

TRAFFIC & SAFETY COMMAND CONTROL CENTRE (TSCCC)

Information Handbook



SMART CITY THIRUVANANTHAPURAM LTD (SCTL)

Executive Summary

Smart City Thiruvananthapuram Limited is a Special Purpose Vehicle (SPV) set up for the implementation of Smart City Mission of Government of India with a project overlay of Rs. 1538 Cr. The proposal submitted to Government of India had 43 projects aimed at improving basic infrastructure of the city and harnessing the use of IT based solutions to make the City Smart. The projects were grouped into two categories; Pan City Solution (IT based solution) for entire corporation area and Area based development (ABD) Projects which are specifically targeted for 9 wards in the City Centre as a retrofit model.

The objective is to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. Some of the core infrastructure elements in a Smart City includes adequate water supply, assured electricity supply, sanitation, including solid waste management, efficient urban mobility and public transport, affordable housing, especially for the poor, robust IT connectivity and digitalization, good governance, especially e-Governance and citizen participation, sustainable environment, safety and security of citizens, particularly women, children and the elderly and health and education.

The strategic components of the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city. Area-based development (ABD) transforms existing areas (retrofit and redevelop), including slums, into better planned human settlements, thereby, improving liveability of the whole cities. Application of Smart Solutions enables the cities to use technology to improve infrastructure and services



Traffic and Safety Command Control Centre

Smart City Thiruvananthapuram Limited (SCTL) under the ambit of smart city initiatives intends to utilize information technology to modernize Traffic management, Traffic control, Traffic Law enforcement and traffic information dissemination in the city to enable Trivandrum Traffic Police in ensuring smooth traffic flow and help provide information to the road users.

The TSCCC project is also having a Control Centre in AR Camp, Nandhavanam, Thiruvananthapuram for monitoring and controlling the city traffic.

The main components of TSCCC are given below:

- 1) Data Centre with Servers, Storage, Security and Network Components
- 2) Video Wall (2 x 8 cube of 70" DLP Projection screen) and Controllers
- 3) Adaptive Traffic Control System with web management application
- 4) Intelligent Traffic Management System with web application
- 5) Video Management System
- 6) Face Recognition System with Web application
- 7) Integrations with third-party applications
- 8) Emergency Call Box
- 9) Variable Messaging System/boards in the city
- 10) Workstations for Operators



- 11) Providing Connectivity between the locations to the TSCCC Data Centre
- 12) Network Monitoring system and Enterprise management system to manage the TSCCC
- 13) Operation & Maintenance for a period of 5 years from the date of Go-Live

Benefits from TSCCC

The centralized approach of TSCCC offers numerous benefits:

- 1) Enhanced Public Safety: CCTV surveillance, ITMS, and ECBs collectively boost security, allowing the city to address safety issues proactively.
- 2) Optimized Traffic Flow: ATCS and VMS optimize traffic movement, reducing travel times and enhancing the overall commuter experience.
- 3) Sustainability: The use of solar panels at junctions promotes green energy and reduces carbon emissions.
- 4) Data-Driven Decision Making: The integration with ICCC enables real-time analytics, supporting data-driven strategies for urban planning and public safety.

The work was awarded to M/s Madras Security printers Private limited, Chennai via e-tendering mode covering the Operation & Maintenance for a period of 5 years from the date of Go-Live. The project is considered Go-Live from the date -“31st August 2024” since most of the software functionalities were achieved and more than 95 junctions were operational.

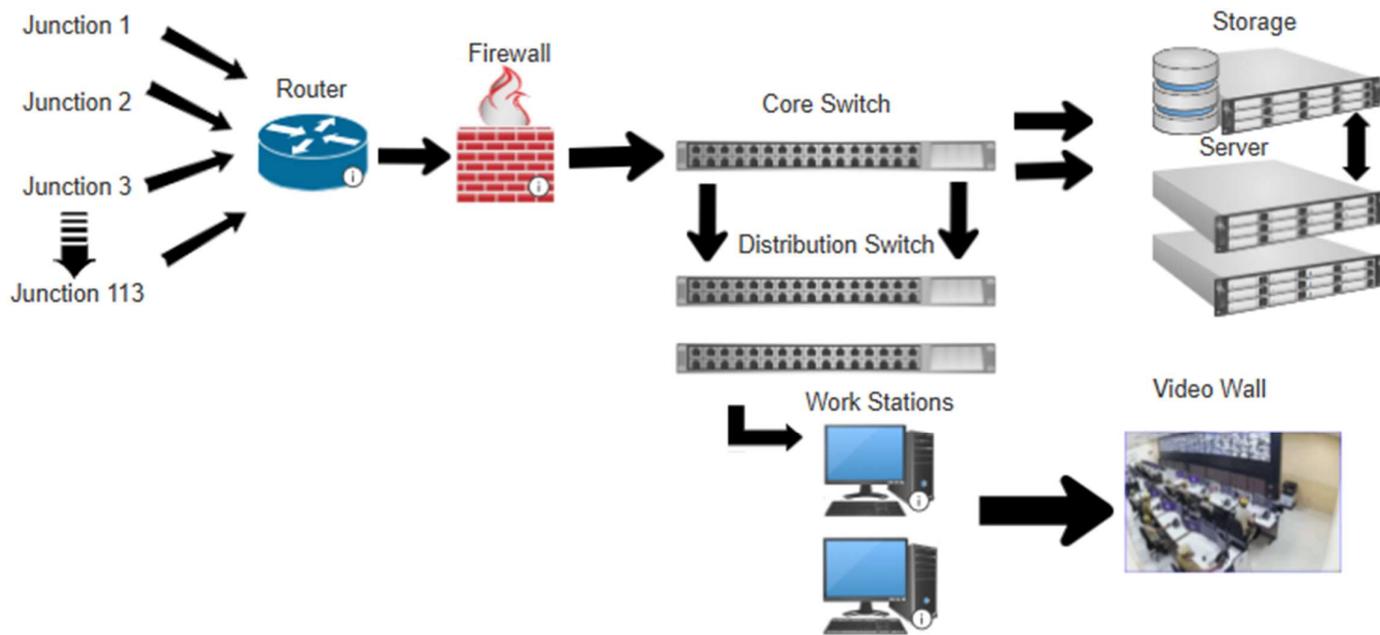


Data Centre with Servers, Storage, Security, and Network Components

The main components of the Data Centre of TSCCC are given below:

- a) Application & Database servers – 9 nos
- b) Primary Storage – 1200 TB
- c) Software
 - o Virtualization solution (Citrix)
 - o Adaptive Traffic Control System (TRAMM)
 - o Traffic Enforcement System (Vehant Solutions)
 - o Video Management System (Videonetics)
 - o Face Recognition System (Videonetics)
 - o Network Monitoring System & Enterprise Management System for monitoring of IP devices (Motadata)
- d) Network & Security Devices
 - o Firewall (Checkpoint)
 - o Router and Switches (HP)
- e) High-end Workstation (Dell)
- f) Desktop Systems (Dell)





Data privacy and usage assurance

We are ensuring that we are not collecting any personal data as part of this project and capturing only the vehicle numbers and photographs of the events against violations. We are committed for maintaining the privacy and security of the collected information, ensuring its usage is limited solely to the specific purposes for which it was originally collected.



