>	
<b>Position/Designation in the organization:</b>	

<p><b><i>Prior Experience in implementation of City Surveillance, Traffic Surveillance, Intelligent Enforce Management Solutions, or similar nature of projects where traffic enforcement is part of the scope of the project.</i></b></p>	
<p><b><i>No of Project Completed:</i></b></p>	
<p><b><i>Years of experience:</i></b></p>	
<p><b><i>About Organization (Max 100 words):</i></b></p>	

We look forward to your participation in this important discussion, which will play a pivotal role in shaping the future of transportation management in our state. Your involvement is integral to the success of the IEMS project.

Thank you for considering our invitation, and we eagerly anticipate your presence at the discussion.

**Sd-**

**Transport Commissioner  
Odisha**

## Annexure 1:

### About Project

The idea of having a vibrant and dynamic IEMS System in place is envisioned keeping in mind that the numbers of vehicles are increasing day by day in the state. More than eighty lakh vehicles are plying on the road. This has led to an increase in traffic congestion and makes roads unsafe. The rate of accidents involving drivers, the riders and the pedestrian on the roads increases due to rash driving and over speeding.

Therefore, for any traffic rules violation along the identified stretch the Vehicle Registration Number will be captured through ANPR Cameras and Speed Detection Radars and data will be processed at Local Processing Unit before being sent to central server at cloud infrastructure. The collective data from all the cameras and field devices for all violators will be fed to the e-Challan module of the VAHAN application through web services for subsequent activity of issuance of challan and payment etc.

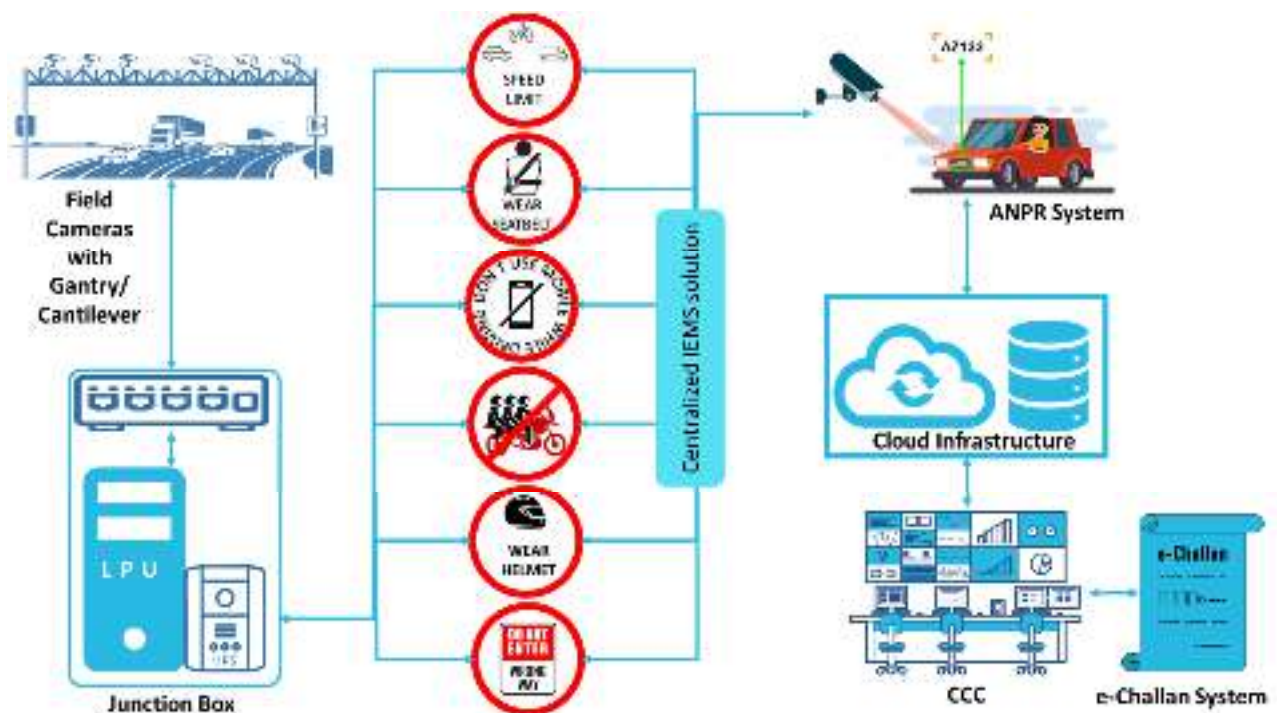


Figure 1: Solution Envisaged

The Vehicle Registration numbers fed into e-challan system, which will search for vehicle owner details like Mobile No., Address in VAHAN 4.0 database and based on available data and offence committed, SMS and E Mail will be triggered to owner of the vehicle along with penalty details (as per traffic rules & regulations). An e-mail will be sent to the registered address mentioned in the Vehicle Registration Details in VAHAN 4.0, if required.

This is expected that this strict enforcement through ICT enabled IEMS system will create awareness regarding road and traffic safety amongst people and will play a very important role in compliance of traffic related laws. This will reduce the loss of human lives through strict enforcement and compliance.

