INSTALLATION OF CHENNAI METROPOLITAN AREA INTELLIGENT TRANSPORT SYSTEMS

Funded by

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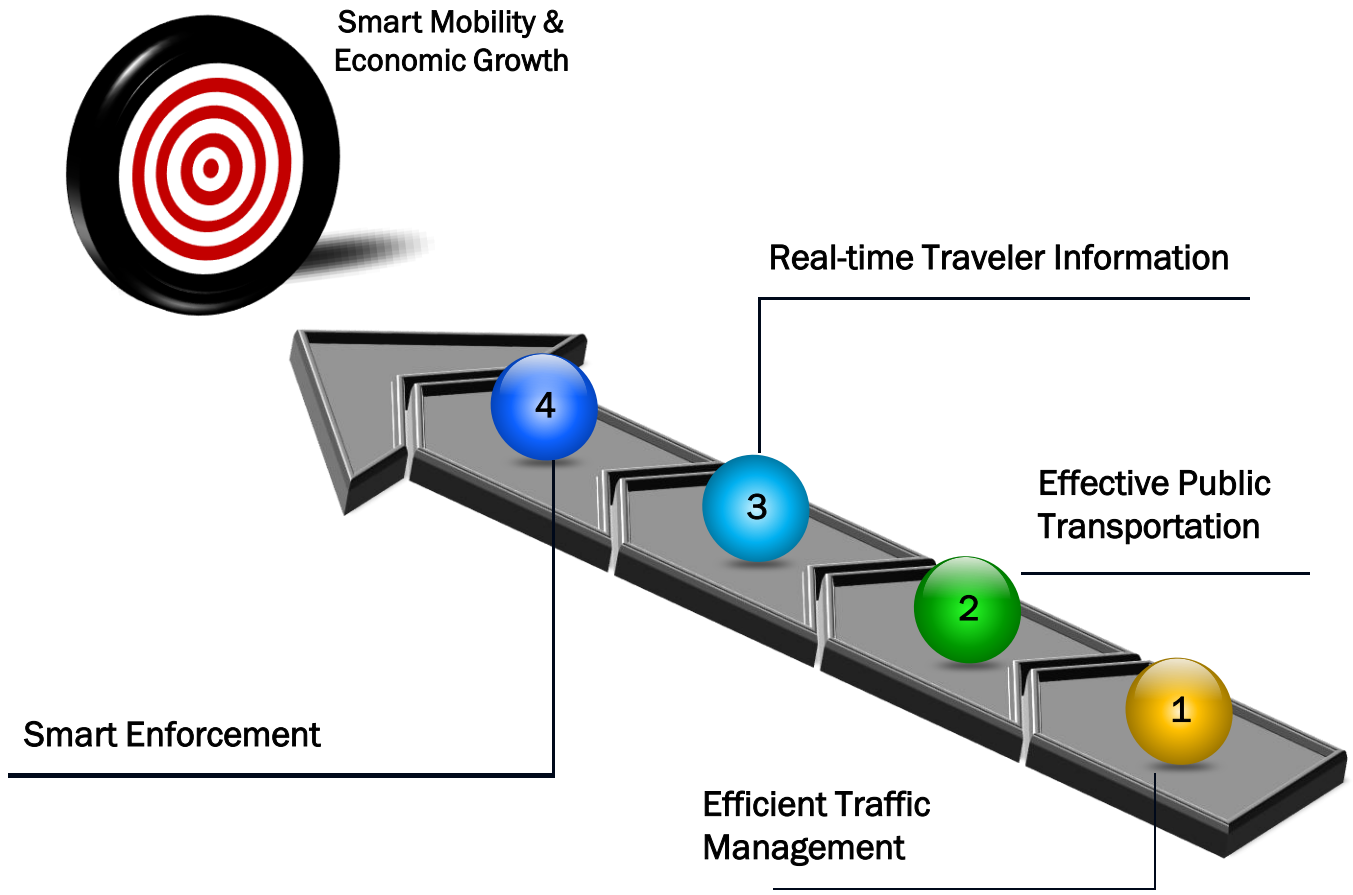
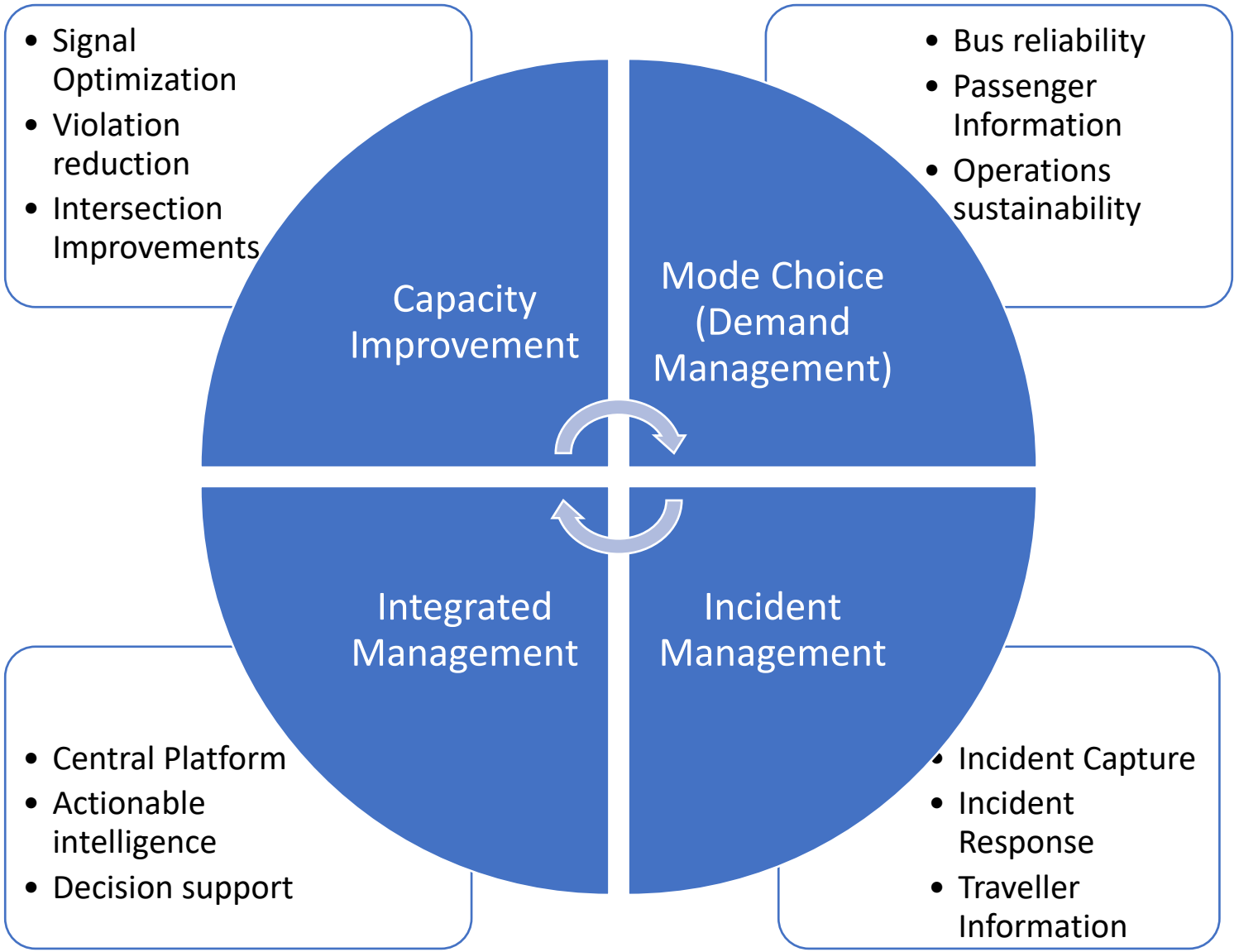
Project Statement

