Smart & Enabling ITS Technology for Road Safety

Regulatory Facilitation Under

TED 28,BIS
(Sectional Committee on ITS)

Presented at - 7th Webinar : TS for Road Safety
Dt. 28th July'21

Presented By:
Dr. Madhusudan Joshi, ICAT

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    - Panel on ETM
    - Panel on functional safety & cyber security
    - Panel on ADAS
    - Panel on Traveler information Systems
    - Panel on Traffic Management
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ABOUT ICAT

The International Centre for Automotive Technology (ICAT), Manesar is a centre under NATRIP (**N**ational **A**utomotive **T**esting and **R**&D **I**nfrastructure **P**roject), Govt. of India.

ICAT provides services for

- Test
- Validation
- Design
- Homologation

- Established : 2006
- Human resource : 492 (+100)
- Location : Manesar, Haryana (38 km from Delhi Airport)
- Area : Centre I - 8 Acres & Centre II - 46.6 Acres

ICAT ORGANIZATION

Ministry of Heavy Industries
& Public Enterprises

National Automotive Testing & R&D
Infrastructure Project (NATRiP)

Total Investment-
USD 560 M (INR 3742 Cr)

ICAT -(Manesar)

Investment at ICAT –
USD 192 M (INR 1350 Cr)

ICAT AUTHORIZATION AND ACCREDITATION

Authorization Status

- For TYPE APPROVAL & CoP under Rule- 126 of Central Motor Vehicle Rules (CMVR) by MoRTH, GOI
- Central Pollution Control Board (CPCB) Emission and Noise TYPE APPROVAL & CoP of Generator Sets

Accreditation Status

- NABL (ISO 17025)
- VCA(UK) -Since 2008
- CAFE secretariat by MoRTH
- BIS Recognition for Testing of Pneumatic Tyres, Safety Glasses, SI Engines for Agricultural Sprayers, CI Engines for Agricultural Purposes, LED Lamps, UPS System.

Facility Certification

✓ **IMS** : (ISO 9001:2015, ISO 14001:2015, ISO 45001)

✓ **Facility Recognition**

❖ Scientific and Industrial Research Organization (SIRO)

Certification Partners

- KIAPI Korea
- IDIADA
- NRCS, South Africa
- TUV- Rheinland
- TUV-Nord
- TUV-SUD

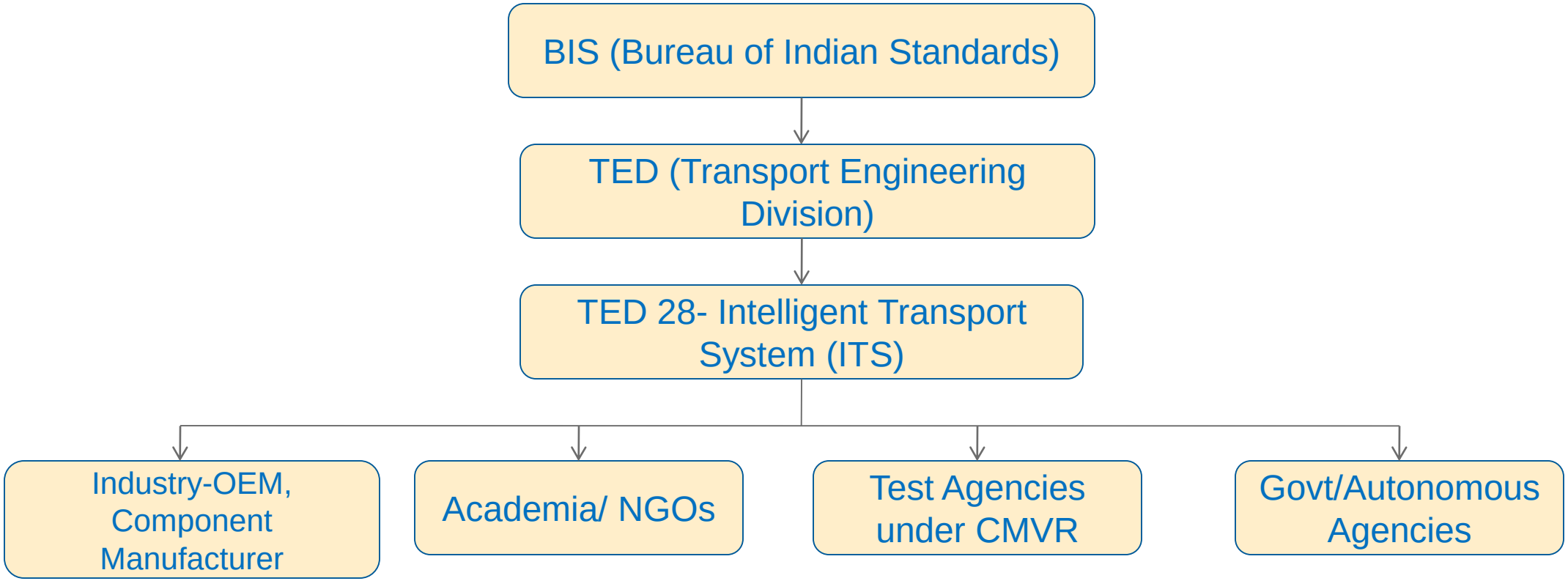
MoUs

- **KIAPI Korea**: Certification Work
- **CATARC, China :** Joint Certification & Development Work
- **Millbrook UK** : Joint Development and Certification work
- **Brunel University, U.K. :** Electric Powertrain
- **Argonne National Laboratory, Chicago, USA**: For Power train
- **Ohio State University, Columbus, USA**: For NVH
- **Hangzhou ORD**: Business Development in China

ABOUT TED 28

BIS has a sectional committee on Intelligent Transport System (TED 28) under its Transport Engineering Division (TED) Council. The scope of the committee TED 28 is as follows:

Scope: Standardization of information, communication and control systems in the field of urban and rural surface transportation, including autonomous, connected, intermodal and multimodal aspects thereof, traveller information, traffic management, public transport, commercial transport, emergency services and commercial services in the intelligent transport systems including associated security issues.