The application/System is to be developed by System Integrator (SI) and along with that SI will be responsible for supply, installation, testing and commissioning of the project along with operation and maintenance for 5 years. Further the operation and maintenance period may be extended up to 3 years on a yearly basis depending on the performance of the SI. The SI

will be responsible for making the necessary arrangement for feeding data from field equipment and analyzing the data through application and presenting the dashboard at Integrated Command & Control Centre (ICCC) for decision making.

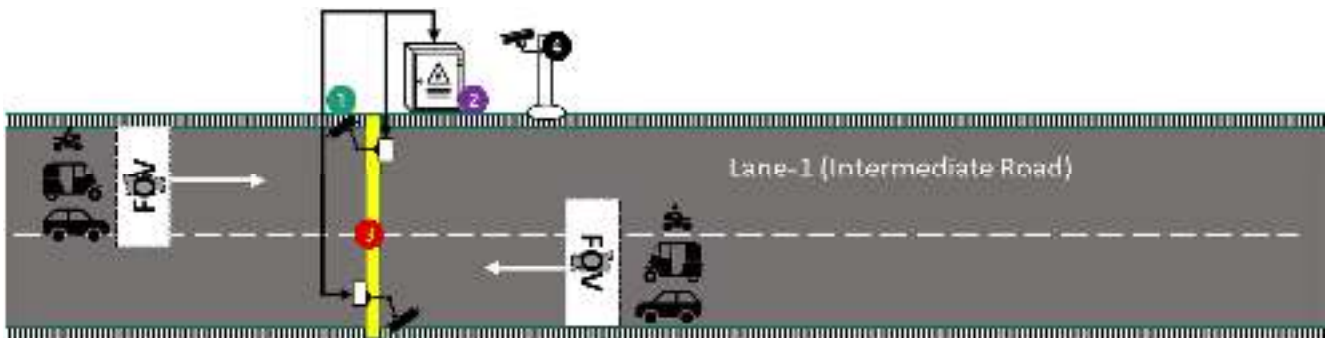
The solution should also be capable of generating MIS reports in terms of number of enforcement cases, duration of the day, date wise, operator wise etc. and other data field parameters. The MIS reports and dashboard will be accessed through a user-based web application under the purview of the Office of Transport Commissioner along with the police stations.

The SI shall develop software and analytics applications to facilitate deployment of intelligent analytics on the cameras/field equipment and raise alarms & triggers in case of unwanted activities around IEMS devices installed at strategic locations or nodes.

Various data analytics that shall be offered on Evidence, ANPR and Speed Radars through IEMS are:

- a) Speed Violation Detection
- b) Wrong direction movement (Reverse Riding)
- c) No Helmet on two wheelers
- d) Triple riding on two wheelers
- e) Wrong Entry Lane Driving
- f) No seat belt in four wheelers
- g) Use of mobile during riding/driving
- h) Road Congestion
- i) Illegal parking of vehicle

Proposed schematic diagrams for Gantry/Cantilever poles and field equipment to be installed at strategic locations or nodes.