- Problem Statement
  - Reduce congestion & improve safety in Chennai
- Solution Statement
  - Holistic outlook at the Chennai congestion & safety challenges and provide solutions that can support the city long term.



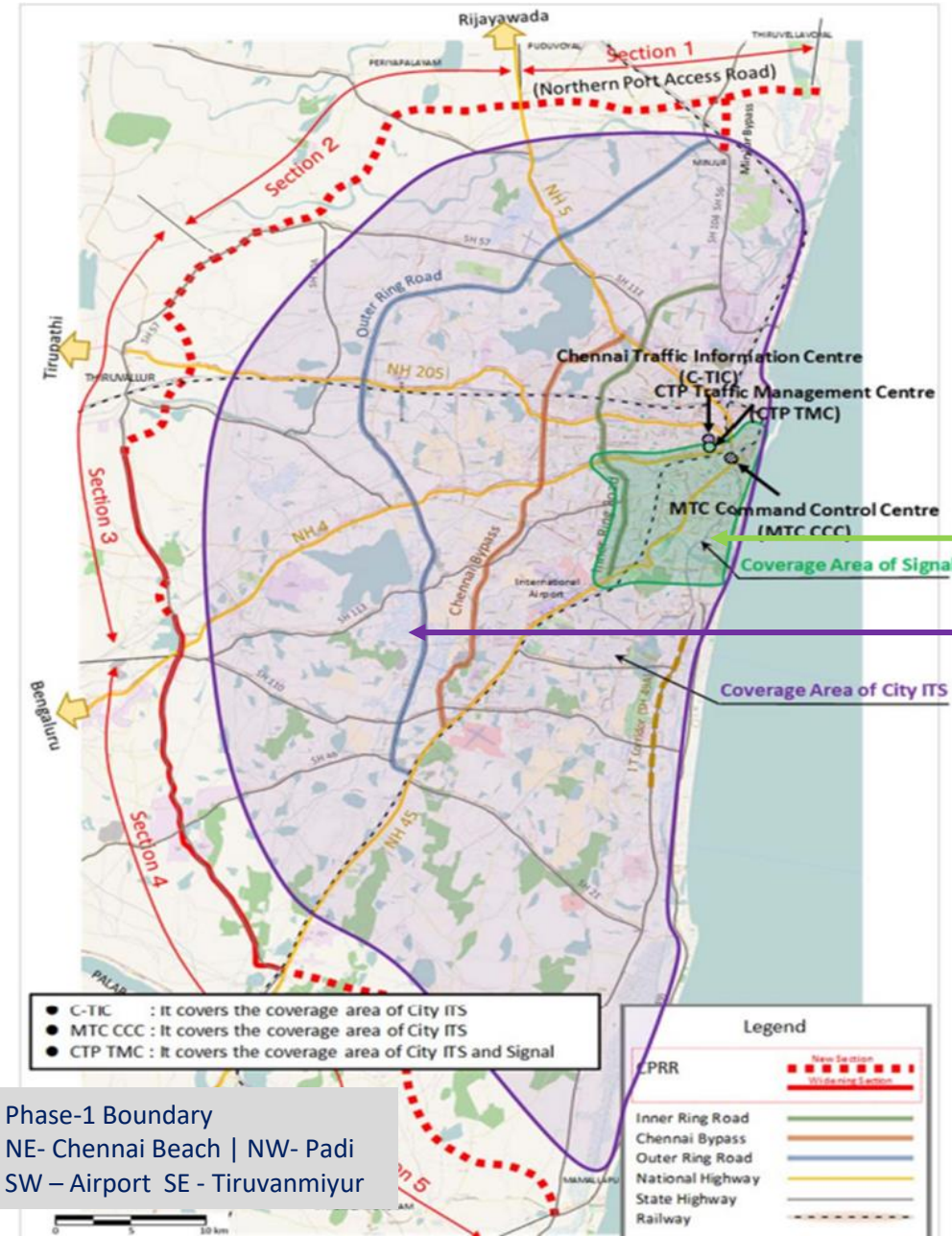
Overview – Solution Space



Overview – Project Components

S. No.	Components	Sub-system	Phase 1 – Design, Implementation and O & M	Phase 2 - Design
1	Chennai Traffic Information & Management System	Chennai Traffic Police –Traffic Information & Management Centre	1 set	-
		Adaptive Traffic Signal Control System (ATCS)	165 junctions	332 junctions
		Intersection Improvement	165 junctions	332 junctions
		Traffic Incident detection System (TIDS)	58 locations	-
		Variable Message Sign System (VMS)	17 locations	-
		Red Light Violation detection System (RLVD)	50 junctions	-
		Speed Limit Violation Detection (SLVD)	10 locations	
		Automatic Traffic Counter-cum-classifier System (ATCC)	230 numbers	-
		ITMS Platform and Probe System	1 number	-
2	City Bus System (CBS)	Command Control Centre (Integrated control system)	1 set	-
		Automatic Vehicle Location (AVL)	3500 numbers	-
		Passenger Information System	20 numbers	-
		Depot Management System (33 depot)	1 set	-
3	O & M	O&M for all systems listed above	5 years	-