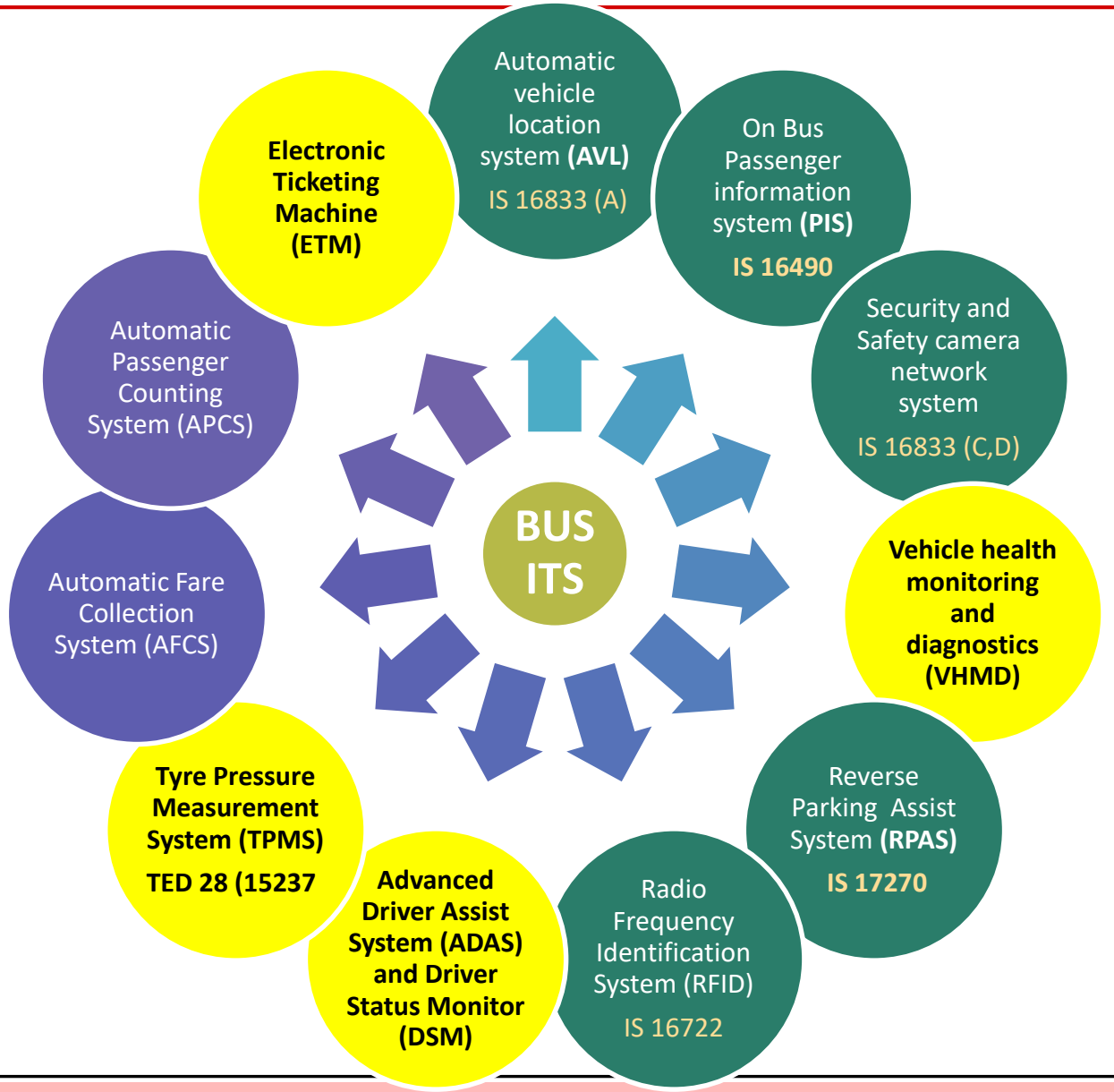


LIST OF PANELS UNDER TED 28

Sr. No.	Panel	Convener
1	**TED 28/P1 Panel on Bus ITS**	Dr. M. Joshi, ICAT
2	**TED 28/P2 Panel on Traffic Management**	Mr. Prakash R, CDAC
3	**TED 28/P3 Panel on RPAS**	Dr. M. Joshi, ICAT
4	**TED 28/P4 Traveler Information Systems**	Shri Alok Sethi, DIMTS
5	**TED 28/P6 Panel on ADAS**	Dr. M. Joshi, ICAT
6	**TED 28/P7 Panel on VTS**	Dr. M. Joshi, ICAT

Sr. No.	Panel	Convener
7	**TED 28/P8 Panel on 'Automatic Vehicle Identification and fare collection/ associated FasTag issues'**	Dr. M. Joshi, ICAT
8	**TED 28/P9 Panel on 'RFID Application for School Buses'**	Dr. P.K. Sarkar, DMICDC
9	**TED 28/P10 Panel on 'E-ticketing'**	Shri Taron Mohan, Nextgen Telesolutions Pvt. Ltd.
10	**TED 28/P11 Panel on 'Cyber Security and Functional safety of Road Vehicles'**	Dr. M. Joshi, ICAT
11	**TED 28/P12 Panel on 'TPMS'**	Dr. M. Joshi, ICAT

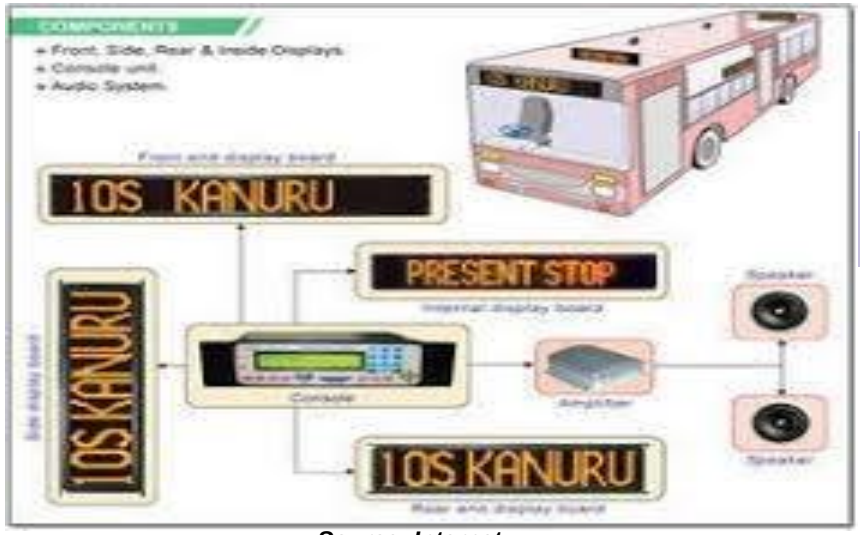
TED 28/P1 - PANEL ON BUS ITS



TED 28/P1 - PANEL ON BUS ITS
(IS 16490): LED DESTINATION BOARD SYSTEM FOR BUSES — SPECIFICATION

Major Highlights of IS 16490

- First Standard on LED Destination Boards formulated by India Under BIS in 2016
- Test standrad IS 16490 published till Amd 1:2018 and in use.
- Amendment 2 for additional functional requirements of PIS Boards & controller is under final stage of Publication
- Covers all requirements of PIS Boards & Full ITS Compliant Controller
- **Accepted in ISO Standard committee as a working draft**



Source: Internet

Basic System Architecture Example

Major Test Details

- Performance Related Test
- Environmental Test
- EMC/EMI Test
- Endurance Durability Test
- Mechanical Test
- Durability Test
- Electrical Test

TED 28/P7 - PANEL ON VTS
(IS 16833): AUTOMOTIVE TRACKING DEVICE & INTEGARTED SYSTEMS

Major Highlights of IS 16833

- **Annexure A** – ATD with an integrated emergency system
- **Annexure B** – ATD with an integrated emergency system and fare meter
- **Annexure C** – CCTV system with an integrated emergency system
- **Annexure D** – CCTV system with in-built tracking system and integrated emergency system