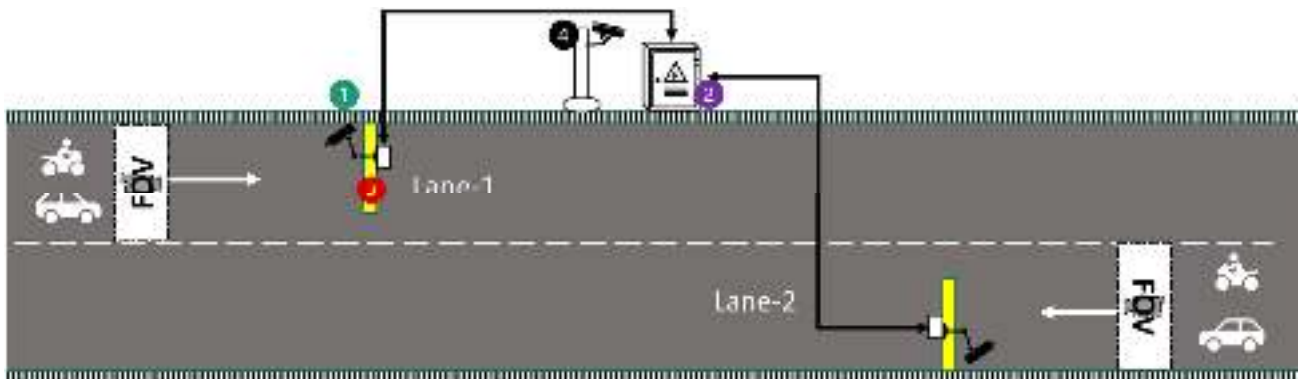
**Intermediate Road**

1 Evidence/ANPR Camera

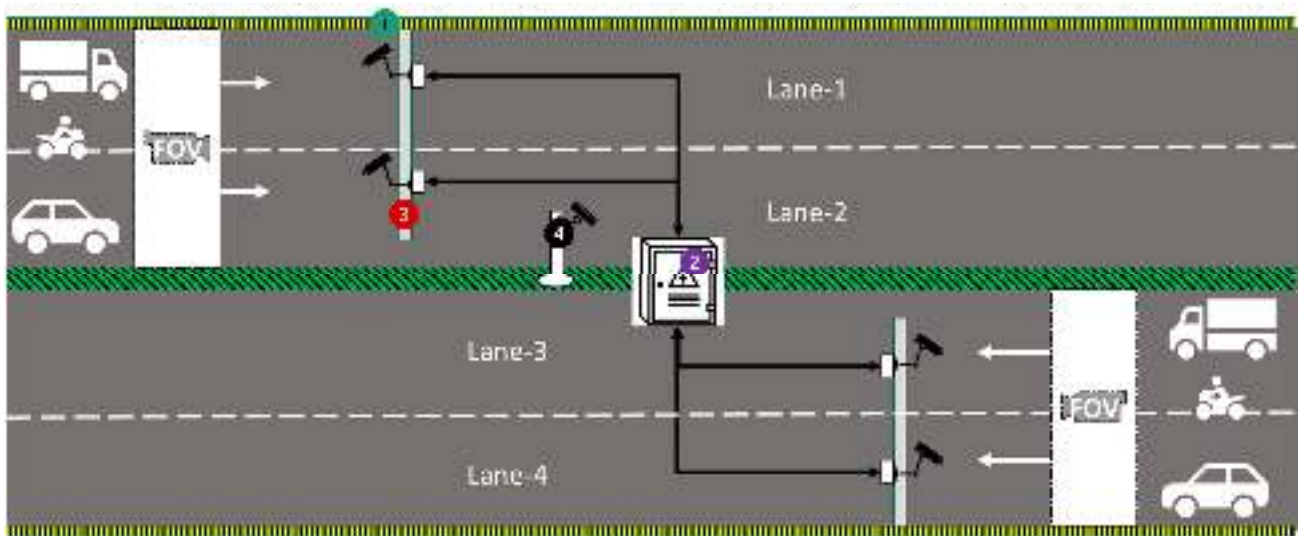
2 Junction Box & Accessories

3 Gantry/Cantilever Poles

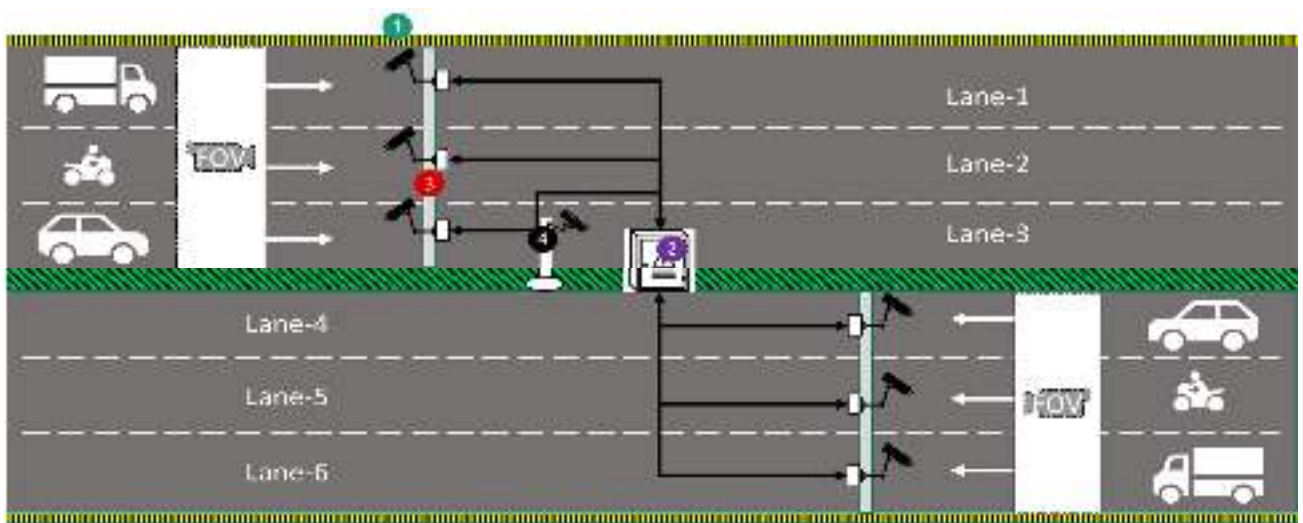
4 IP Camera/Speed Radar



Two Lane Road



Four Lane Road



Six Lane Road

- 1
Toll-free/WNR Camera
- 2
Junction Box & Accessories
- 3
Painted/Contrast Poles
- 4
Saw-Dust Camera

Apart from these, surveillance mechanisms across each of these sites will be made available to prevent vandalism and should be capable of triggering alarm in case of suspicious activities.

The goal of Intelligent Enforcement Management can be enumerated as:

- a) Help in bringing more safety on roads.
- b) Result in reduction of rash and negligent driving.
- c) Increase awareness of traffic rules and regulations.
- d) Reduce processing and disposal time of traffic violations.
- e) Bring transparency in the enforcement of traffic laws and rules.
- f) Used as an effective tool of e-governance to manage, monitor and administer.

Also, the application which will be developed as part of IEMS project must be scalable and designed in such a way that during the project period, STA may increase the number of gantries or nodes and cameras to any extent without changing the core of the software engine or any part thereof, whereas only the required hardware infrastructure will be added or upgraded as per requirement and recommendation of competent authority.

