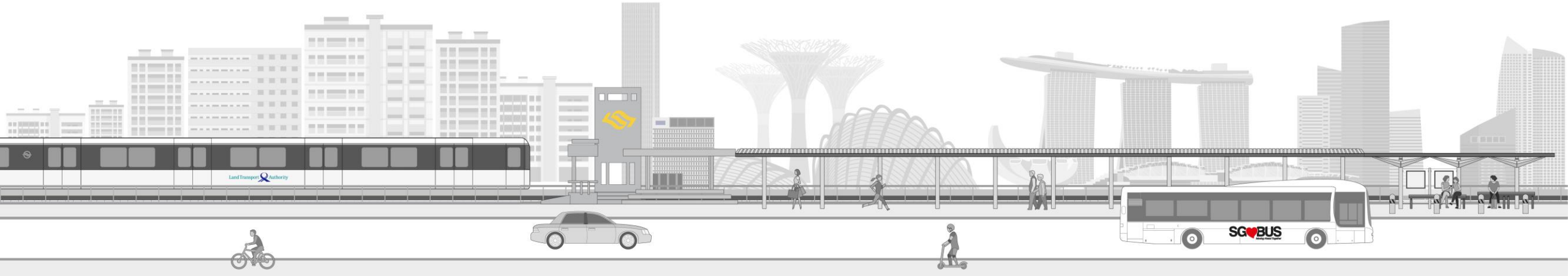
Singapore

Vehicle Type Approval System
and
AV Frame Work

Date: 26 January 2021



Vehicle Engineering Sub-Group

Vehicle Approval & Control

- Regulate vehicle safety and implement vehicle safety initiatives/control measures
- Ensure that new and in-use vehicles for use on public roads comply with construction, safety and roadworthiness requirements through:
  - Pre-registration approval (type approval) of new motor vehicles
  - Periodic inspections and enforcement inspections
  - Vehicle recall monitoring and vehicle scrapping

Vehicle Technology & Standards

- Keep abreast of advancement in vehicle technology, review vehicle safety standards and technical regulations to ensure that they remain current and relevant
- Support Autonomous Vehicle (AV) and Electric Vehicle (EV) trials on public roads
- Provide technical support and inputs to other Divisions and agencies (e.g. TP, Policy, TI(AV), EMSPO, CETRAN, MTI, NEA, etc.)
- Participate in international and regional meetings on vehicle safety standards harmonisation

Vehicle Approval & Control Division

Vehicle Approval & Control Division

Mission

To ensure that new and in-use vehicles for use on public roads comply with safety and exhaust emission standards

Key Activities and Operations

- Regulates LTA-Authorised Inspection Centres (AICs) for periodic inspection of vehicles under the Road Traffic Act
- Administers type-approval regime for new vehicle models
- Administers Enforcement Inspection of non-compliant vehicles
- Administers Vehicle Recall regime
- Administers Service Level Agreements (SLAs) with AICs for pre-registration inspection, change of vehicle particulars inspection and enforcement inspection of vehicles
- Administers SLAs with 4 LTA-appointed scrapyards operators for scrapping of de-registered vehicles
- Regulates technical requirements for Power Assisted Bicycles (PABs) and oversees the PAB type-approval and sealing

Vehicle Approval System

Vehicle Approval

- Ensure vehicles registered for use in Singapore meets vehicle safety and exhaust emission requirements
- Every new vehicle make and model must be approved before it can be registered. Managed via the Vehicle Inspection & Approval System (VITAS)
- Submissions from motor dealers:
  - Vehicle manufacturers' certifications/ test reports
  - Compliance with internationally-recognized standards
    - Vehicle safety standards e.g. UNECE Regulations, JIS, ADR, FMVSS
    - Prevailing exhaust emission standards set by the National Environment Agency for petrol and diesel-driven vehicles
- At least one unit to undergo pre-registration inspection

Vehicle Inspection & Type Approval System (VITAS)

- ✓ Web-based system
- ✓ Incorporates workflow and imaging technologies
- ✓ Facilitate end-to-end management of vehicle approval application and inspection processes from the point they are received until they are approved
- ✓ Linked to AICs & motor dealers