Overview - Project Study Area



Phase-1 Boundary
NE- Chennai Beach | NW- Padi
SW – Airport SE - Tiruvanmiyur

Adaptive Traffic Signal Control System

Red Light Violation detection System

Intersection Improvement

Chennai Core Area

CMA Boundary

Traffic Incident detection + Speed Limit Violation Detection

Variable Message Sign System

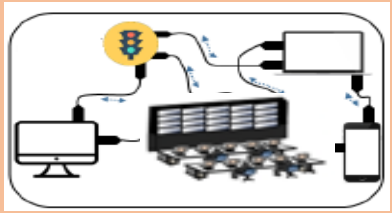
Automatic Traffic Counter-cum-classifier System

CAD/AVL System (Bus Fleet Management)

Depot Management System

DETAILED SCOPE OF WORK

Scope – TIMS Architecture



Traffic Management Center

- Adaptive Traffic Signal
- Red Light Violation Detection
- Speed Limit Violation Detection
- Variable Message System
- Traffic Incident Detection
- Automatic Traffic Counter and Classifier
- CAD/AVL & Probe Data
- Mobile App/ Web Portal
- Social Media Integration

Project Components

ITMS Platform

Generate and Confirm Events	Manage & Close Events
Insights & Actionable Intelligence	Dashboard & Reporting
Response Plan Implementation	Retrieval System
Interaction with Internal & External Systems/Users	Scenario Analysis
Business Intelligence	Multi-Agency/System Co-Ordination

Multi-Agency Users

- Police
- Corporation
- Ambulance
- Fire
- Highways
- Media
- Citizens

Other ICT Projects/Systems

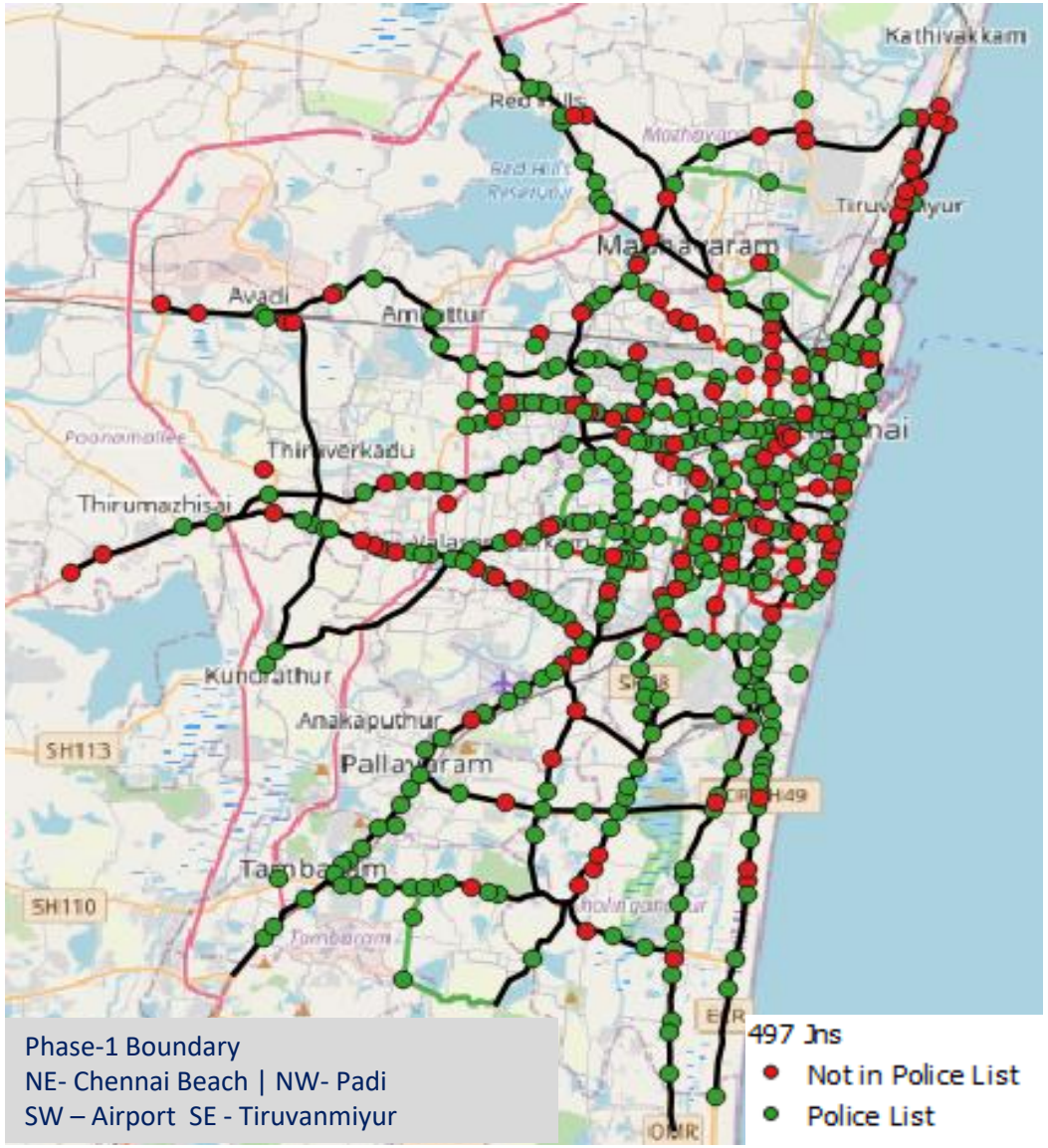
- CPRR
- ICCC
- Safe City (Nirbhaya)
- Smart Parking
- Other transportation projects
- Other probe systems