### Project Modules & Brief Scope of Work

Sl. No.	Particulars	Description
<b>A.</b>	<b>Field Hardware Components (for Gantry Location)</b>	
1.	Evidence camera with IR	Supply, installation and commissioning of Cameras with IR at strategic locations as per Feasibility Survey. To monitor the real-time movement of traffic along the SH/NH/District Roads.
2.	ANPR camera with IR	
3.	Overview or Pole Security Camera with IR	
4.	Speed Violation detection Radar System	
5.	Network Active & Passive components	Supply, installation, and commissioning of Network / Power components for communication with CCC from Strategic locations as per Feasibility Survey. To monitor the real-time movement of traffic along the SH/NH/District Roads.
6.	Junction Box & accessories	
6.	Variable messaging services with display board & poles	Supply, installation, and commissioning of Variable messaging services with display board & poles for awareness at Gantry locations as per Feasibility Survey.
<b>B.</b>	<b>Software Components</b>	
7.	Centralized IEMS Software for ANPR, SVD, no seat belt in Car, No Helmet, Triple riding, wrong way driving, reverse lane driving, Event Aggregation, User Management, and	Development / customization, testing, installation and commissioning of Centralized Software for ANPR, SVD, no seat belt in Car, No Helmet, Triple riding, wrong way driving, reverse lane driving, Event Aggregation, User Management, and Resource Management Including Integration with

<b>Sl. No.</b>	<b>Particulars</b>	<b>Description</b>
	Resource Management Including Integration with an Existing E-Challan System along with Network Monitoring System.	an Existing E-Challan System along with Network Monitoring System.
8.	Perpetual Channel licenses for centralized IEMS Software including Integration with Existing E-Challan System etc.	Deployment and Distribution of IEMS feed and integration with other stakeholders (RTOs, Police Department, etc.).
9.	Centralized Dashboard & Helpdesk Services	The Solution is basically a customized software system, which has been used in the country for various transit management functions. It shall consist of Dashboard & Network Management System, SLA Management System and shall be integrated with all the image/video recording field devices and shall transfer the data to video storage through wire/wireless connection.
10.	Command & Control Centre Software with Perpetual Licensees	Database, Servers, Security setup, Backup System, Anti-Virus setup etc. for Database
11.	CCC Components: 1- Connectivity and Integration 2- Centralized Data hosting and managing Infrastructure 3- Service/Monitoring Stations	Integration & commissioning of Video Wall and Hosting Infrastructure.
12.	Cloud Based Hosting DC and DR	Set up, Hosting and Maintenance of the primary and recovery data center
<b>C</b>	<b>Other Components</b>	
13.	Annual Maintenance Contract	Annual Maintenance Contract for all hardware and software components during contract period i.e., 5 years post Go-Live.
14.	Communication	Successful Agency shall be responsible for providing connectivity for each location along with CCC.
15.	Manpower Support	Successful Agency shall provide adequate Manpower support as required for meeting the scope of the project.
16.	Training and Handholding	Successful Agency shall provide training to officials & employees and other end-users.



### Suggestions for Specifications:

The below mentioned Specifications are indicative only. The bidders are free to propose own specifications in the remark/suggestion column. However, the specification should meet bare minimum requirements as provided below.

#### 1. ANPR Cameras

(Should be able to capture high-definition images and videos during day & nighttime. It should also be able to maintain clarity in rainy, hazy or cloudy weather with low light)

Sl. No	Feature	Technical Specification	Remarks/Suggestions (if any)
<b>Camera</b>			
1.	Image Sensor	1/2" Progressive scan CMOS Global Shutter or better	
2.	Maximum Resolution	1920x1080 or better Bit Rate- 20kbps-30mbps ROI upto 8 Areas	
3.	Lens Type	Multi focal	
4.	Focal Length	f = 15 ~ 40 mm or better	
5.	Aperture	F1.8 ~ F2.3	
6.	Auto-iris	P-iris (DC-iris reserved)	
7.	Field of View	10° ~ 35° (Horizontal) or better 5° ~ 20° (Vertical) or better 10° ~ 40° (Diagonal) or better	
8.	Day/Night	Removable IR-cut filter for day with night vision function	
9.	Pan/Tilt/Zoom Functionalities	48x digital zoom (4x on IE plug-in, 12x built in)	
10.	On-board Storage	Slot type: SD/SDHC/SSDXC card slot	
11.	Frame Rate	60fps @ 1920x1080 or better	

12.	S/N Ratio	60dB or better	
13.	Dynamic Range	140 dB or better	
<b>Audio (Optional)</b>			
14.	Audio Capability	Two-way Audio	
15.	Compression	G.711, G.726	
16.	Interface	External microphone input	
		External line output	
<b>IR Illuminator</b>			
17.	Beam Angle	30° ~ 40° adjustable	
18.	IR Distance	200 meters or better	
19.	Power Consumption	80W	
20.	Minimum Illumination	0.001 Lux	
		0 Lux with IR	
<b>Camera Housing</b>			
21.	Operating Temperature	0° C ~ 60°C or Better	
22.	Weatherproof	IP 67 or better	
<b>Other Camera Specification</b>			
23.	Capture Range	35 meters wide angle multilane capture or better	
24.	Power Input	AC 24V or DC 24V or PoE	
25.	Operating Temperature	Working Temperature: -5°C ~ 60°C	
26.	Humidity	90% or better	
27.	Video Compression	H.265+ & MJPEG Or better	
28.	No of Streams	3 or better	