Major Stakeholders Involved

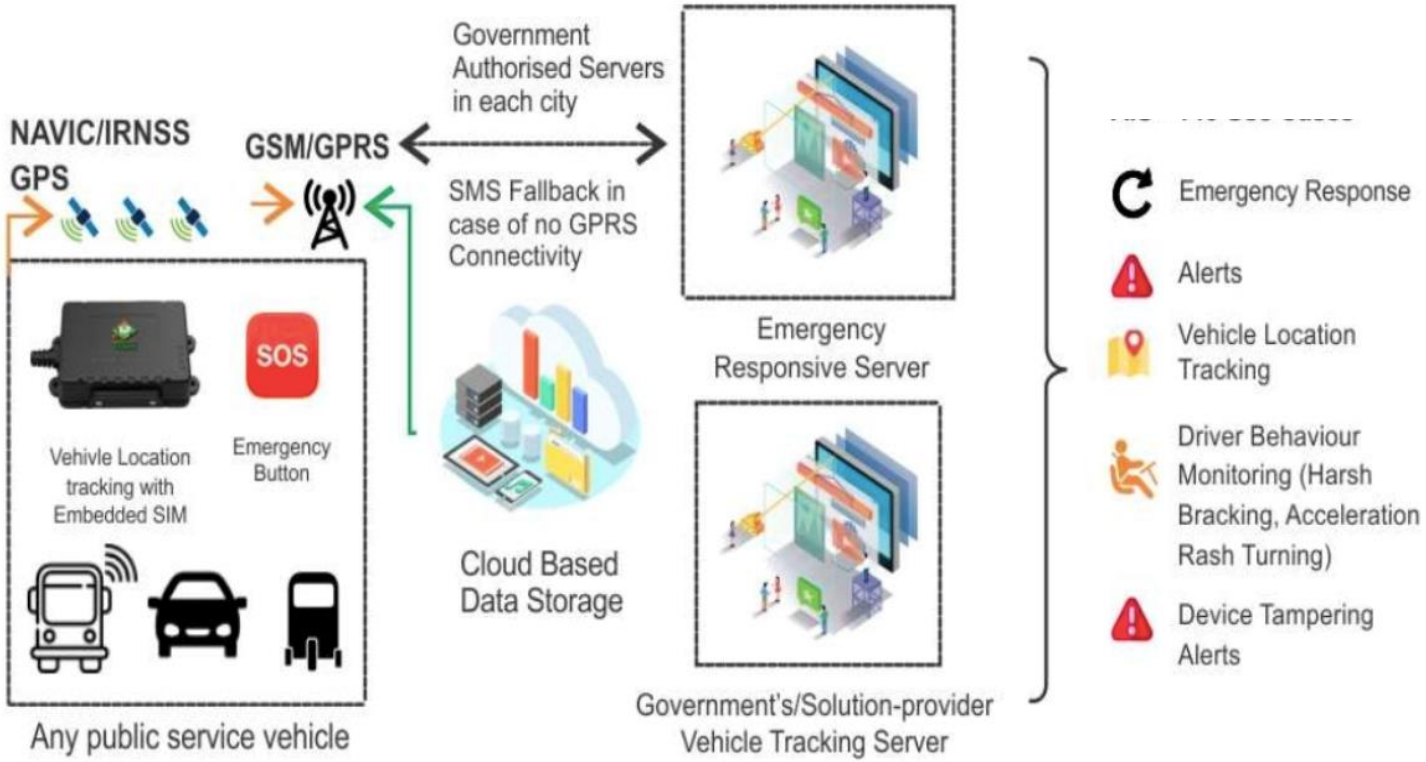
- National Database
- PMU
- Test Agency
- Backend Server Provider
- OEM's VTS manufacturer
- BIS

P7 (IS 16833): ANNEXURE A: AUTOMOTIVE TRACKING DEVICE WITH AN INTEGRATED EMERGENCY SYSTEM

Major Highlights

Under Nirbhaya Scheme of MORTH

Inline with AIS 140 (Latest amendments) with all requirements of VTS with Emergency button & Backend server/Application for data storage and further processing



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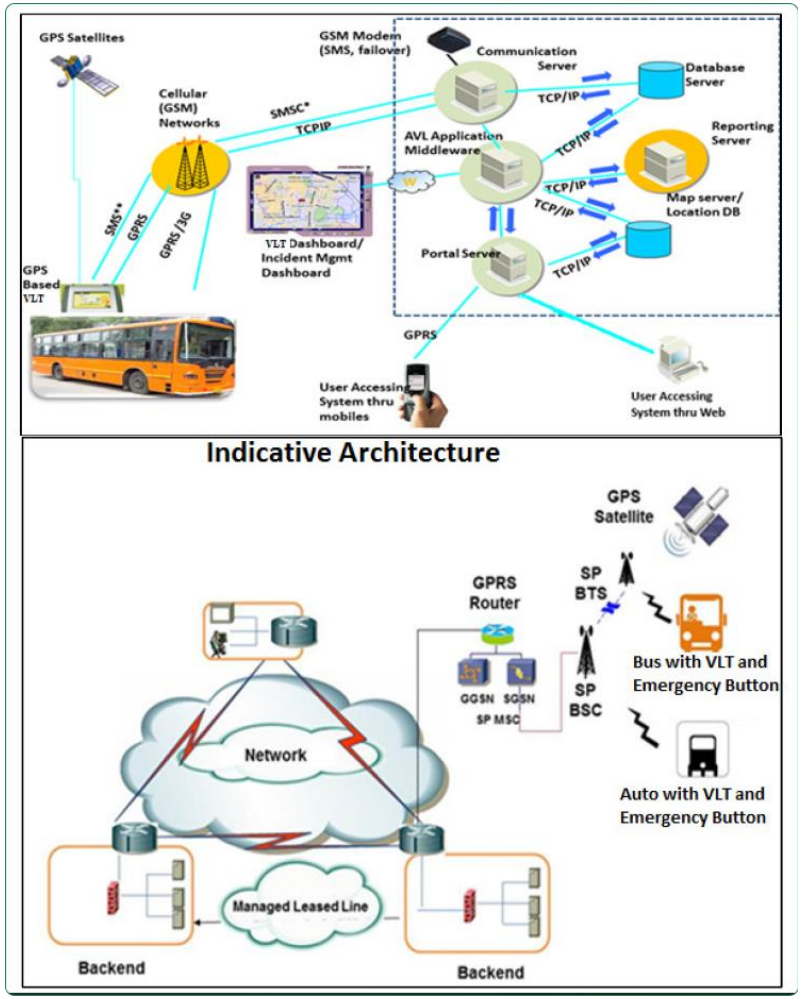
Basic System Architecture Example