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Servers: An overview

In the TSCCC data centre, servers are integral to the real-time management, processing, and delivery of data essential for monitoring and informed decision-making. Configured in High Availability (HA) mode, these servers are optimized for maximum uptime and operational reliability. The Database Server is tasked with storing and managing extensive volumes of both operational and historical data, facilitating swift retrieval and updates to support analytical and decision-making processes. The Web Application Deployment Server hosts and delivers web-based applications, enabling user access for real-time monitoring, analysis, and reporting. HA deployment ensures redundancy, significantly reducing downtime risk and maintaining uninterrupted service, even in cases of hardware failure.

Storage: An overview

Storage systems are critical to maintaining the availability, reliability, and security of essential data. Specifically, high-speed, volatile storage is employed for real-time processing, enabling rapid access to active data required by applications and systems. This storage type directly supports operational efficiency by holding data currently in use or undergoing processing, thereby facilitating seamless data handling for active workloads.



Video Wall (2 x 8 cube of 70” Projection screen) and Controllers



Helpdesk agents and supporting officers will be sitting in this office to monitor and to manage the TSCCC activities.

Adaptive Traffic Control System (ATCS)

The Adaptive Traffic Control System (ATCS) is an advanced framework engineered to manage and optimize urban traffic flow. This system harnesses cutting-edge technology to improve traffic efficiency, mitigate congestion, and enhance safety across city or metropolitan junctions. ATCS integrates data from a range of sources—such as traffic signals, sensors, cameras, and real-time traffic feeds—to enable dynamic adjustments in traffic signal timings and other control measures, thereby ensuring responsive and adaptive traffic management.



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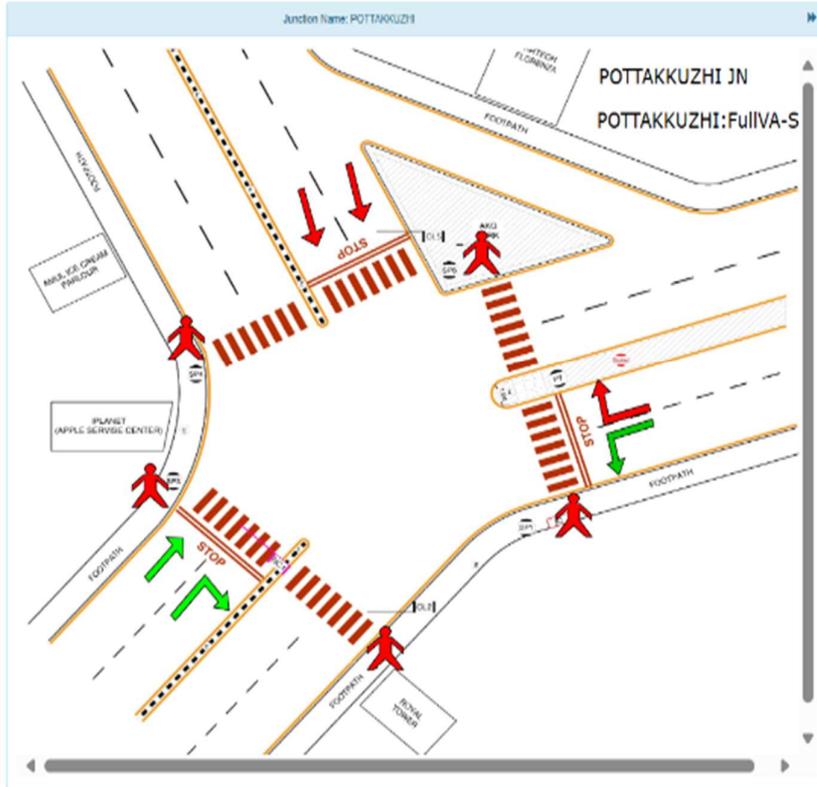
Components of ATCS

1. TraMM (web Application): Data collected by software from all junctions is analysed to make informed decisions on signal timings and other traffic control measures.
2. Traffic Signals: The core of ATCS are the traffic signals at each junction, which can be adjusted in real-time based on current traffic conditions.
3. Vehicle Detection Cameras (VDC): This helps to reduce congestion and improve traffic flow at intersections by detecting vehicle presence and optimizing signal timings.

Working Principle:

Vehicle detector cameras operate by establishing virtual detection zones within the camera's field of view on the roadway. When a vehicle enters one of these predefined zones, the camera detects it and sends a signal pulse to the ATCS controller. The ATCS controller then uses this input to dynamically adjust traffic light timing. If no vehicles are detected within a specified gap time, the camera ceases to send pulses, prompting the controller to transition to a different stage or traffic arm. This adaptable system simplifies traffic management by enabling changes to detection zones without requiring any physical modifications to the roadway.





Junction Parameters

SeqNo	Stage	Split	Status	Mode	CycleNo	ICT (sec)	ACT (sec)	Volume (veh/hr)
3	3	9	JUNCTION-ON	FullVA-Split	1	90	90	1302

Stage Parameters

SeqNo	StageNo	Allocated	Available	Utilized
1	1	20	20	<div style="width: 100%;"></div>
2	2	30	30	<div style="width: 100%;"></div>
3	3	30	30	<div style="width: 100%;"></div>
4	4	10	10	<div style="width: 100%;"></div>

Saturation & Control Status

Saturation		Control Status	
<input checked="" type="radio"/>	Saturated	>= 95 %	Junction State: ISOLATED
<input type="radio"/>	Normal	>70 < 95 %	CoS/CoSt Status: ACTIVE
<input type="radio"/>	UnderSaturated	<= 70 %	Corridor-Mode: LEARNING MODE

Remote Administration

Normal
 Flash
 --Select HurryCall--
 Hurrycall
 Lamp OFF/ON



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Benefits of ATCS

- Reduced Travel Time: By optimizing signal timings, ATCS can significantly reduce travel time through intersections.
- Increased Fuel Efficiency: Smoother traffic flow reduces stop-and-go driving, leading to lower fuel consumption.
- Enhanced Road Safety: Better traffic management reduces the likelihood of collisions at intersections.
- Lower Emissions: Reduced idle times and smoother traffic flow contribute to lower vehicle emissions.