Within CITS project scope

External system integration

External system access

Selection of Intersections



Phase-1 Boundary
NE- Chennai Beach | NW- Padi
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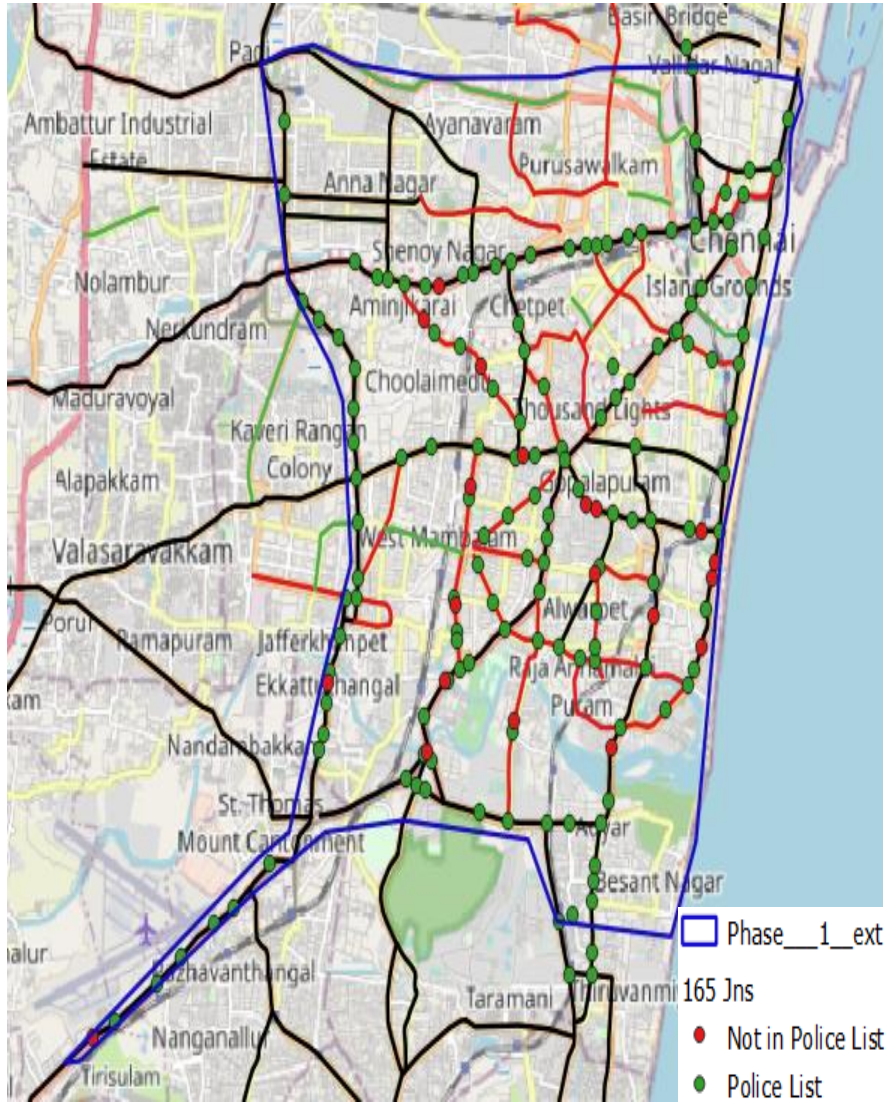
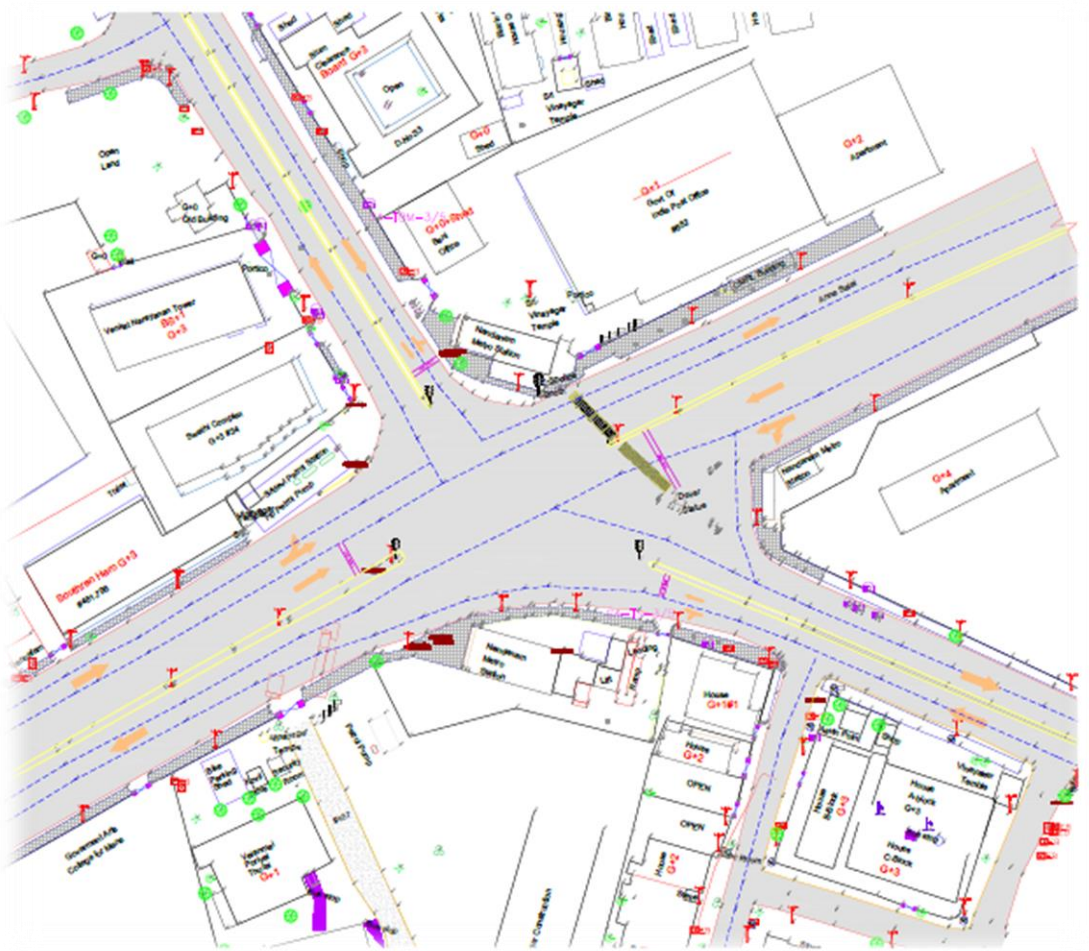
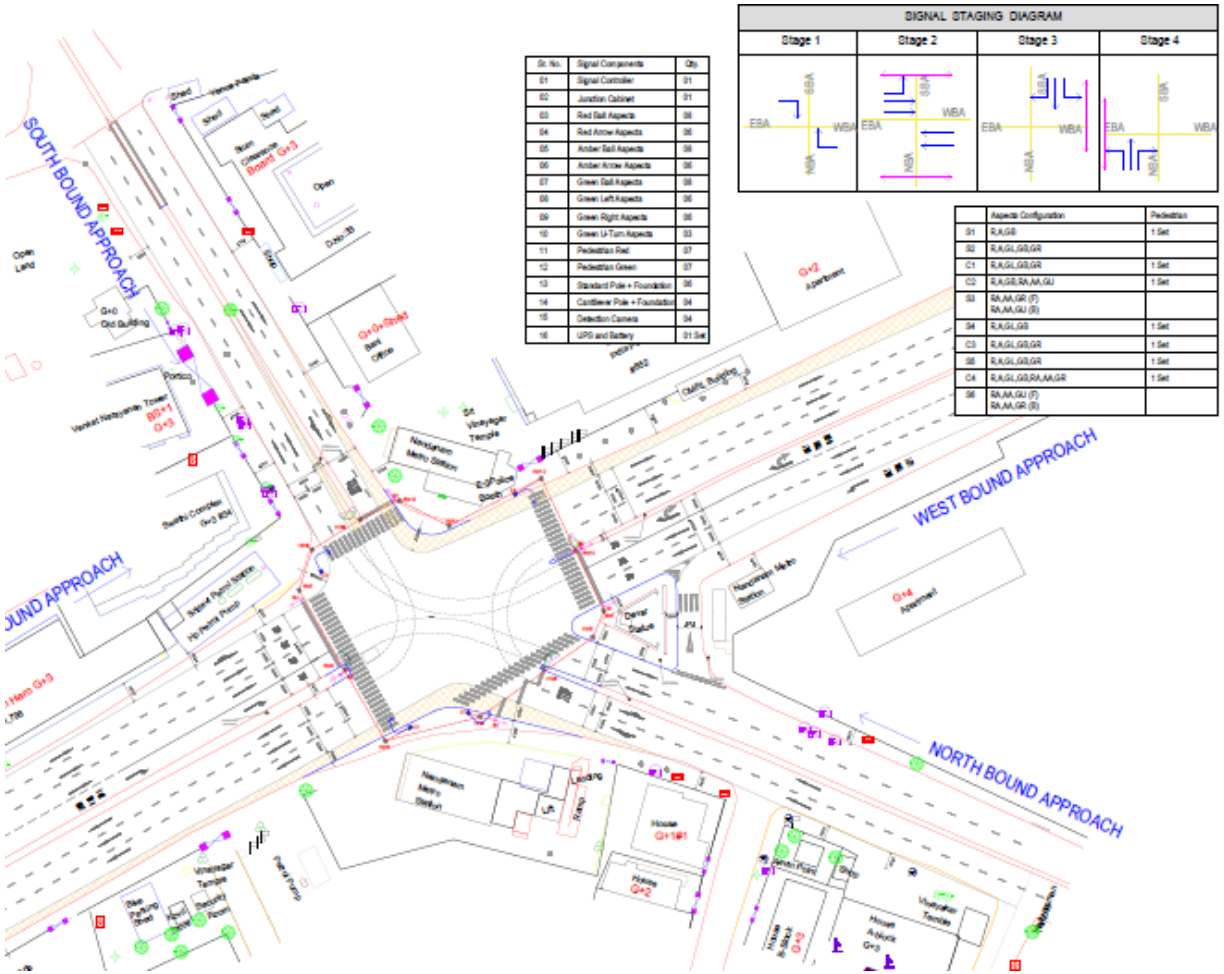