P7 (IS 16833): ANNEXURE B: ATD WITH AN INTEGRATED EMERGENCY SYSTEM AND FARE METER

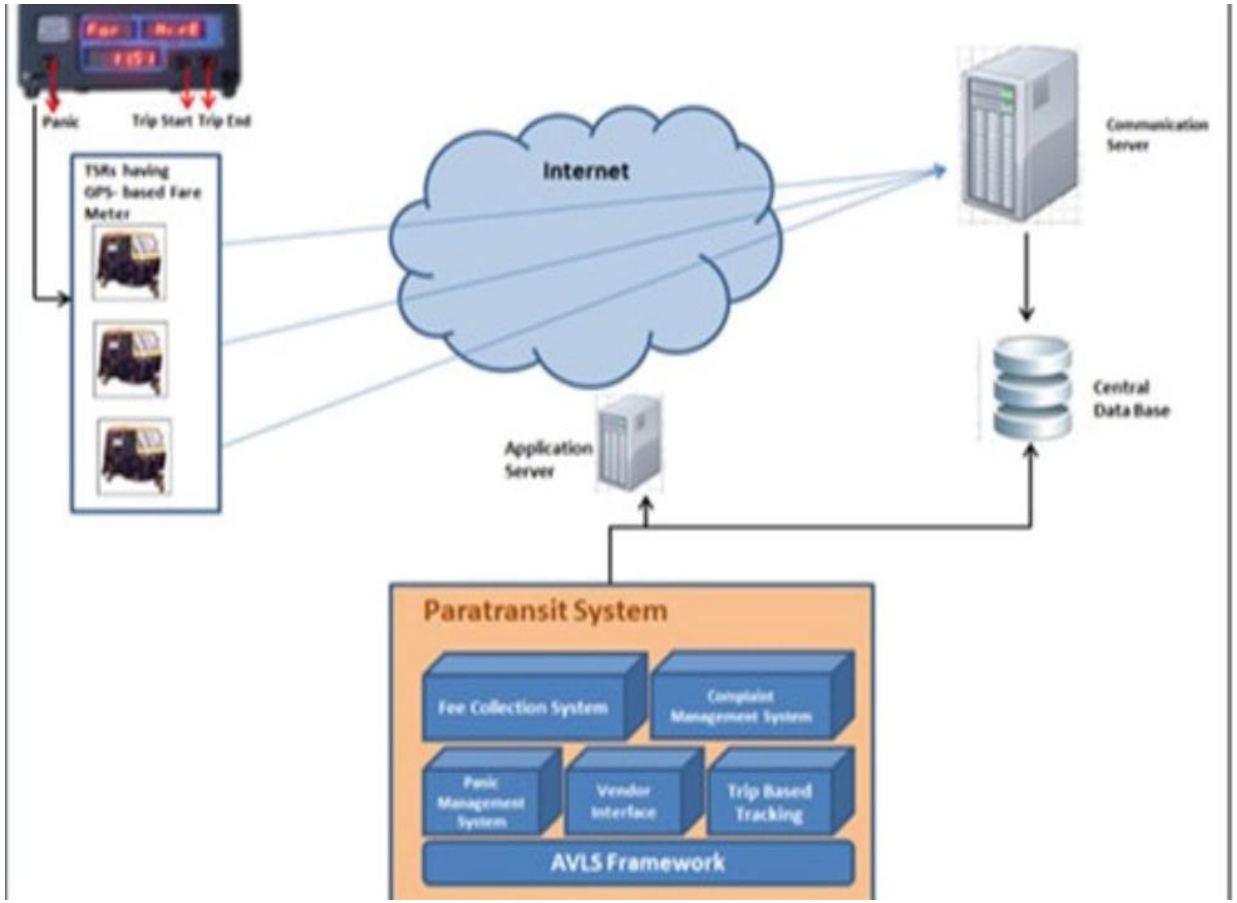
Major Highlights

- Test standard covers the test requirements DIGITAL FARE METER with Emergency button except IS 2467

Major Features

- Provision of real time tracking of TSR location.
- Complete history tracking, using GPS location updates from the devices.
- Trip based tracking/trip replay for any vehicle.
- Facilitation for panic alert handling in case of 'Panic' alert raised by the vehicle.
- Facilitation for handling/redress of public complaints like fare overcharging, non-stopping of TSR by driver etc.
- User level/Role based access to information.
- Automated event logging with time stamps (Like trips, GPS logs, panic alerts)
- Various reports for relevant authorities – like over-speeding, panic alerts log etc.

Basic System Architecture Example



Source: Internet

Major Highlight

- Test standard covers the test requirements of both IP & Analog type CCTV System with Emergency button & VTS Features

IP Camera/Analog Camera Upto 8 nos. → mDVR/mNVR/ Hybrid mNVR → Display Unit/ Monitor → Vehicle Tracking , Emergency Button Features (GPS/IRNSS/Others) → Backend server / Communication Protocol GSM/GPRS

Major Test Details

- Performance Related Test
- Environmental Test
- EMC/EMI Test
- Endurance Durability Test
- Mechanical Test
- Durability Test
- Electrical Test

Basic System Architecture Example

Source: Internet

TED 28/P8 - PANEL ON AUTOMATIC VEHICLE IDENTIFICATION AND FARE COLLECTION/ ASSOCIATED FASTAG ISSUES

Major Highlights of IS 16722

- Test standard IS 16722 published and in use. Amendment is under publishing
- Inline with MoRTH specification and NHAI guidelines
- Covers all requirements of Fastags and RFID tags with their transceivers and readers

Source: Internet

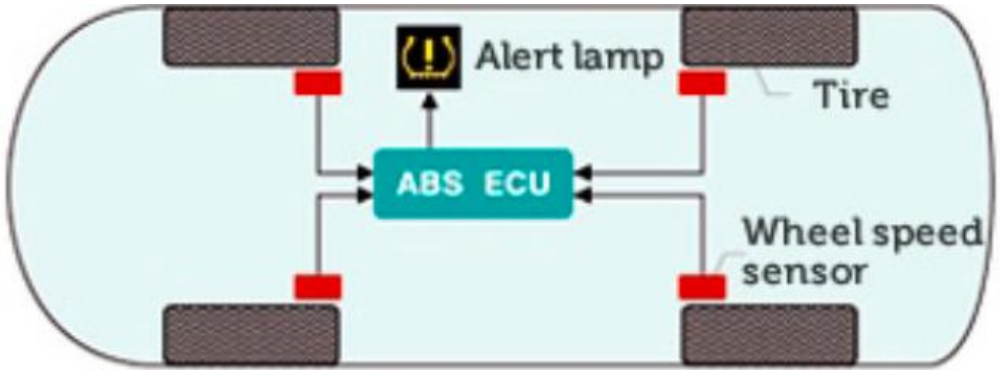
Basic System Architecture Example

Major Test Details

- Performance Related Test
- Environmental Test
- EMC/EMI Test
- Endurance Durability Test
- Mechanical Test
- Durability Test
- Electrical Test

TED 28/P12 - PANEL ON TPMS (TYRE PRESSURE MONITORING SYSTEM)