List of Junctions where ATCS implemented

S/n	Location Name
1	Peroorkada
2	Ulloor
3	Medical College Jn
4	Neeramankara
5	GG Hospital
6	Pottakuzhi
7	Kumarapuram
8	Edappazhanji
9	SMC
10	Ambalamukku
11	Pettah
12	Nalumukku
13	Pallimukku
14	Vazhuthacaud

S/n	Location Name
21	Statue North & Middle
22	Paruthippara
23	Vellayambalam
24	VJT
25	Pattoor
26	Attakulangara
27	East Fort
28	East Fort Bus Stand
29	Pazhavangadi
30	Old War Memorial
31	Xanadu
32	Keltron House
33	Norka
34	Mettukada

S/n	Location Name
41	LMS
42	DDE
43	Vazhayila
44	Bakery Junction
45	Vanchiyoor
46	Jagathy
47	Aalthara
48	Chenthitta
49	Panavila
50	Mascot
51	Plamoodu
52	PMG
53	Killipalam
54	Karamana



S/n	Location Name
15	Ayurvedha College
16	Aristo
17	Over bridge
18	Pulimoodu
19	Statue South
20	Kowdiar

S/n	Location Name
35	Corporation
36	Upplamoodu
37	Model School
38	AKG Centre
39	General Hospital
40	Museum

S/n	Location Name
55	Kesavadasapuram
56	Pattom
57	RMS
58	Palayam



INTELLIGENT TRAFFIC MANAGEMENT SYSTEM

System that allows state and local governments and law enforcement agencies to remotely capture images of violation of traffic law. Automated traffic law enforcement systems use sensors and digital cameras to detect offences in speeding, red light violations, Triple Driving & no helmet. The system produces a recorded image of a motor vehicle's violating of a provision of the law or a local ordinance and is designed to obtain a clear recorded image of the vehicle and the vehicle's license plate.

The Following are the Components of the System:

1. Intelligent Traffic Management System Software:

Traffic Enforcement System (TES) is a client-server-based web application that works on image processing engine's collected analytics data to generate automated challans and Graphical User Interface (GUI) based management portal for live monitoring and processing traffic related violations data and thresholds.

2. Automatic Number plate Detection Camera
3. Red Light violation Detection Camera
4. Speed Violation Detection Radars
5. E-Challan Integration



 Dashboard

 Live Monitoring

 Violations

 Search

 Reports

 Admin Console

 About

Live Monitoring

Stay Logged In



Transaction Details

Date/Time	2024-11-12 15:30:37	License Plate	KL 21S 5519
Location	Chanthavila	Registration Number	KL21S5519
Lane	Chanthavila Towards Kinfra Rd	Make	Suzuki
Transaction ID	P10D570-2024111216506	Color	Grey 

Select Location

Camera Selected : 1

S.No.	Registration Number	License Plate	Category	Time Stamp	Violation
49	KL21Z0864		General	2024-11-12 15:30:38	
50	KL21S5519		General	2024-11-12 15:30:37	
51	KL16Q1008		General	2024-11-12 15:30:36	
52	KL21W5766		General	2024-11-12 15:30:34	
53	KL22L4174		General	2024-11-12 15:30:32	
54	KL12H4437		General	2024-11-12 15:30:32	
55	KL01CP0069		General	2024-11-12 15:30:28	
56	KL16Y5192		General	2024-11-12 15:30:28	
57	KL24M1127		General	2024-11-12 15:30:25	
58	KL16T2673		General	2024-11-12 15:30:23	
59	TN074K1295		General	2024-11-12 15:30:22	
60	KL02AK1880		General	2024-11-12 15:30:18	
61	KL01BH8295		General	2024-11-12 15:30:11	
62	KL02AD9806		General	2024-11-12 15:29:51	
63	KL 80 4839		General	2024-11-12 15:29:46	
64	KL 02 A 0010		General	2024-11-12 15:29:45	