29.	Network Users	Live viewing for up to 10 clients Multiuser access with password protection, 802.1 Port based authentication	
30.	Protocols	DDNS, DHCP, DNS, FTP, HTTP, HTTPS, Ipv4, Ipv6, NTP, PPPoE, QoS, RTSP/RTP/RTCP, SMTP, SNMP, SSL, TCP/IP, TLS, UDP	
31.	Interface	10Base-T/100BaseTX Ethernet (RJ-45)	
32.	Alarm Events	Event notification using digital output, HTTP, SMTP, FTP, NAS server and MicroSD card	
33.	IP Camera Connectors	RJ-45 for Network/PoE connection	
		DC12V/AC 24V power input	
34.	Safety Certifications	BIS IS 13252, CE, FCC ETDC, NIST, NABL	
35.	Integrated Control	Built-in photocell for automatic IR on/off	
36.	Make / Brand	<b>The bidders are requested to suggest any 3 globally reputed Manufacturers presence in India for last 5 Years.</b>	

*Note: Please add other parameters to satisfy the desired functionality.*

## 2. Speed Violation Detection Multilane Radar

S. No.	Features	Description	Remark/Suggestion
1	Technology	Object tracking (range, angle, speed) with UHD resolution independent discrimination of multiple targets at same speed and range	
2	Speed Range	Maximum Speed: +/- 240 Km/H	

3	Field of view	+/- 9 Degree (LRR), +/- 45 Degree (MRR)	
4	Frequency	75-80 GHz integrated CMOS transceiver	
5	Interface	Ethernet/CAN/RS485	
6	Housing	IP67	
7	Simultaneous Tracking of Objects	200 or more	
8	Max. speed Detection Range	250 Mtr or more	
9	Operation Mode	Approaching Object detection	
10	Accuracy	97% or better	
11	Refresh Time	50msec or better, Multi lane operation	
12	Security Certificates	ETDC, NIST, NABL	
13	Make/Brand	<i>Make / BrandThe bidders are requested to suggest any 3 globally reputed Manufacturers presence in India for last 5 Years.</i>	

*Note: Please add other parameters to satisfy the desired functionality.*

### **3. Pole Security Camera**

(Should be able cover area surveillance up to 15-meter radius)

<b>S. No.</b>	<b>Features</b>	<b>Description</b>	<b>Remark/Suggestion</b>
1.	Camera Type	Varifocal Bullet Camera	
2.	Image Sensor	1/2.8-inch CMOS or better	
3.	Resolution	2 MP, Min. 1920 × 1080 at 50/60 FPS or better	

4.	Video Compression	H.264, H.265	
5.	Audio Compression	G.711ulaw/G.711alaw/G.722.1/G.726/MP2L2/PCM/MP3/MJPEG, should support Environment Noise Filtering	
6.	Streaming	Min. three compressed stream (Individually Configurable)	
7.	ID/Password	Multi-level user ID/Password	
8.	Simultaneous Live View	Up to 6 channels	
9.	Physical Layer	1 RJ45 10M/100M self-adaptive Ethernet port	
10.	Security	Password protection, complicated password, HTTPS encryption, Stateful IP address filter	
11.	Protocol	TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, NTP, UPnP, SMTP, IGMP, 802.1X, QoS, IPv4, IPv6, UDP, Bonjour, SSL/TLS, PPPoE, ARP	
12.	Lens Type	2.7 to 13.5 mm	
13.	Alarm	2 inputs, 2 output	
14.	Audio	1 inputs, 1 output	
15.	Image Enhancement	BLC, HLC, 3D DNR	
16.	Image Parameters Switch	Yes	
17.	Image Settings	Rotate mode, saturation, brightness, contrast, sharpness, gain, white balance adjustable by client software or web browser	
18.	Target Cropping	Yes	
19.	Illumination	Color: 0.002 Lux or better at (F1.4, AGC ON), 0 Lux with IR	
	Minimum	0.001 Lux	

	Illumination	0 Lux with IR	
20.	IR Distance	60 mtrs. or better	
21.	Privacy Mask	Yes	
22.	Electronic Shutter	1/3 s to 1/100,000 s with slow shutter support	
23.	Wide Dynamic Range	120dB	
24.	Day and Night	Day, Night, Auto, Schedule	
25.	Edge Storage	MicroSD / microSD HC / microSD XC slot supporting memory card for min. 256 GB (Min. Class 6 or higher, Card to be included)	
26.	Operating Temperature	-30 °C to +60 °C Humidity 95% or less (non-condensing)	
27.	Housing	IP67, IK10	
28.	Basic Events	Video tampering, Motion Detection. The system focuses on human and vehicle targets, vastly improving alarm efficiency and effectiveness	
29.	Power Source	12 VDC, PoE: 802.3at/af	
30.	Certification	CE, FCC, BIS	
31.	Make/Brand	<i>Make / BrandThe bidders are requested to suggest any 3 globally reputed Manufacturers presence in India for last 5 Years.</i>	

*Note: Please add other parameters to satisfy the desired functionality.*

#### **4. Video Analytical Camera for Traffic Violation detection**

(Should be able to capture high-definition images and videos during day & nighttime. It should also be able to maintain clarity in rainy, hazy or cloudy weather with low light. The camera should be capable enough for capturing and analyzing multiple MV violations and produce high clarity evidence)

<b>S. No.</b>	<b>Features</b>	<b>Description</b>	<b>Remarks/Suggestion</b>
1.	Camera Type	Fixed Bullet Camera	