VITAS Workflow

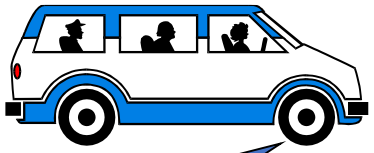
Apply for Netrust Token login

Users

- Motor Agents
- Local Builders
- Parallel Importers

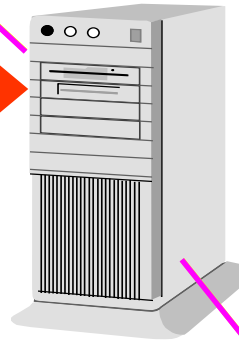
E-submission of Application

Email Approval Letter



Vehicle Inspection at any AICs

Internet



LTA

Manage workflow processes

Data storage and analysis

Retrieve tech info

Check documents

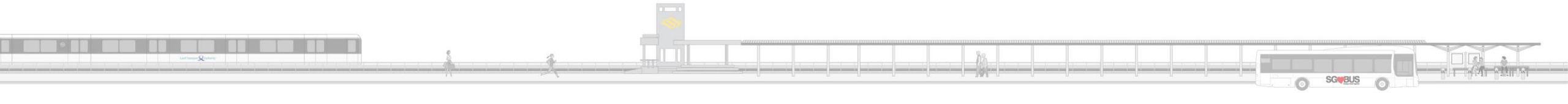
Inspection Centres

Access VITAS to retrieve vehicle's technical info

E-submission of inspection results

Browse Inspection results

Vehicle Technology & Standards Division



VTS's Mission

Set and review vehicle safety standards, rules and regulations and keep abreast of new vehicle technologies, so as to improve vehicle and road safety in Singapore

VTS's Functions

- Build up knowledge on technological advancements in vehicle technology; and international vehicle safety standards, rules and regulations

- Set and review vehicle safety standards, rules and regulations

  - ✓ Autonomous Vehicles (AVs)
  - ✓ Electric Vehicles (EVs)
  - ✓ Consolidation of existing rules relating to the construction and use of motor vehicles

- Provide technical assessment on new standards & regulations for our vehicles

- Provide technical support on new vehicle technologies to PT/Policy/Electro-Mobility Singapore Programme Office (EMSPO)/Autonomous Vehicle Programme Office (AVPO) Groups/Divisions and other Government agencies

- Establish communication channels to create public awareness on vehicle engineering issues

Vehicle Technology's Functions

- Assess AVs for compliance with vehicle standards and construction-related rules prior to allowing them for trials and deployment on public roads

- Drive set up and management of **C**entre of **E**xcellence for **T**esting and **R**esearch of **A**utonomous Vehicles-**N**TU (CETRAN)'s projects related to functional safety, performance evaluation and standards for AVs

- Design AV test framework, work with CETRAN to develop tests and verification standards for AVs

- Support AVPO in the evaluation of AV trial/deployment proposals

- Advise other agencies on AV trials (e.g. GBB, SMRT, SDC)

Vehicle Technology's Functions

- Monitor progress of AV trial participants
- AV accident reporting and investigation
- Work with outsourced partners on managing the operations of the AV test circuit
- Coordinate vehicle engineering issues related to AVs between internal, external agencies and CETRAN
- Support the development of AV-related regulations
- Keep abreast of global developments on AV regulations and standards

Framework for AV Trials

- Trial vehicles that do not fully comply with the technical requirements / safety standards can be permitted exemptions
  - ✓ Basic vehicle construction and safety requirements must still be met
    - ❑ E.g. effective brakes, position lamps, headlamps, direction indicator lamps, brake lamps, reverse lamps, etc.

- Unregistered AVs approved to conduct trials on public roads will be issued with AV Authorisations
  - ✓ Licenses are issued with conditions such as:
    - ❑ Minimum insurance coverage for third party liability against death of or bodily injury to any person, and property damage
    - ❑ Safety driver required to hold valid local driving license, have a clean driving record and training in AV operation given by AV technology developer
    - ❑ Each AV must maintain a black box data recorder and log of AV testing activities
    - ❑ Submit progress reports and accident report (when required)

Trials for Autonomous Buses and Shuttles

Fixed & Scheduled Services

Autonomous Vehicle Trials @ NTU-CleanTech Park

Autonomous Bus Trials @ potential JTC sites, e.g. NTU-CleanTech Park

ST Engineering Land Systems

NANYANG TECHNOLOGICAL UNIVERSITY

Energy Research Institute @ NTU

Autonomous Shuttle @ Gardens by the Bay, SAFTI

Gardens by the Bay

ST Engineering

Point-to-Point Mobility on-Demand Services

Autonomous Vehicle Mobility-on-Demand Trials @ one-north

APTIV

SMART

Autonomous Shuttle @ Sentosa

sentosa

Sentosa Development Corporation

ST Engineering Land Systems

- Partnership between MOT-SDC-ST
- Trials on mixed-use roads
- Fleet management system

Launch of CETRAN

On 1 August 2016, CETRAN was launched to:

- build up technical capabilities and knowledge in the testing and certification of AV capabilities
- to facilitate the drafting of regulations to allow eventual deployment of AVs on public roads

NTU is appointed by LTA to host CETRAN.

The test circuit, jointly developed by JTC and LTA, is located at CleanTech Park and will also support these AV testing and certification activities.

CETRAN Partners:

TUV SUD, TUM CREATE, BMW, TNO

Land Transport Authority – We Keep Your World Moving

jtc – Breaking New Ground

NANYANG TECHNOLOGICAL UNIVERSITY

Vision:
To position Singapore as a renowned AV Knowledge and Research Centre to catalyse the testing and certification of AV Technology for urban cities

Thank you

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WeKeepYourWorldMoving

LTAsg

LTAsg

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