First Previous 1 2 3 4 5 Next Last

Database IP:
127.0.0.1

Powered By 

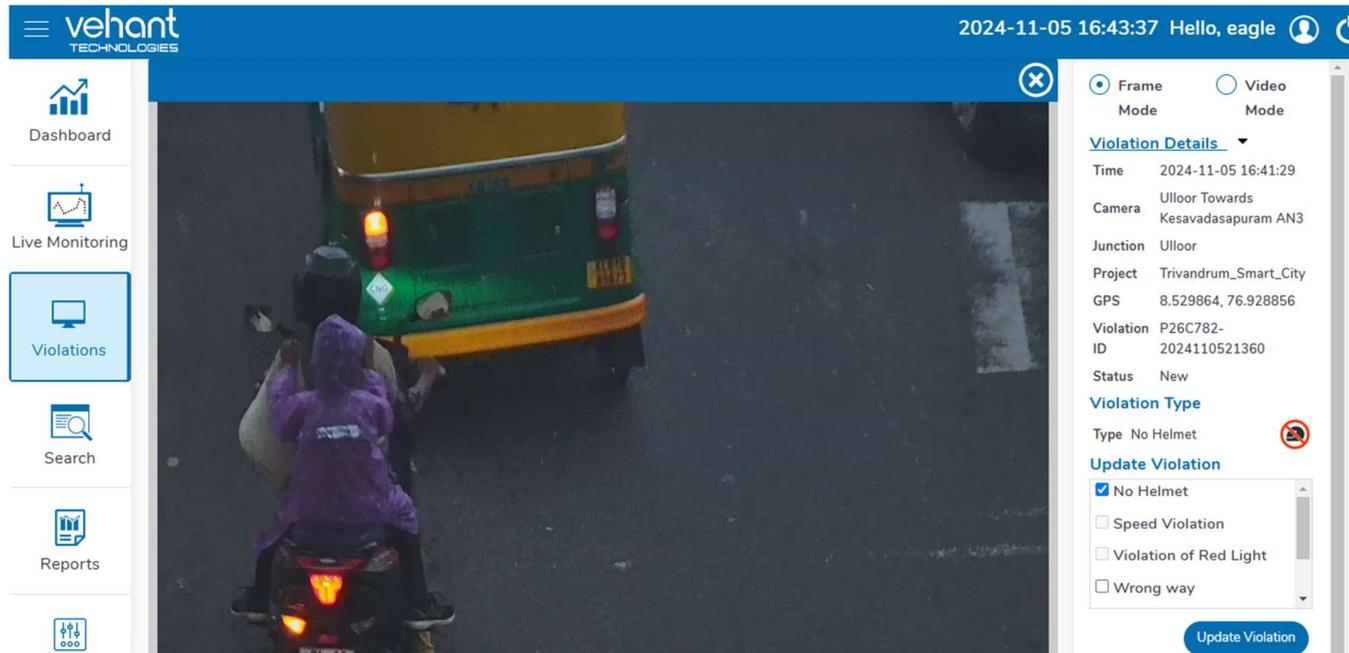


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The System can monitor the following violations

- **No Helmet**

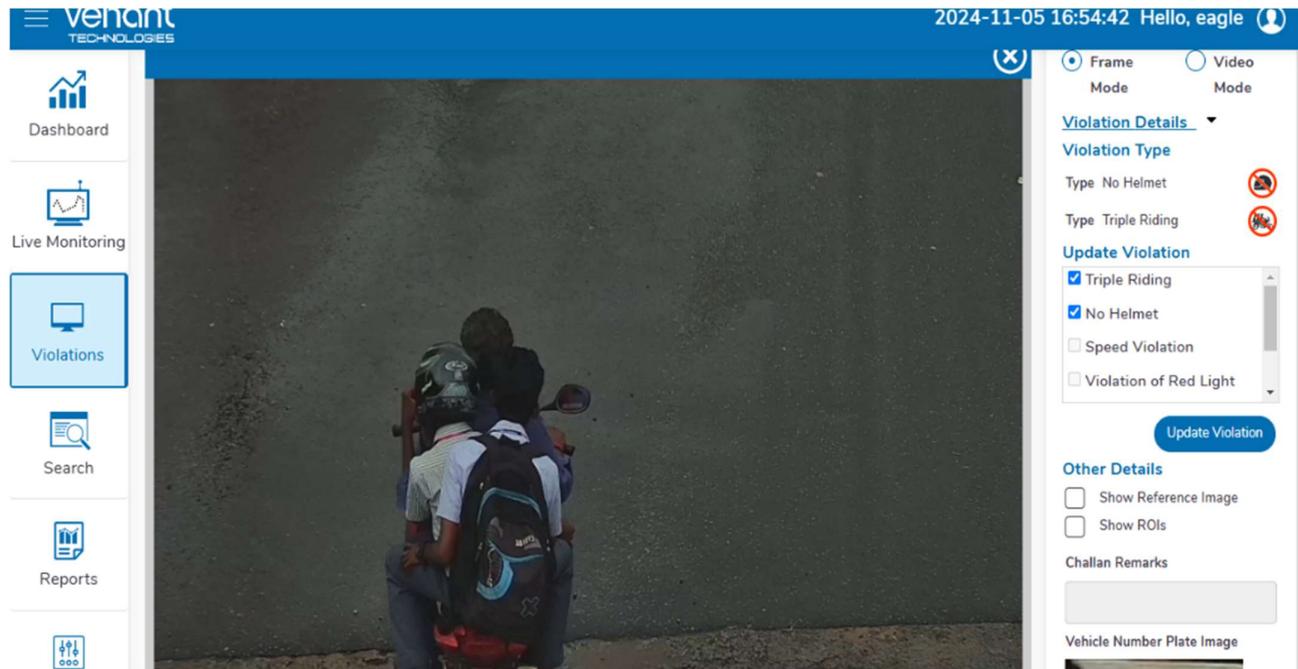
The No Helmet Violation detection feature in ITMS systems identifies and records instances where two-wheeler riders are not wearing helmets when violating traffic signals. This functionality promotes road safety by enforcing helmet compliance alongside monitoring red light violations



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- **Triple Riding**

Triple Riding Violation Detection uses cameras to automatically identify and record instances of more than two passengers on two-wheelers. This system supports traffic rule enforcement and enhances road safety by reducing risks associated with overcrowded vehicles



- **Red Light Violation**

The Red-Light Violation Detection (RLVD) system is an automated technology that monitors intersections and captures vehicles that crosses the red traffic signals. This system is crucial for traffic management authorities, helping to enhance overall traffic discipline and reduce the risk of collisions at busy intersections

The screenshot displays the Vehant Technologies interface. At the top, the logo 'vehant TECHNOLOGIES' is on the left, and the date/time '2024-11-05 16:46:43' along with a user profile 'Hello, eagle' is on the right. A navigation menu on the left includes 'Dashboard', 'Live Monitoring', 'Violations' (highlighted), 'Search', and 'Reports'. The central video feed shows a busy intersection with a red traffic light. A red car is stopped at the light, and a yellow bus is in the foreground. The right-hand panel shows 'Violation Details' for a 'Violation of Red Light' detected at 16:40:39 on 2024-11-05. The violation type is 'Violation of Red Light' (indicated by a red light icon), with a duration of 1 min 26 sec. The 'Update Violation' section has a dropdown menu with 'Violation of Red Light' selected, and other options like 'Speed Violation', 'Wrong way', and 'Stop Line' are visible.