Indirect TPMS



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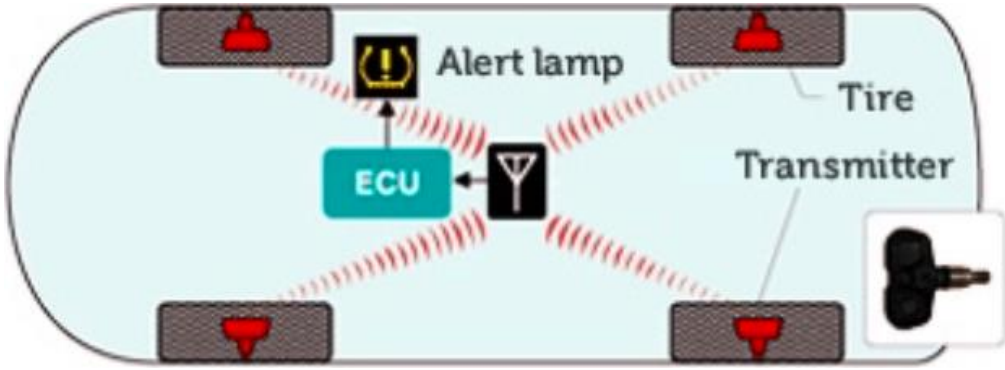
Basic System Architecture Example

Direct TPMS



Source: Internet

Major Highlights of standard

- Test standard is in final stages of publications.
- Inline with AIS 154 for vehicle level tests.
  Sub-system level tests in addition.
- Covers all requirements of RPAS

Major Test Details

- Performance Related Test
- Environmental Test
- EMC/EMI Test
- Endurance Durability Test
- Mechanical Test
- Durability Test
- Electrical Test

TED 28/P3 - PANEL ON RPAS (REVERSE PARKING ALERT SYSTEM)

Major Highlight of IS 17270

Inline with AIS 145 for vehicle level tests and covers sub-system level tests in addition

Basic System Architecture Example

Major Test Details

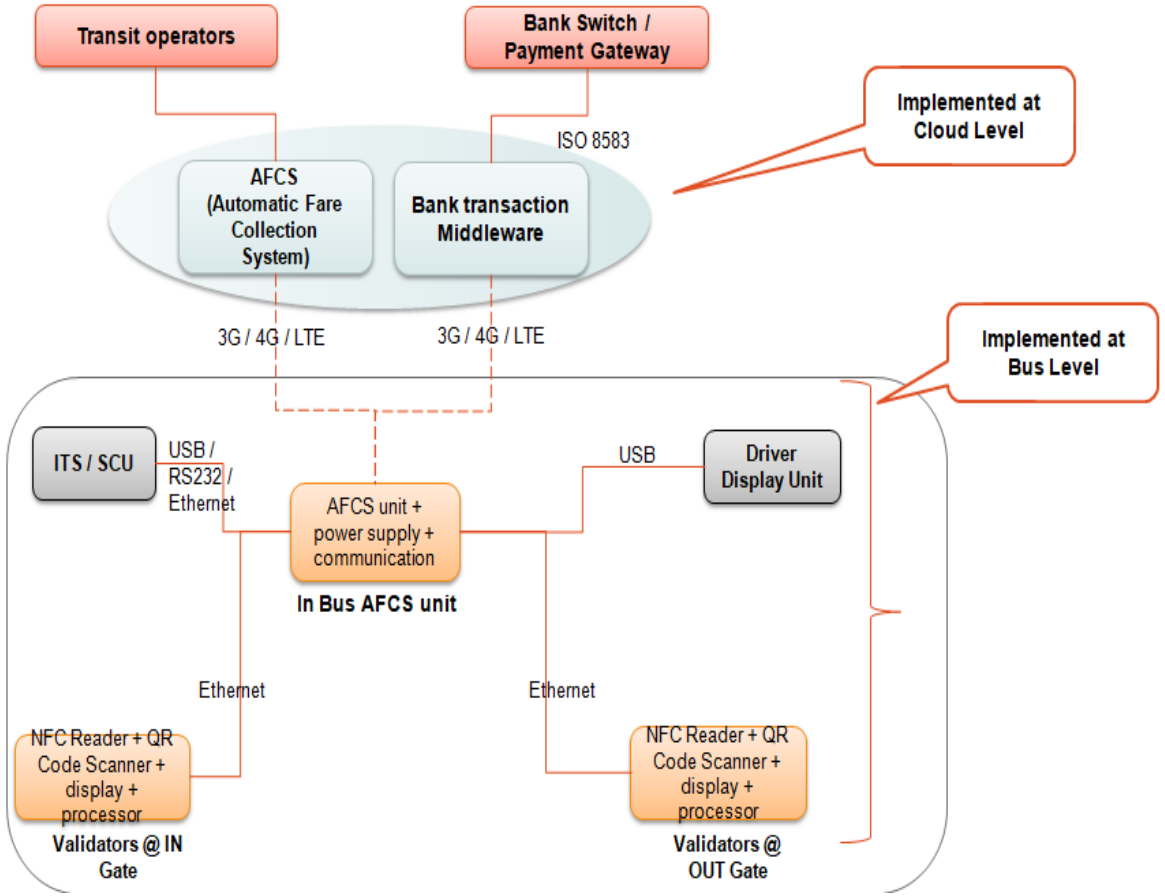
- Performance Related Test
- Environmental Test
- EMC/EMI Test
- Endurance Durability Test
- Mechanical Test
- Durability Test
- Electrical Test

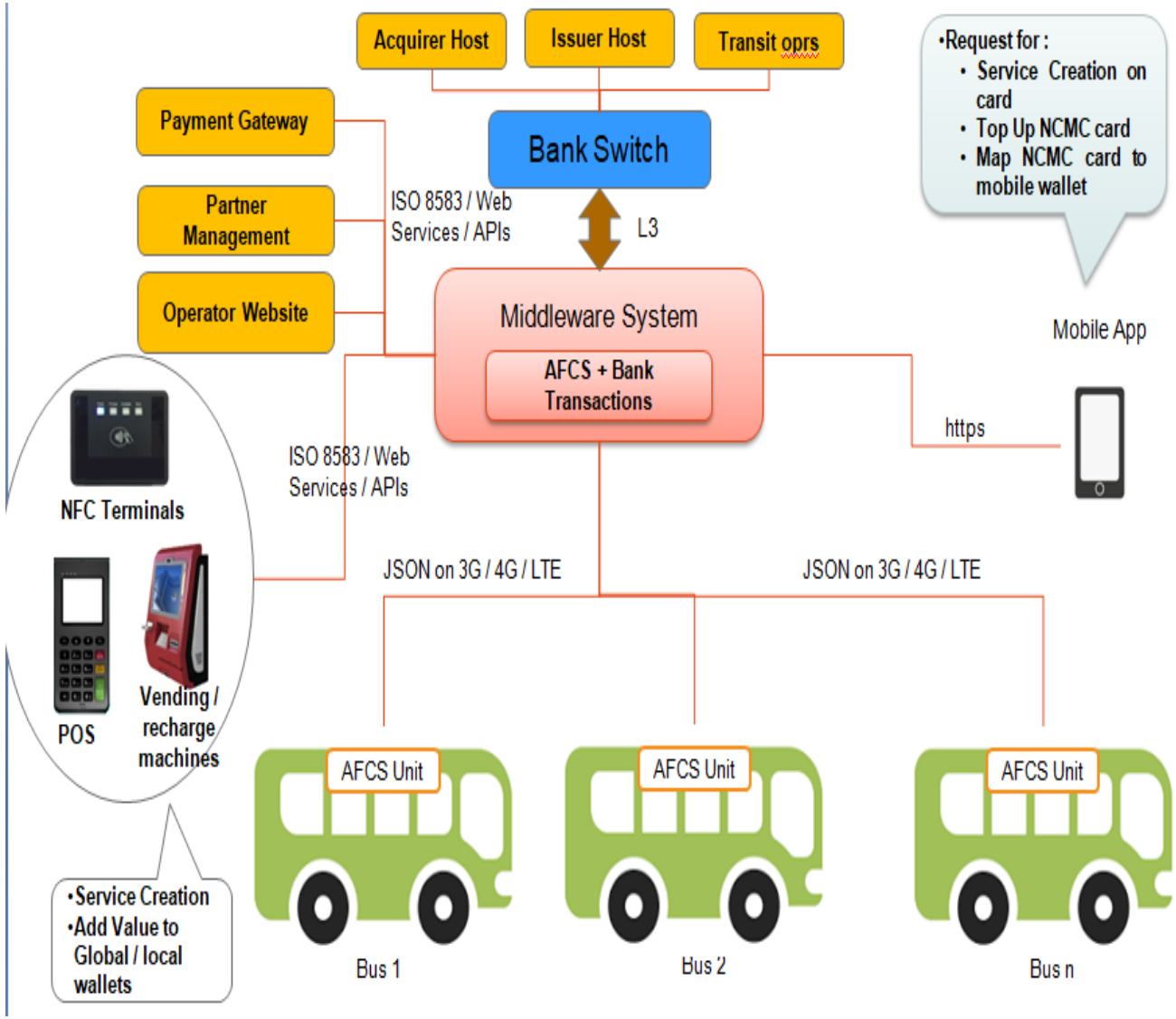
TED 28/P10- PANEL ON ELECTRONIC TICKETING MACHINE (IN PROCESS)