Intersection Improvement



Existing



Proposed Design

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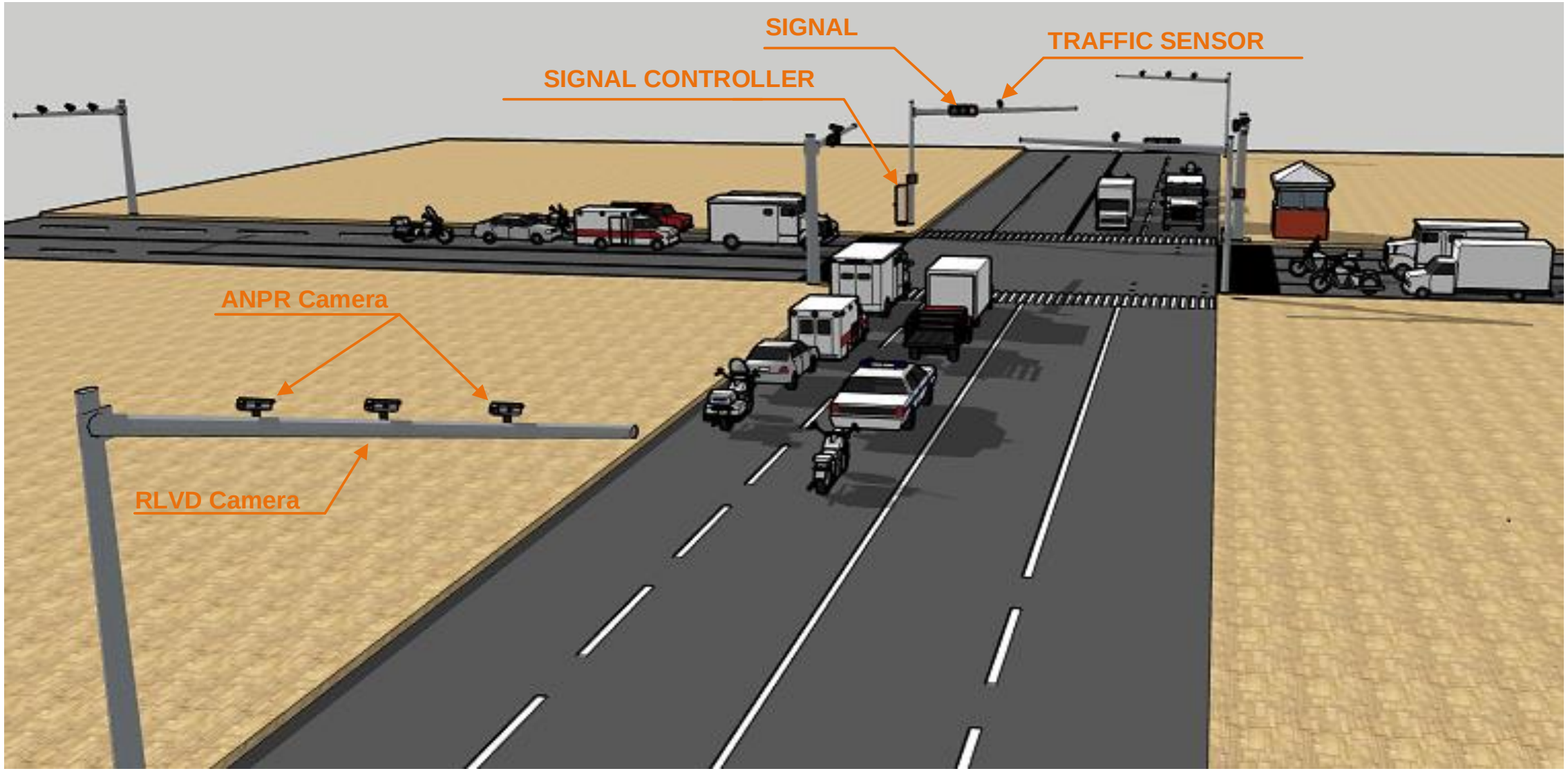
Adaptive Traffic Control Signal (ATCS)



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Red Light Violation Detection (RLVD)

- Detect violated vehicles crossing the stop line during red light
- Able to capture standard number plate of vehicle.
- Vehicle Images will be provided as violation evidence.
- Real-time alerts for suspected Vehicle in control room.
- Integrated with e-challan system

Sample violation screen

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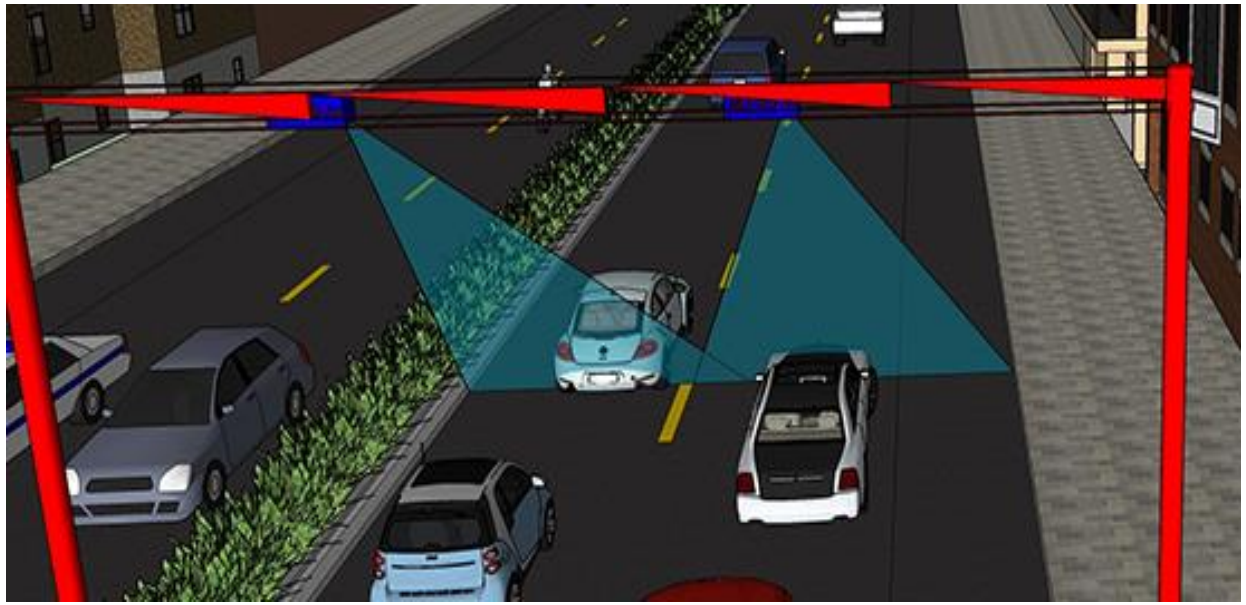
Speed Limit Violation Detection (SLVD)

- Detect vehicles violating speed limit
- Capture standard number plate of vehicle
- Violator's images provided as evidence
- Real-time alerts of suspected Vehicle to control room
- Integration with e-challan system