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- **Speed Violation**

Speed violation detectors are designed to assess a vehicle's speed and compare it with the speed limit assigned to that particular junction. When a vehicle is detected exceeding the speed limit, the system automatically captures the image of the vehicle and its license plate, enabling law enforcement to issue a ticket promptly. This technology enhances road safety by ensuring compliance with speed regulations while streamlining the process of monitoring traffic violations

The screenshot shows the 'vehant' web application interface. The top navigation bar includes the logo, the date '2024-11-13 14:44:00', and the user 'Hello, admin'. The sidebar on the left contains navigation icons for Dashboard, Live Monitoring, Violations (highlighted), Search, Reports, and Admin Console. The main content area is titled 'Violation Review' and features a video player showing a motorcycle violation. Below the video is a table of violation records with columns for S.No., License Plate, Registration Number, Time Stamp, Site Name, Camera Location, Violation Type, Vio Description, Speed Value, Category, Make, Logo, Vehicle Type, Color, and User. The table shows four records, with the fourth record (S.No. 4, License Plate KL20L3465) highlighted in blue. To the right of the table is a detailed view of the selected violation, including a 'Violation Details' section with a dropdown menu, a 'Type' field set to 'Speed Violation', and 'Details' showing 'Speed Value : 47 kmph' and 'Speed Limit : 45 kmph'. There is also an 'Update Violation' section with checkboxes for 'Speed Violation', 'Violation of Red Light', 'Wrong way', and 'Stop Line'. Below this is an 'Other Details' section with checkboxes for 'Show Reference Image' and 'Show ROIs', and a 'Challan Remarks' field. At the bottom of the detailed view, there is a 'Vehicle Number Plate Image' and a 'Vehicle Registration Number' field containing 'KL20L3465', with 'Save', 'Discard', and 'Generate Challan' buttons.

S.No.	License Plate	Registration Number	Time Stamp	Site Name	Camera Location	Violation Type	Vio Description	Speed Value	Category	Make	Logo	Vehicle Type	Color	User	Action
1	KL 01 2K 7085	KL01CK7063	2024-11-13 13:56:54	JAGATHY	VAZHUTHACAUD JN AN1	Speed Violation	Speed Violation	44	General	HMV		2-Wheeler	Black		g
2	KL 20 8C 5882	JKH5889	2024-11-13 13:52:52	JAGATHY	VAZHUTHACAUD JN AN1	Speed Violation	Speed Violation	43	General			2-Wheeler	Brown		g
3	KL 20 8C 5882	KL16MK9412	2024-11-13 13:43:58	JAGATHY	VAZHUTHACAUD JN AN1	Speed Violation	Speed Violation	41	General			HMV	Black		g
4	KL 20 8C 5882	KL20L3465	2024-11-13 13:28:24	JAGATHY	VAZHUTHACAUD JN AN1	Speed Violation	Speed Violation	47	General			2-Wheeler	Grey		g

Junctions equipped with the ITMS system

SL	Junctions	Violations Enabled
1	Ulloor	No Helmet, RLVD, Triple Ridding
2	Kumarapuram	Speed violation, No Helmet, RLVD, Triple Ridding
3	Mannanthala	Speed violation, No Helmet, RLVD, Triple Ridding
4	Statue South	Speed violation, No Helmet, RLVD, Triple Ridding
5	Kowdiar	No Helmet, RLVD, Triple Ridding
6	Statue North	No Helmet, RLVD, Triple Ridding
7	Vellayambalam	No Helmet, RLVD, Triple Ridding
8	VJT	No Helmet, RLVD, Triple Ridding
9	Pattoor	No Helmet, RLVD, Triple Ridding
10	Attakulangara	Speed violation, No Helmet, RLVD, Triple Ridding
11	Kaimanam	No Helmet, Triple Ridding
12	Karakkamandapam	No Helmet, Triple Ridding

SL	Junctions	Violations Enabled
13	Vazhayila	No Helmet, RLVD, Triple Ridding
14	Jagathy	Speed violation, No Helmet, RLVD, Triple Ridding
15	Veli Bridge	No Helmet, Triple Ridding
16	Chenkottukonam	No Helmet, Triple Ridding
17	Mangatukadavu	No Helmet, Triple Ridding
18	Kundamankadavu	No Helmet, Triple Ridding
19	Kizhakke Mukkola	No Helmet, Triple Ridding
20	Thrikannapuram	No Helmet, Triple Ridding
21	St.Thomas College	No Helmet, Triple Ridding
22	Kesavadasapuram	No Helmet, RLVD, Triple Ridding
23	Maruthoorkadavu	No Helmet, Triple Ridding
24	Poojappura	No Helmet, Triple Ridding

SL	Junctions	Violations Enabled
25	Kachani	No Helmet, Triple Ridding
26	Thirumala	Speed violation, No Helmet, Triple Ridding
27	Shanghumugham	No Helmet, Triple Ridding
28	Poonkulam	No Helmet, Triple Ridding
29	Vellayani Junction	Speed violation, No Helmet, RLVD, Triple Ridding
30	Mankuzhi	No Helmet, Triple Ridding
31	Pappanamcode	Speed violation, No Helmet, RLVD, Triple Ridding
32	Pravachambalam	No Helmet, Triple Ridding
33	Nemom	No Helmet, Triple Ridding
34	Neeramankara	No Helmet, RLVD, Triple Ridding
35	Kazhakuttom	No Helmet, RLVD, Triple Ridding

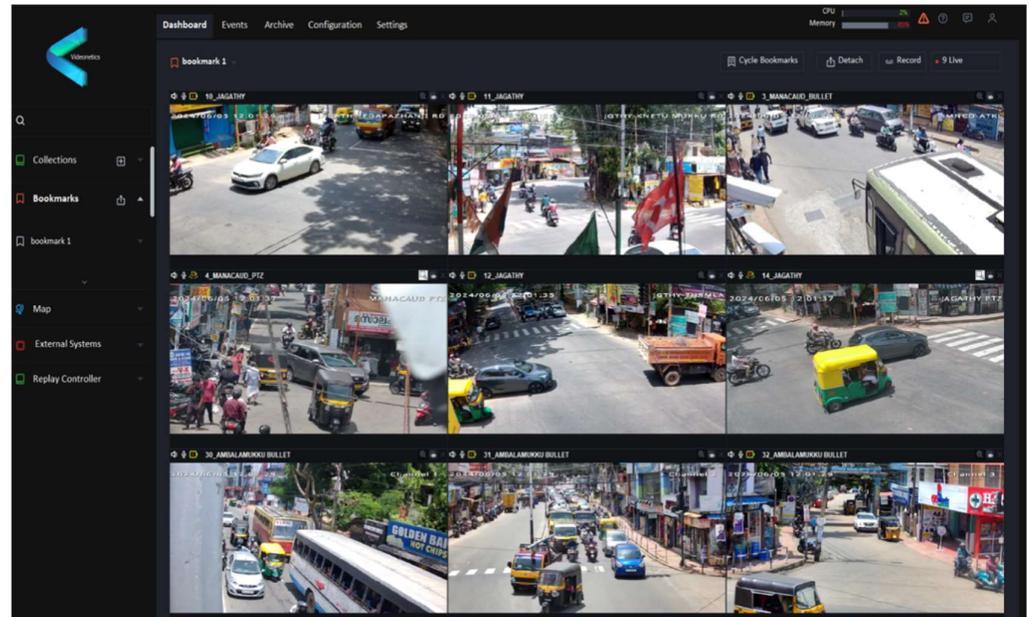


VIDEO MANAGEMENT SYSTEM

A Video Management System (VMS) is a software-based platform that is used to manage and control video surveillance cameras, recording devices, and other security components. VMS systems are typically used by businesses, governments, and other organizations that require large-scale surveillance and security monitoring.