Standard formulation Deadline

DEC' 2021

Basic System Architecture Example



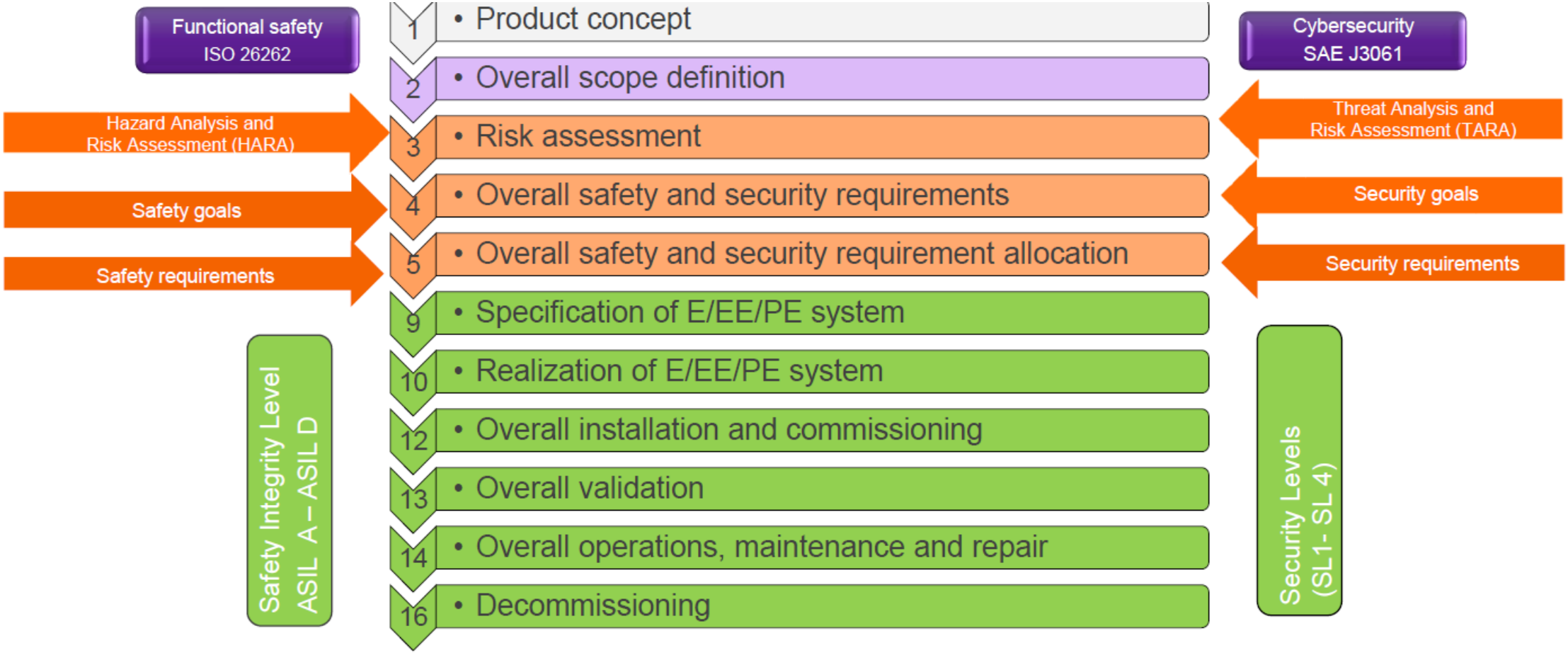


Note: Payment/transaction related specifications will not be under scope of this standard

Standard formulation Deadline

DEC' 2021

Implementation approach for Safety & Security process



Defence against random and systematic failure to protect from harm

Defence against negligent and willful actions to protect devices and facilities

TED 28/P6 - PANEL ON ADAS (IN PROCESS)

Standard formulation Deadline

JUL' 2022

- Blind Spot Monitoring System
- Crosswinds Stabilization
- Automotive navigation system with up-to-date traffic information
- Reverse Parking Assist System (RPAS) **IS 17270**
- Driver drowsiness detection
- Tyre Pressure Measurement System (TPMS)
- Automotive Night Vision
- Traffic Signal Recognition
- Electric vehicle warning sounds
- Rain Sensing System
- Omniview Technology
- Adaptive cruise control
- Wrong way Driving Warning
- Automatic Parking
- Collision Avoidance System
- Emergency Driver Assistant
- Autonomous Emergency Braking
- Driver Monitoring System
- Intersection Assistant
- Lane Centering
- Lane departure system with auto steering
- Lane Departure Warning
- Turning Assistant
- Vehicular Communications System
- Glare-free high beam and pixel light