Sample incident detection

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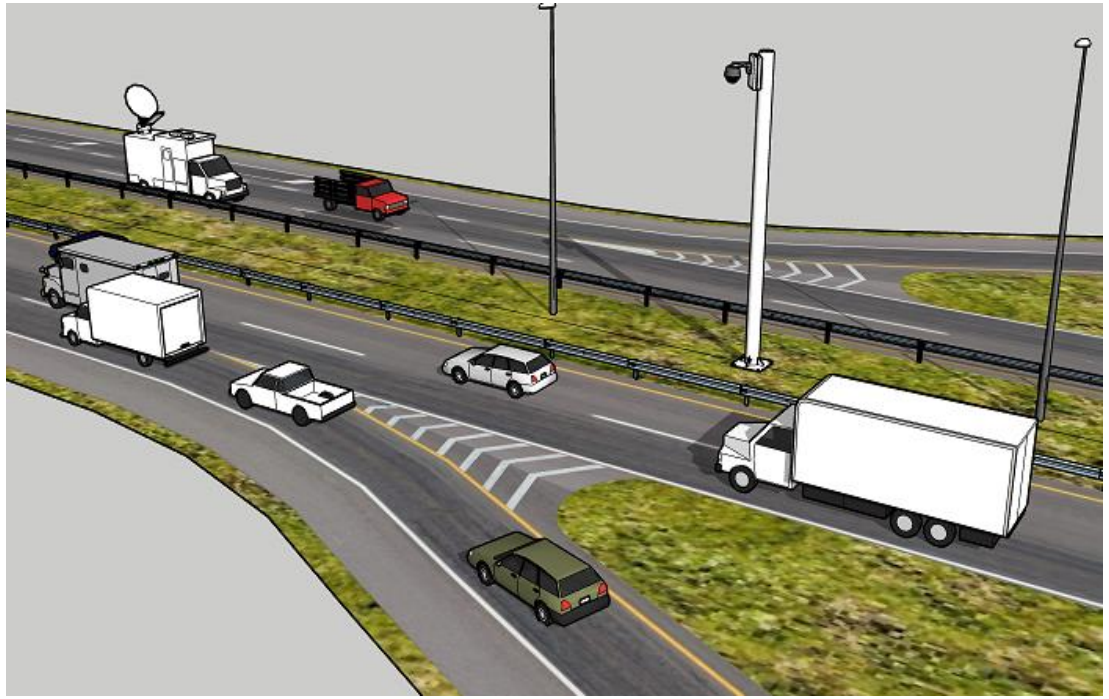
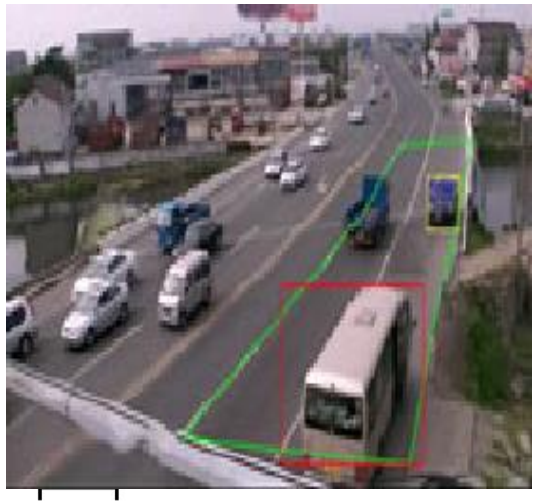
Traffic Incident Detection System (TIDS)

- Monitor traffic situation at merging location of major road
- Detect traffic anomaly (congestion, wrong-way vehicle, unattended object & vehicle)
- Incident response, Realtime alerts at Control Centre for quick action
- Images/videos transmitted to control center for real time monitoring
- Incident record for further analysis and enforcement





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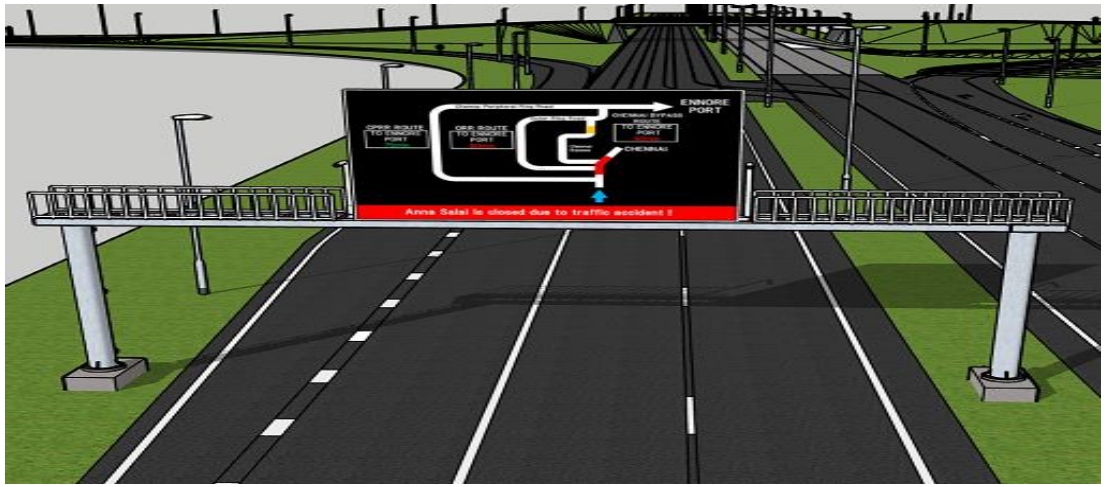
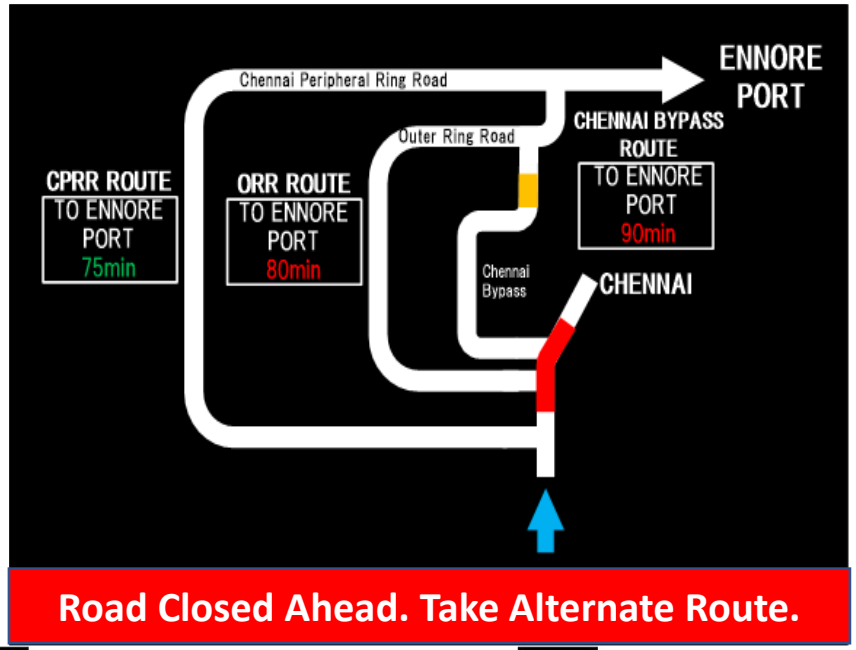
Variable Message Sign (VMS)