2.	Image Sensor	1/2.8-inch CMOS or better	
3.	Resolution	8 MP, Min. 1920 × 1080 at 40 FPS or better	
4.	Video Compression	H.264, H.265 or better	
5.	Audio Compression	G.711ulaw/G.711alaw/G.722.1/G.726/MP2L2/PCM/MP3/MJPEG, should support Environment Noise Filtering	
6.	Streaming	Min. 3 compressed stream (Individually Configurable)	
7.	ID/Password	Multi-level user ID/Password, 802.1 based port-based authentication	
8.	Simultaneous Live View	Up to 6 channels	
9.	Physical Layer	1 RJ45 10M/100M self-adaptive Ethernet port	
10.	Security	Password protection, complicated password, HTTPS encryption, IP address filter	
11.	Protocol		
12.	Lens Type	Fixed focal lens 2.8 / 4 / 6 mm	
13.	Alarm	1 input, 1 output	
14.	Audio	1 input, 1 output	
15.	Image Enhancement	BLC, HLC, 3D DNR	
16.	Image Parameters Switch	Yes	
17.	Image Settings	Rotate mode, saturation, brightness, contrast, sharpness, gain, white balance adjustable by client software or web browser	
18.	Target Cropping	Yes	

19.	Illumination	Color: 0.001 Lux or better at (F1.4, AGC ON), 0 Lux with IR Inbuilt IR (Up to 200 mtrs. or better)	
20.	Privacy Mask	Yes	
21.	Electronic Shutter	1/3 s to 1/100,000 s with slow shutter support	
22.	Wide Dynamic Range	120dB	
23.	Day and Night	Day, Night, Auto-Schedule	
24.	Edge Storage	Built-in memory card slot up to 512 GB	
25.	Operating Temperature	-30 °C to +60 °C Humidity 95% or less (non-condensing)	
26.	False alarm reduction	False alarm reduction through human and vehicle target classification	
27.	Housing	IP67 or better Vandal Proof	
28.	Basic Events	Motion detection, video tampering alarm	
29.	Power Source	12 VDC, PoE: 802.3at/af	
30.	Capture Range	35 meters wide angle multilane capture or better	
31.	Certification	CE, FCC, BIS	
32.	Make/Brand	<i>Make / BrandThe bidders are requested to suggest any 3 globally reputed Manufacturers presence in India for last 5 Years.</i>	

*Note: Please add other parameters to satisfy the desired functionality.*

### **5. Local Processing Unit**

(LPU should be able to store evidence for 72 Hours)

<b>S. No.</b>	<b>Features</b>	<b>Technical Specifications</b>	<b>Remark / Suggestion</b>
1.	Chassis /Enclosure	2U or 4U chassis Rack	



		Mount or Tower Type with Industrial Grade Fan	
2.	Motherboard Generation	Motherboard supports i5 / i7 with CPU Cooler	
3.	Motherboard	Intel Core i7 CPU or higher	
4.	Memory	8GB DDR3 RAM	
5.	Hard Driver	6TB, Grade HDD (Seagate SV35 or equiv.) /7000 RPM CPU	
6.	Solid State Drive	256 GB Industrial grade SSD	
7.	Data Transmission	USB 3.0/2.0 and DVD R/W	
8.	Operating System	UBUNTU –14.04 64 bits	
9.	Motherboard Operating Temperature	0 to 60°C	
10.	Physical Presence	Any 3 globally reputed Manufacturer having presence in India for more than 5 years	

*Note: Please add other parameters to satisfy the desired functionality.*

## **6. Industrial Managed PoE + Switch**

<b>S. No.</b>	<b>Technical Specifications</b>	<b>Remark/Suggestion</b>
1.	L2 Managed Industrial Switch 16 ports 2X1G with 8x10/100/1000 Base-T PoE+ ports and additional 2x1G Base-X ports accommodate SM/MM FO Module.	
2.	Should support PoE as per IEEE 802.3af and 802.3at with PoE budget of 120W or better.	
3.	Should have Minimum 20Gbps switching bandwidth and Min. 14Mbps Switch- forwarding rate. The switch should work Wire speed forwarding from day 1.	

4.	Layer 2 Features: Should support STP, RSTP, MSTP, IGMP v1/v2/v3 snooping, loop protection, MAC-Port mapping, STP root guard, Voice VLAN, MLD snooping (MLDv1 and v2), 16k MAC Table or more, PVST+ compatibility mode, VLAN Mirroring (RSPAN), Support IEEE 802.1Q (4000 VLAN IDs), Should support GARP VLAN Registration Protocol / GVRP, VLAN classification by protocol and port, VLAN Double tagging (Q-in-Q).	
5.	Resiliency: Should support IEEE 802.17/equivalent for sub 50ms ring protection in following scenario: single, dual fiber cuts in ring, Control Plane Prioritization (CPP), Loop Detection and Loop protection.	
6.	Security: Should support ACL based on L2 and L3, Stateful Packet Filter, DHCP (Server, Relay and Client), IP Source guard, DAI, Private VLAN, AAA, Authentication (MAC, Web and IEEE 802.1x), BPDU Protection, sflow or equivalent, SSLv2 and SSLv3, TACACS+, LAG.	
7.	Qos: Policy-based QoS based classifying traffic based on MAC, Port, VLAN, Protocol, Tail drop for queue congestion control, Strict priority/ weighted round robin.	
8.	Management: CLI, GUI, USB or memory card slot for taking backup of software release files configurations, DDM –Optical digital diagnostic monitoring as per SFF – 8472 or equivalent, UDLD or equivalent, Time Domain Reflectometry/ equivalent, RMON 4 groups, SNMPv3, Support ECO Friendly Mode, LLDP-MED, IEEE 802.3az, SNMPv6, Telnetv6 and SSHv6.	
9.	The switch should support static & dynamic Routing, ping pooling and trace route.	
10.	Should support Ipv4 and Ipv6 dual stack.	
11.	Should inherently support operating temperature range of 0°C to 60°C or Better.	
12.	Switch Certifications: RoHS compliant, UL, EN, FCC,	
13.	Switch and FO Module should be from same OEM	
14.	Any 3 globally reputed Manufacturer should have 5 years of prior presence in India.	