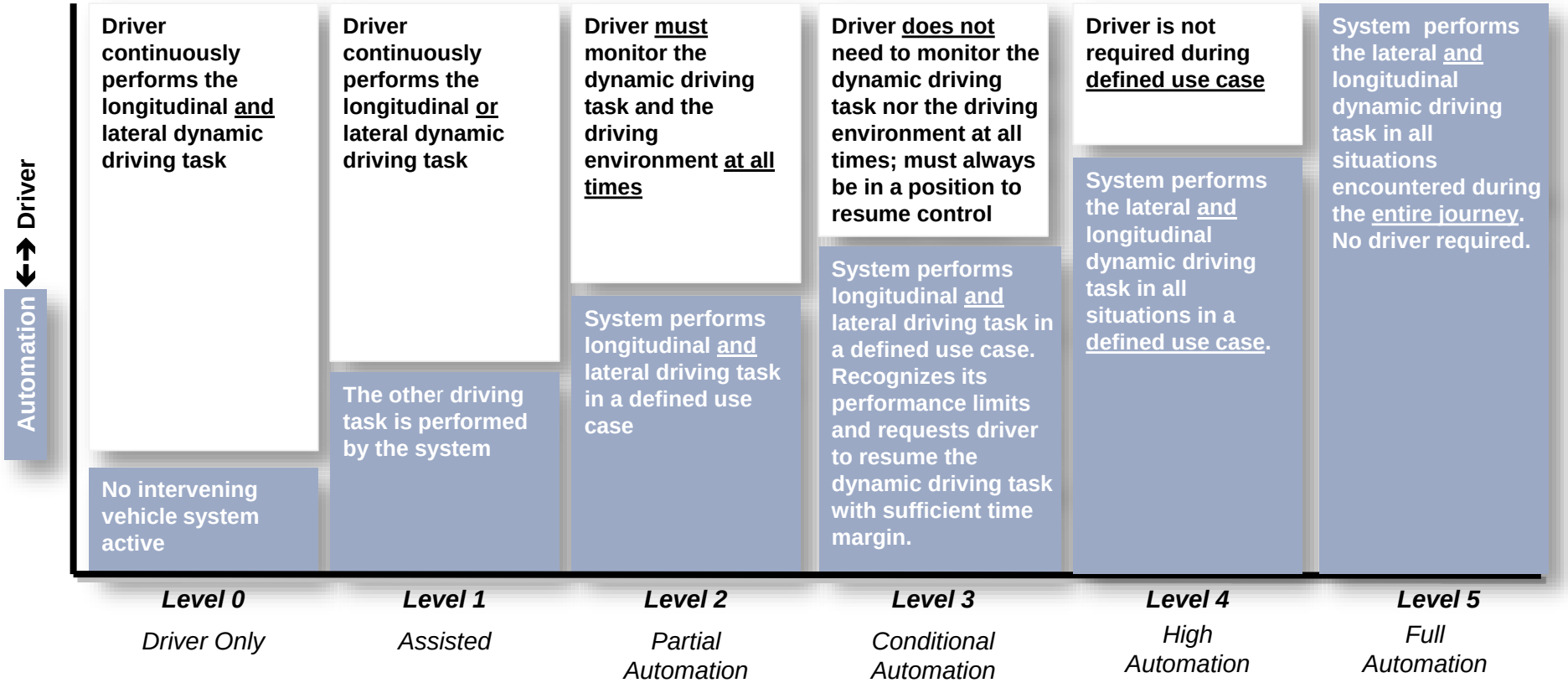
TED 28/P6 - PANEL ON ADAS (IN PROCESS)

Standard formulation Deadline

JUL' 2022

Innovation • Service • Excellence

Levels of automated driving (SAE J3016)



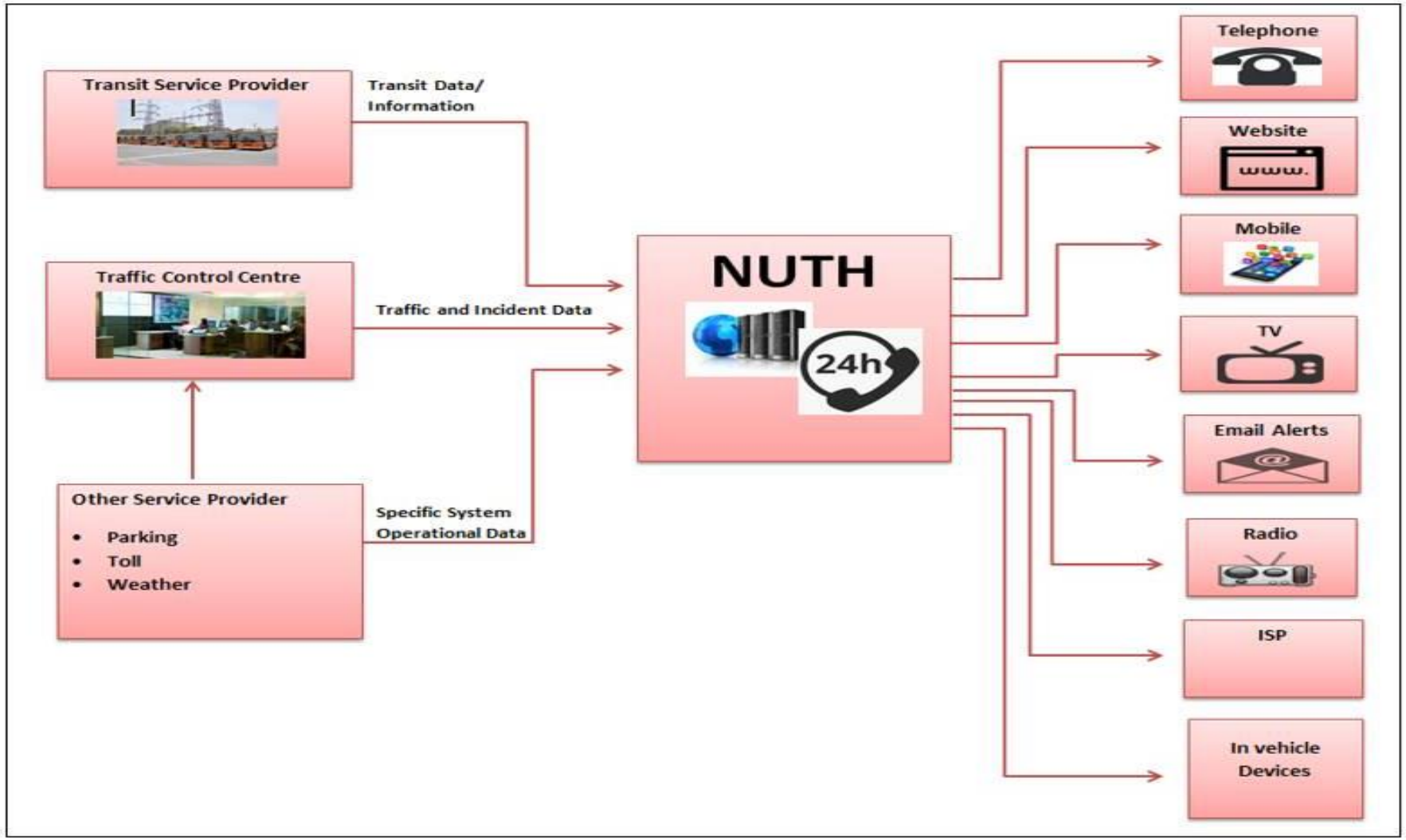
In first phase, we believe, India will be able to reach up to Level 3 of automation.