The proposed Video Management System is *IVMS version 3.0* gives the power to simplify complexities of handling vast amounts of video data with its video management system, which encompasses multiple video computing services in a unified and homogenous software architecture platform.

The video surveillance software harnesses the prowess of AI to expertly handle cyber security threats with its multi-pronged security measures so that you can be confident in the security of your valuable credentials and maintain data privacy and integrity while maintaining workplace efficiency.



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VMS can Perform Video Analytics, also known as Video Content Analysis is a technology that utilizes algorithms to automatically analyse video content. Video Analytics solutions perform real-time video processing to automatically generate descriptions (metadata) of what is happening in a video stream. This allows them to perform tasks such as detecting intruders, reading license plates, counting people and tracking objects

The software having following video analytics features using the Surveillance Camera

- Appearance Search
- Camera Tamper
- Crowd Detection
- Graffiti and Vandalism Detection
- Intrusion Detection
- Loitering
- No Parking
- People Count
- Unattended object
- Vehicle Congestion
- Vehicle Wrong Way



Junction under Surveillance

SL	Junctions
1	Peroorkada
2	GG Hospital
3	Manacaud
4	Kochuveli
5	Kumarapuram
6	SMC
7	Ambalamukku
8	Pettah
9	Nalumukku
10	Pallimukku
11	Vazhuthacaud
12	Mannanthala
13	Ayurvedha CLG
14	Nanthancode
15	Devaswom Board
16	Aristo
17	Over bridge
18	Pulimoodu
19	ICH Thampanoor
20	Ponnara

SL	Junctions
21	Statue South
22	Spencer
23	Kowdiar
24	Statue North
25	Statue Middle
26	Vellayambalam
27	VJT
28	Pattoor
29	Pettah Railway Station
30	Jacobs
31	Vanross
32	Chalai Entrance
33	Attakulangara
34	East Fort
35	Pazhavangadi
36	Old War Memorial
37	Sasthamangalam
38	Xanadu
39	Jawahar Nagar
40	KIMS

SL	Junctions
41	Venpalavattom
42	Kuravankonam
43	Marappalam
44	Cantonment Gate
45	Sree Padmanabha Temple
46	Mettukada
47	Upplamoodu
48	Kottaikkagom
49	Model School
50	General Hospital
51	Museum
52	Asan Square
53	LMS
54	TTC
55	Raj Bhavan
56	Vazhayila
57	Housing board
58	Bakery Junction
59	Vanchiyoor
60	Jagathy

SL	Junctions
61	Chenthitta
62	Veli Bridge
63	Chenkottukonam
64	Panavila
65	Mascot
66	Plamoodu
67	Mangattukadavu
68	Kundamankadavu
69	Kizhakke Mukkola
70	PMG
71	Thrikkanapuram
72	Killipalam
73	Karamana
74	St.Thomas College
75	Kesavadasapuram
76	Kachani
77	Thirumala
78	TVM Railway Station
79	All Saints
80	Shanghumugham

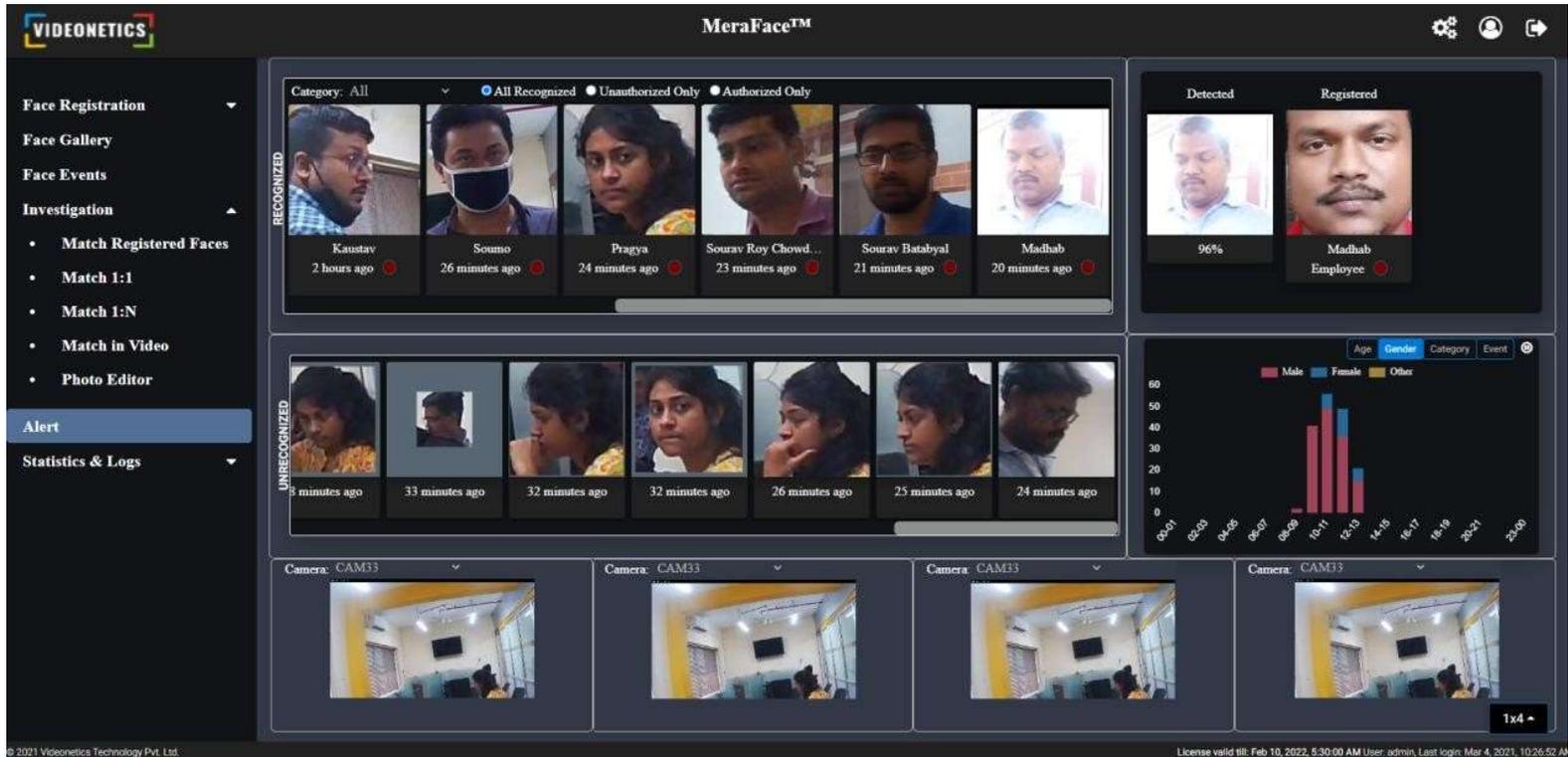
SL	Junctions
81	Pattom
82	Poonkulam
83	Vellayani Junction
84	KLA
85	Mankuzhi
86	Pappanamcode
87	RMS
88	Poonthura
89	Pravachambalam
90	Nemom
91	Paruthippara
92	Neeramankara
93	Kaimanam
94	Karakkamandapam
95	Maruthoorkadavu
96	Poojapura
97	Kazhakuttom
98	Akkulam