*Note: Please add other parameters to satisfy the desired functionality.*

## 7. Industrial Online UPS (4 Hours of back up with full load)

S. No.	Features	Technical Specifications	Remark/Suggestion
	<b>Input Parameters</b>		
1.	Nominal Input Voltage	90~300 VAC	
2.	Input Frequency Variation	45Hz to 60 Hz	
3.	Output Capacity	3000 VA	
4.	Nominal Output	230VAC $\pm$ 10%	
5.	Output Frequency	45 Hz to 60 Hz	
6.	Power Back up	4 Hrs with full load	
7.	Frequency (Hz) on Battery	50/60Hz $\pm$ 0.1Hz	
8.	Waveform	Simulated Sine Wave	
9.	Transfer Time (ms)	4-8 ms Typical	
10.	Protection	Battery Low, Overload, Short Circuit, AC Input Low/ High & Fault conditions	
11.	Degree of Protection	IP 56 or above	
12.	Nos. of Power Outlet	3 or more	
13.	Quality	ISO 9000, ISO 14001, OHSAS 18001, ISO 27001, BIS and RoHS	
14.	Safety	IEC/EN62040-1	
15.	EMC / Performance	IEC Standards, Complying to CE	
16.	Noise	Low Noise Level	
17.	Communication Port	RS-232 / USB	
18.	Voltage Stabilizer	3KVA (Automatic)	
19.	Battery Voltage	24V DC	

20.	Internal Battery	24V/9AH	
21.	Recharge Time	Sealed Maintenance Free Lead Acid VRLA or better	
22.	Make/Brand	Any 3 globally reputed Manufacturer presence in India for more than 5 years	

*Note: Please add other parameters to satisfy the desired functionality.*

### **8. Junction box (anti-theft and tampering detection sensor)**

<b>Sr No</b>	<b>Item</b>	<b>Technical Specification</b>
1.	Sensor Specification	
2.	Sensor solution detail	
3.	Alarm / Hooter / any other solution	
4.	IP Rating	

*Note: Please add other parameters to satisfy the desired functionality.*

### **9. Variable Messaging Signboard (VMS)**

<b>Sl. No</b>	<b>Features</b>	<b>Technical Specification</b>
<b>Technical Specifications for Variable Message Signboard Or Display</b>		
1.	Brightness	3000 Nits or better
2.	Contrast Ratio	04:03
3.	Refresh Rate	≥120Hz or better
4.	Grey Scale	256 Levels per color or better
5.	Viewing Angle (Horizontal, Vertical)	H120° x V60° or Better
6.	Power Consumption	Input Power Frequency 50 or 60Hz

7.	Pixel Matrix	64 x 256 per Cabinet or Better	
8.	Operating Temperature	20° to 50° or better	
9.	Grey Scale per Color	256 Levels per color or better	
10.	Nits per Sq. mm	3000 or better	
11.	Pixel Density per Sq. ft. or Sq. m	10000 per sq. m or better	
12.	Lifetime	100000 Hour or Better	
13.	IP Rating	(Front/Rear) IP67/IP54 or Better	
14.	Viewing Distance for Outdoor	10-150 Meters or Better for Best Viewing Distance.	
15.	Controller Card for Content Distribution	The Controller should be communicating with Sim Based Option and ETHERNET LAN Based Option to the Central Control Software.	
16.	Dimensions & Type	Size of VMS 9 ft x 6ft Pixel pitch DIP P10 Color Type Single In-build/ External UPS with minimum 30 mins back time to be factored	
VMS Functional Requirement			
17.	VMS should be capable to Display text messages in AMBER Font with Text Scrolling		
18.	VMS Screen should be divided into Two parts		
19.	Clock can be scheduled in one of the zones		
20.	LED board should support Text and pictograms		
21.	Make/Brand: Any 3 globally reputed Manufacturer presence in India for more than 5 years		

*Note: Please add other parameters to satisfy the desired functionality.*

## 10. Speed Display with Radar

Sl. No	Feature	Technical Specification	Remarks/Suggestion
1	Speed Digits	Height: 11 Inches, Display: 7 Segment	
2	LEDs	Ultra-bright Polycarbonate coated ,3-row thick, tricolor: Amber, Green and Red	
3	Led Angle	22° cone angle, auto-dimming	
4	Power Consumption	Ultra-low power consumption. Average <SW	
DETECTION			
5	Doppler Radar	Dual direction, K-Band, 24.125 GHz (FCC part 15 compliant)	
6	Accuracy	+ / - Mph, 99% accuracy	
7	Beam Width	12° Horizontal – 25° Vertical	
8	Speed Detection	10-150 Kmph	
9	Detection Range	Minimum 150 Meters	
10	External Integration	Siren Can be Integrated, if needed	
CASING			
11	Material	Aluminum	
12	Waterproof	Nema 4R / IP67	
13	Temperature	-5°C to +60° (Operational in extreme weather conditions)	
14	Electrical Safety	Two fuses (Internal & External), internal pressure safety valve	
15	Communication	Ethernet / RS232 / RS 485 and GSM	
16	Speed	Average and maximum speed, 85th percentile, distribution per speed group	