TED 28/P4 - PANEL ON TRAVELER INFORMATION SYSTEM (IN PROCESS)

Standard formulation Deadline

DEC' 2021

Basic System Architecture Example

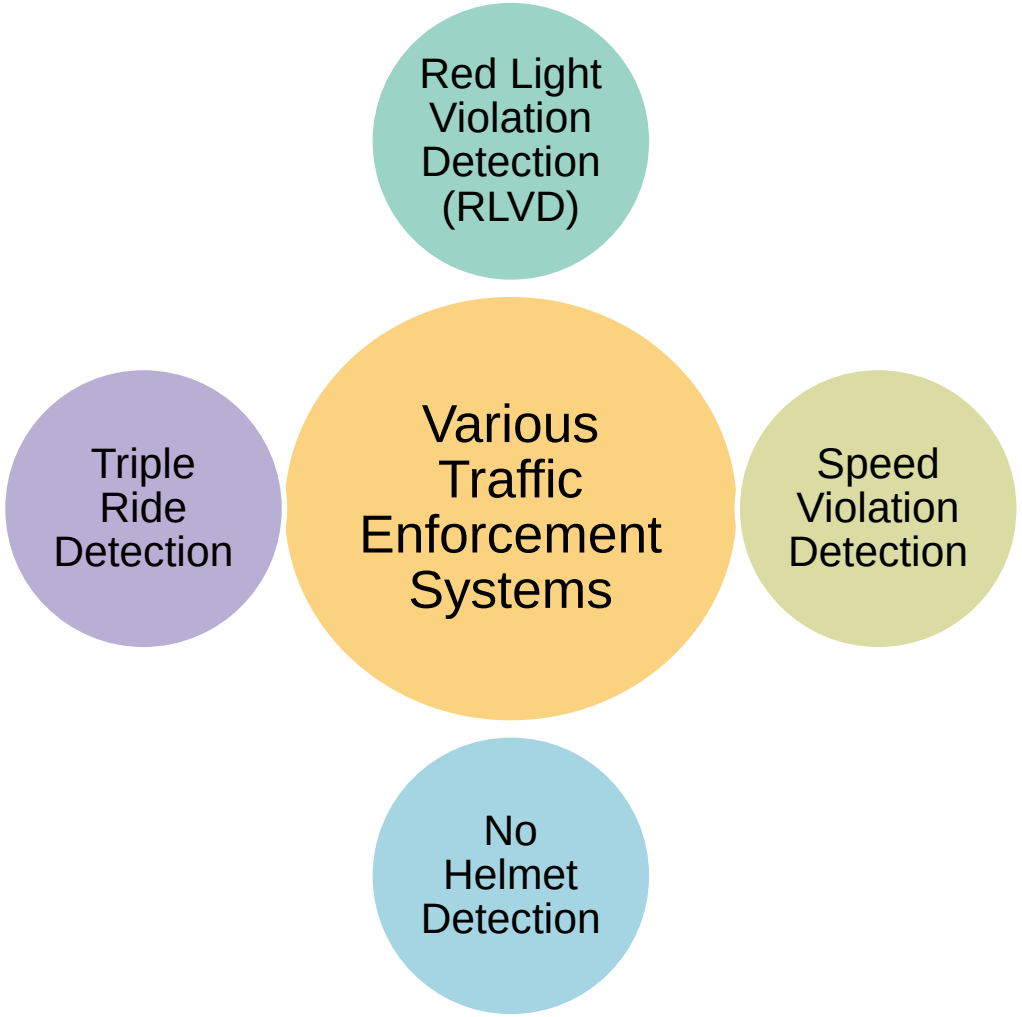


Suggested Architecture for NUTH

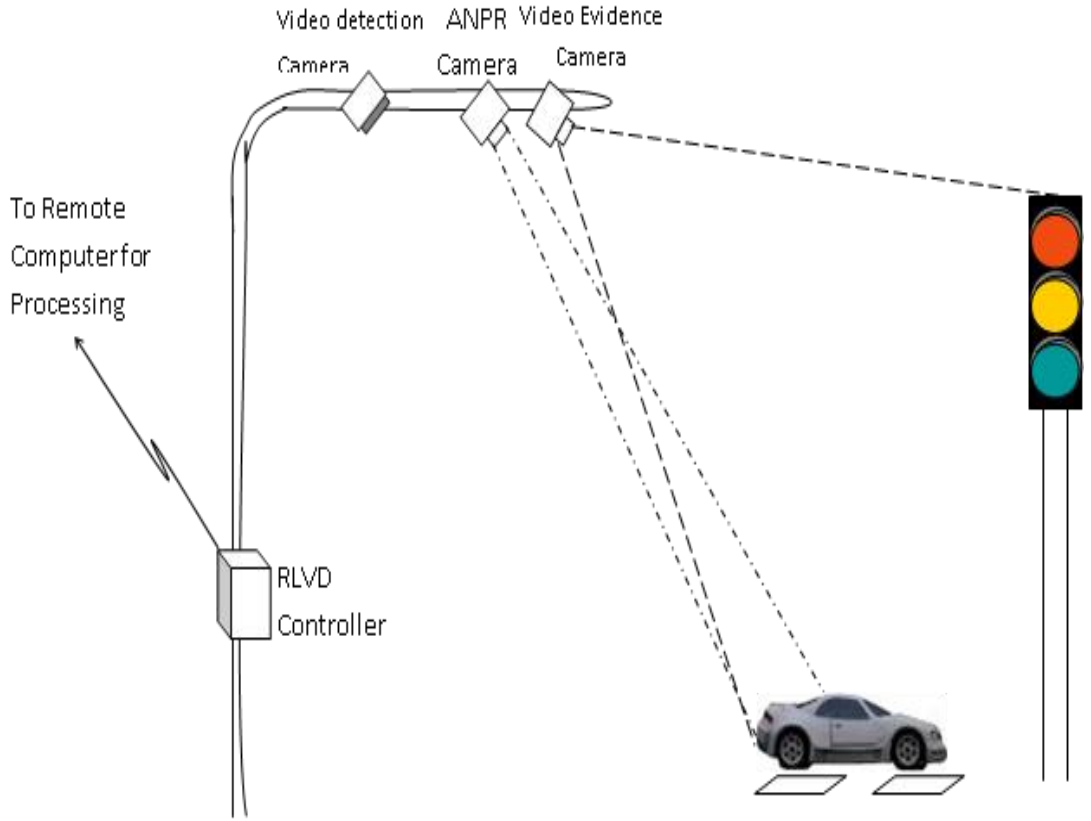
TED 28/P2 - PANEL ON TRAFFIC MANAGEMENT (IN PROCESS)

Standard formulation Deadline

DEC' 2021



Basic System Architecture for RLVD



CONCLUSION

- **ITS Standardization work is going efficiently under TED 28**

Published Standards:

1. IS 16490: Led Destination Board System For Buses — Specification
2. IS 16833: Automotive Tracking Device & Integrated Systems
3. IS 16722: Radio Frequency Identification (RFID) System for Automotive Applications — Specification
4. IS 17270: Reverse Parking Assist System (RPAS)

Standards in Process:

1. TPMS (Tyre Pressure Monitoring System)
2. ADAS (Advance Drive Assistant System)
3. Traveler Information Systems
4. Traffic management
5. Electronic Ticketing Machine
6. Cyber Security and Functional safety of Road Vehicles
7. Bus ITS
8. RFID Application for School Buses

- **Any New Topic under ITS can be Proposed for standardization**

Thank You