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FACE RECOGNITION SYSTEM

A face recognition system is a technology potentially capable of matching a human face from a digital image or a video frame against a database of faces. Such a system is typically employed to authenticate users through ID verification services, and works by pinpointing and measuring facial features from a given image.



The System can be linked with the database of Police Department or add the photos of criminals to get the alerts from the system against similarities. If the features are matching more than 70 % it will generate the alert through the application,



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This alert can be given via email as well as through SMS or WhatsApp through respective gateway configuration.

The Facial Recognition System is “**MeraFace**” is designed, architected and developed based on its indigenous Artificial Intelligence (AI)/ Deep Learning (DL) framework and algorithms. The working principles and underlying architecture of the system is modular in nature, suitable for deployment on-premise (single server or distributed) as well as on-cloud, using edge-to-cloud VCPaaS framework. MeraFace can be deployed on various operating systems (Windows, Linux) and supports standard IP cameras, in both indoor and outdoor environments.

The features of the application include :

- Capture face images from CCTV feed and generate alerts if a blacklist match is found.
- Search photographs from the database matching suspect features.
- Match suspected criminal face from pre-recorded video feeds obtained from CCTVs deployed in various critical identified locations, or with the video feeds received from private or other public organization’s video feeds.
- Add photographs obtained from newspapers, raids, sent by people, sketches etc. to the criminal’s repository tagged for sex, age, scars, tattoos, etc. for future searches.
- Investigate to check the identity of individuals upon receiving such requests from Police Stations.



EMERGENCY CALL BOX

Emergency Call Boxes (ECBs) are a critical component of many Advanced Traffic Management Systems (ATMS). These boxes are strategically located throughout highways and roadways to provide a means for drivers and passengers to contact emergency services quickly in the event of an accident or other emergency. ECBs typically consist of a large, easily visible box mounted on a post or pole, containing a telephone or intercom system, and often accompanied by a flashing light or other visual indicator to help users identify its location. When activated, the system automatically connects the user to a designated emergency services provider, such as the local police or highway patrol. In addition to providing a direct line to emergency services, ECBs also serve as a deterrent to crime and other illegal activities, as they are often equipped with cameras or other surveillance technology to monitor the surrounding area.



VARIABLE MESSAGING SYSTEM

A **Variable Messaging System (VaMS)** is typically a communication system that allows for the dynamic display or broadcast of messages that can be changed or updated based on specific conditions or requirements. The term is used in different contexts, such as road traffic management, marketing, and electronic signage.

Common Uses of Variable Messaging Systems:

1. Traffic Management (Variable Message Signs)
2. Marketing and Advertising
3. Public Announcements

Key Features of a Variable Messaging System:

1. **Real-Time Updates:** Ability to change messages instantly in response to new data or conditions.
2. **Customizable:** Can display different messages for different conditions, times, or target audiences.
3. **Remote Control:** Many VaMS solutions, especially in traffic management, allow for remote updating and management from a central control system.
4. **Multimedia Support:** Advanced systems can display more than just text—images, graphics, or videos can be included.
5. **Data Integration:** Often integrated with sensors, databases, or other data sources to provide relevant, context-aware messages.

Note: 14 Junctions are planned to implement the VaMS Boards in the Trivandrum City



Junctions with respective solutions provided

S/n	Junction Name	ATCS	ITMS	CCTV	FR	ECB
1	Perrorkada	Yes	No	Yes	No	NO
2	Ulloor	Yes	Yes	No	No	No
3	Medical College Jn 1	Yes	No	No	Yes	Yes
4	Medical College Jn 2	Yes	No	No	No	No
5	GG Hospital	Yes	No	Yes	No	No
6	Pottakuzhi	Yes	No	No	No	No
7	Manacaud	No	No	Yes	No	No
8	Kochuveli	No	No	Yes	No	No
9	Kumarapuram	Yes	Yes	Yes	Yes	No
10	Edapazhanji	Yes	No	No	No	No
11	SMC	Yes	No	Yes	No	Yes
12	Ambalamukku	Yes	No	Yes	No	No
13	Pettah	Yes	No	Yes	No	No
14	Nalumukku	Yes	No	Yes	No	No
15	Pallimukku	Yes	No	Yes	No	No
16	Vazhuthacaud	Yes	No	Yes	No	No
17	Mannanthala	No	Yes	Yes	No	No
18	Ayurvedha College	Yes	No	Yes	No	No
19	Nanthancode	No	No	Yes	No	No
20	Dewasom Board	No	No	Yes	Yes	No
21	Aristo	Yes	No	Yes	No	No
22	Over bridge	Yes	No	Yes	No	No
23	Pulimoodu	Yes	No	Yes	No	No