17	Count	Estimated vehicle count	
18	Type	Time-stamped data for both directions of the road	
19	Memory Storage	Up to 1 million vehicles	
POWER OPTIONS			
21	“SOLAR” (solar-powered)	Internal solar regulator, solar panel, 2 batteries	
22	SOLAR PANEL	32” X 37”, 80-watt solar panel	
23	BATTERIES	12V/22AH batteries	
24	Make/Brand	Any 3 globally reputed Manufacturer presence in India for more than 5 years	

*Note: Please add other parameters to satisfy the desired functionality.*

#### **11. Network Bandwidth requirement at Strategic IEMS Nodes/Locations:**

<b>Sl. No</b>	<b>Feature</b>	<b>Technical Specification</b>	<b>Remarks/Suggestion</b>
1	Resolution	Full HD (1920 X 1080)	
2	Compression	H.265, H.264 or better	
3	Frame Rate	50 FPS or better	
4	Storage Bandwidth	4 Mbps	
5	Network Bandwidth	30 Mbps	

*Note: The successful bidder will obtain the power supply & network connectivity at the gantry/cantilever locations where edge devices will be installed. The office of the Transport Commissioner will facilitate the services from selected service providers. The cost will be re-imbursed to the successful bidder with back-to-back payment & as per the actual invoice raised by the service provider.*

**12. Proposed unpriced Bill of Materials:**

Sr.	Particulars	Unit	1 Lane	2 Lane	3 Lane	4 Lane
<b>A. Gantry Mounted Products (For Single Gantry Location)</b>						
1	ANPR Camera inbuilt IR	Qty				
2	Speed Violation Detection Radar	Qty				
3	Other MV Violation Detection Camera inbuilt IR	Qty				
4	Supply Pole Security Camera inbuilt IR	Qty				
5	Surge Protector pair	Qty				
6	LPU Hardware	Qty				
7	Industrial PoE switch	Qty				
8	UPS, Online, 4 Hour Back Up	Qty				
9	Junction Box for putting Junction server, UPS, Power supply & Switch with Power Extension Board & Junction Box security sensor	Qty				
10	Variable Messaging Services (VMS) Display Boards	Qty				
11	8 Port Industrial switches	Qty				



13	Surge Protector pair	Qty				
<b>B. Civil Work</b>						
1	Gantry: Pole with necessary installation & foundation, with necessary clamp for Camera mounting & necessary clamp for mounting Junction Box with Earthing of Pole	Qty				
2	Cantilever: Pole with necessary installation & foundation, with necessary clamp for Camera mounting & necessary clamp for mounting Junction BOX with Earthing of Pole	Qty				
3	Poles for Variable Messaging Services (VMS) Display Boards	Qty				
4	Cabling STP Cat 6 (Assuming RF/OFC connectivity distance from junction box - 50 Mtrs)	Qty				
5	Cabling 2 Core 1 sq.mm (Assuming RF/OFC connectivity distance from junction box - 50 Mtrs)	Qty				
6	Power Cable 3 core 2.5 sq.mm (Assuming Power Source distance from junction box- 100 Mtrs)	Qty				
7	PVC conduit/ SDPE & GI wire	Qty				

8	Civil Activity Cost (Soft/Hard Digging, Road Cutting, Trench Connection)	Lot				
<b>C. Centralized Software Products</b>						
1	Centralized Software for ANPR, SDV, No seat belt in Car, No Helmet, Triple riding, wrong way driving, reverse lane driving, Event Aggregation, User Management, Resource Management Including Integration with Existing E-Challan System along with Network Monitoring System.	Lot				
2	Perpetual License for Cameras (ANPR, SVD, MV Violation Detection, Pole Security, Any other field units)	Qty				
5	Channel license for ANPR, SDV, No seat belt in Car, No Helmet, Triple riding, wrong way driving, reverse lane driving, Event Aggregation, User Management, Resource Management Including Integration with Existing E-Challan System etc.	Qty				
6	Network Intrusion Prevention System	Qty				
<b>D. Command Control Room Products (for 6 workstations)</b>						
1	i7 workstations with Keyboard, Mouse, Monitor for viewing with OS, antivirus	Qty	6			

2		Qty	
<b>E. License for field equipment's connectivity &amp; API Integration, End user Training</b>			
1	API integration with all third-party software	Qty	
2	Integration with Mobile vehicle speed detection & others		
3	Centralized Dashboard with RTO database integration		
4	Training & other services		
<b>F. Cloud Hosting &amp; Managed Services Cost</b>			
1	<b>Annual Cost of DC &amp; DR on Managed Cloud Services</b>		

**Note: The bidders are requested to share unit wise Bill of Material for 1, 2, 4 & 6 lane roads. The bidders are also requested to add line items to meet the desired functionality. AMC cost may be indicated for Software & Hardware only excluding manpower cost.**

-----end of the document-----