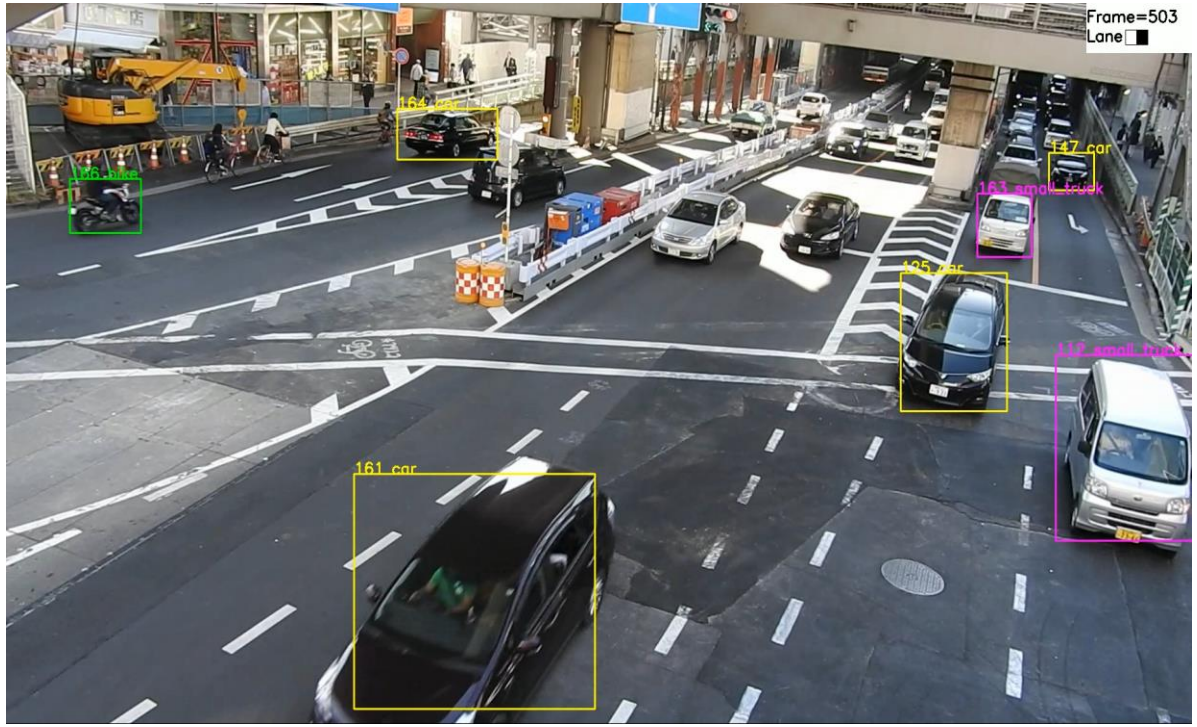
- Information dissemination by Control Centre ITMS application
- Accident & congestion messaging
- Suggest alternative non/less congested route
- Accident/construction information and travel time with route map
- Most effective and safe methods to show the traffic information
- Traffic awareness, safety advisories





Automatic Traffic Counter & Classifier (ATCC)

- Permanent data stations
- Accurate traffic data collection
- Measures avg. speed, occupancy, count and classify the traffic
- Store historic traffic data and analyse as per requirement
- Exchange traffic information with various agencies



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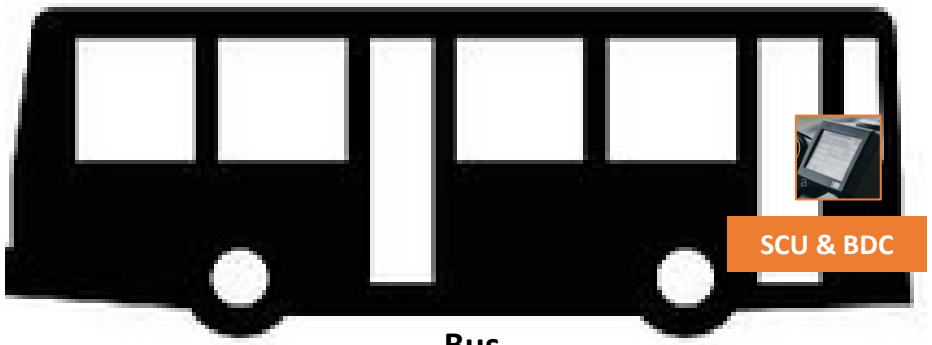
City Bus System

GPS Satellite

GPS Signal

GSM/GPRS Gateway



Bus

Data Center

LAN Network

Dispatcher at Control Center

GSM/GPRS Gateway

Mobile Application

Commuter Website

Broadband/ Leased Line

Depot Management System

GSM/GPRS Gateway

PIS at Terminals

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PROJECT BENEFIT ANALYSIS

Benefit-Cost Analysis - Components

Expected Future Benefits

S. No.	Year	Tangible Benefits in Rs. Cr							Total Benefits
		Travel Time Savings	Fuel Savings	Reduction in Accidents	Reduction in Emissions	CTP Salary Savings	MTC Salary Savings	MTC Savings (Opteration & Fuel)	
1	FY 2025-26	266	106	17	11	1	1	70	472
2	FY 2026-27	286	114	18	12	3	6	75	512
3	FY 2027-28	307	122	19	12	4	10	81	555
4	FY2028-29	330	131	19	13	5	10	87	597
5	FY2029-30	355	141	20	14	7	11	93	642
	Total	1543	614	93	63	20	38	406	2777

Note:

Travel Time:

- Reduction in the delays at the intersection (C-DAC Study).
- Weighted average value of time per vehicle in Rs. 125 per hour. (Per capita income / Average number of working hours)
- Per capita income – (Ministry of Statistics and Programme Implementation / World Bank)

Fuel Savings

- Average fuel consumption during idle phase - 0.4 liter per hour (CRRI Estimation)

Note:

Reduction in Social Cost of Carbon

- Estimate of fuel savings = 13 Million litres (0.4kg emission per litre)
- Average social cost of CO_2 emission in India = Rs. 6450 per Ton

Reduction in Accident

After ICT implementation in Phase1 area 5% reduction in accidents, as per MoRTH 2018 report.

Salary:

Savings from salary after System is implemented.


Thank you...