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S/n	Junction Name	ATCS	ITMS	CCTV	FR	ECB
24	ICH Thampanoor	No	No	Yes	No	Yes
25	Ponnara	No	No	Yes	No	No
26	Statue South	Yes	Yes	Yes	Yes	No
27	Spencer	No	No	Yes	No	No
28	Kowdiar	Yes	Yes	Yes	No	No
29	Statue North	Yes	Yes	Yes	Yes	Yes
30	Statue Middle	Yes	No	Yes	Yes	No
31	Vellayambalam	Yes	Yes	Yes	Yes	No
32	VJT	Yes	Yes	Yes	No	No
33	Pattoor	Yes	Yes	Yes	No	No
34	Pettah Railway Station	No	No	Yes	Yes	No
35	Jacobs	No	No	Yes	No	No
36	Vanross	No	No	Yes	No	No
37	Chalai Entrance	No	No	Yes	No	No
38	Attakulangara	Yes	Yes	Yes	No	No
39	East Fort	Yes	No	Yes	No	Yes
40	East Fort Bus Stand	No	No	No	No	No
41	Pazhavangadi	Yes	No	Yes	No	No
42	old War Memorial	Yes	No	Yes	No	No
43	Sasthamangalam	No	No	Yes	No	No
44	Xanadu	Yes	No	Yes	No	No
45	Jawahar nagar	No	No	Yes	No	No
46	KIMS	No	No	Yes	No	No
47	Venpalavattom	No	No	Yes	No	No
48	Keltron House	Yes	No	No	No	No



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S/n	Junction Name	ATCS	ITMS	CCTV	FR	ECB
49	Kuravankonam	No	No	Yes	No	No
50	Marapalam	No	No	Yes	No	No
51	Contonment Gate	No	No	Yes	No	No
52	Sree Padmanabha Temple	No	No	Yes	No	No
53	Norka	Yes	No	No	No	No
54	Mettukada	Yes	No	Yes	No	No
55	Corporation	Yes	No	No	No	Yes
56	Uppalamoodu	Yes	No	Yes	No	No
57	Kottakakom	No	No	Yes	No	No
58	Model School	Yes	No	Yes	No	No
59	AKG CENTRE	Yes	No	No	No	No
60	General Hospital	Yes	No	Yes	No	No
61	Museum	yes	No	Yes	No	No
62	Asan Square	No	No	Yes	No	No
63	LMS	Yes	No	Yes	No	No
64	TTC	No	No	Yes	No	No
65	DDE	yes	No	No	No	No
66	Raj bhavan	No	No	Yes	No	No
67	Vazayila	Yes	Yes	Yes	No	No
68	Housing board	No	No	Yes	No	No
69	Bakery Junction	Yes	No	Yes	No	No
70	Vanchiyoor	yes	No	Yes	No	No
71	Jagathy	Yes	Yes	Yes	No	No
72	Althara	Yes	No	No	No	No



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S/n	Junction Name	ATCS	ITMS	CCTV	FR	ECB
73	Chenthitta	Yes	No	Yes	No	No
74	Veli Bridge	No	Yes	Yes	No	No
75	Chenkotukonam	No	Yes	Yes	No	No
76	Panavila	Yes	No	Yes	No	No
77	Mascot	Yes	No	Yes	No	No
78	Plamoodu	Yes	No	Yes	No	No
79	Mangattukadavu	No	Yes	Yes	No	No
80	Kundamankadavu	No	Yes	Yes	No	No
81	Kizhakkemukkola	No	Yes	Yes	No	No
82	PMG	Yes	No	Yes	No	Yes
83	Thirukannapuram	No	Yes	Yes	No	No
84	Killipalam	Yes	No	Yes	No	No
85	Karamana	Yes	No	Yes	No	No
86	St.Thomas College	No	Yes	Yes	No	No
87	Kesavadhasapuram	Yes	Yes	Yes	No	No
88	Kachani	No	Yes	Yes	No	No
89	Thirumala	No	Yes	Yes	No	No
90	TVM Railway Station	No	No	Yes	No	No
91	All Saints	No	No	Yes	No	No
92	Shangumugam	No	Yes	Yes	No	Yes
93	Pattom	Yes	No	Yes	Yes	No
94	Poonkulam	No	Yes	Yes	No	No
95	Vellayani Junction	No	Yes	Yes	No	No
96	KLA	No	No	Yes	Yes	No



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S/n	Junction Name	ATCS	ITMS	CCTV	FR	ECB
97	Mankuzhi	No	Yes	Yes	No	No
98	Pappanamcode	No	Yes	Yes	No	No
99	RMS	Yes	No	Yes	No	Yes
100	Palayam	Yes	No	Yes	No	No
101	Pravachambalam	No	Yes	Yes	No	No
102	Nemom	No	Yes	Yes	No	No
103	Paruthipara	Yes	No	Yes	No	No
104	Neeramankara	Yes	Yes	Yes	No	No
105	Kaimanam	No	Yes	Yes	No	No
106	Karakkamandapam	No	Yes	Yes	No	No
107	Maruthoorkadavu	No	Yes	Yes	No	No
108	Poojapura	No	No	Yes	No	Yes
109	Kazhakuttam	No	Yes	Yes	No	Yes
110	Aakulam	No	No	Yes	No	No
111	Poothura	No	Yes	Yes	No	No
112	Secreteriate Main Gate (Statue North)	No	No	Yes	No	No
113	Ulloor Extension	Yes	No	No	No	No



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Abbreviations

- **TSCCC** – Traffic & Safety Command Control Centre
- **DLP** – Digital Light Processing
- **ECB** – Emergency Call Box
- **AI** - Artificial Intelligence
- **NMS** - Network Management System
- **EMS** – Enterprise Management System
- **ATCS** – Adaptive Traffic Control System
- **ITMS** – Intelligent Traffic Management System
- **CCTV** - Closed-Circuit Television
- **VMS** – Video Management System
- **RLVD** – Red Light Violation Detection
- **DL** – Deep Learning
- **IP** – Internet Protocol
- **VCPaaS** – Verified Credential Platform as a Service
- **HA** – High Availability
- **VaMS** – Variable Messaging System

Citizens can report their concerns regarding signal timing issues or any other queries through a mobile application called One City Mobile Application developed as part of the Integrated Command & control Centre Project

The application is already available in the play store and available, the same is provided in the QR code:



Video-based user manual is available in the below QR code:

