Singapore moves ahead on smart mobility - Autonomous scheduled and on-demand public transport by 2022; first AV test centre opened

BY: PRIYANKAR BHUNIA

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The autonomous on-demand services will enhance first and last mile connectivity and will be particularly useful for the elderly, families with young children and the less mobile.

Above photo: Autonomous shuttle at the new CETRAN AV Test Centre/ Credit: LTA (from LTA’s Facebook page)
The Ministry of Transport (MOT) and the Land Transport Authority of Singapore (LTA) announced today that autonomous scheduled buses and autonomous on-demand shuttles will serve commuters in Punggol, Tengah and the Jurong Innovation District (JID) in Singapore from 2022.

LTA will pilot the deployment of autonomous vehicles in these districts to provide convenient first-last mile connectivity for residents, workers and students. The pilot deployment is expected to provide important insights into how the deployment of AVs can be scaled up across Singapore, as well as develop new towns and refurbish existing ones to facilitate the mass deployment of AVs.

The autonomous scheduled services will complement human-driven public buses, and will initially travel on less crowded roads. The autonomous on-demand services are intended to enhance first and last mile connectivity in and around Punggol, Tengah and JID. These are expected to be particularly useful for the elderly, families with young children and the less mobile, who can hail the services via their mobile phones. On-demand shuttles can also be used to serve the Seletar Aerospace Park.

In addition to intra-town bus services, LTA is also exploring the use of autonomous buses for express transit links to connect the North-East Line to the North-South, East-West and Thomson East Coast Lines.

**Inputs sought from industry and research institutions**

MOT and LTA has also launched a Request for Information (RFI) to seek inputs from the industry and research institutions on the key requirements and enablers needed for the successful pilot deployment of AVs.

To facilitate the preparations for the pilot deployment, RFI respondents are invited to submit inputs on various aspects such as concepts of operations (e.g. how the AV fleets can be optimally deployed), physical infrastructure requirements (e.g. space requirements for depots and other facilities) and system requirements (e.g. the fleet management system required). The RFI will close on 31 May 2018. A briefing to industry and research institutions will be held on 8 December 2017.

**Singapore’s first AV test centre**

Singapore's first autonomous vehicle (AV) test centre was also opened today. The new 2-hectare test facility at JID, Singapore’s largest living lab, has been jointly developed by LTA, Nanyang Technological University (NTU) and JTC Corporation. It supports the Centre of Excellence for Testing & Research of AVs – NTU, in spearheading research for the safe deployment of AVs on Singapore’s roads. As there are currently no existing international test standards or international certification bodies for AVs, it is hoped that CETRAN will anchor Singapore’s position in supporting the testing and eventual widespread deployment of AVs.

Designed to replicate Singapore’s roads, the CETRAN AV Test Centre will allow AVs to be tested under real-world environments. The new CETRAN AV Test Centre is fully-equipped to ensure rigorous testing of the AVs’ communication and interaction with other vehicles, road infrastructure and elements as well as dispatch and routing
systems. To monitor the progress of AV testing, a network of seven 360-degrees CCTV cameras have also been installed to stream real-time footage back to the AutonOmous VehicLe Monitoring and Evaluation SystEm (OLIVE). Through OLIVE, LTA will be able to integrate data from AVs and the CCTVs to evaluate the readiness of AVs for public use.

The test circuit also features a rain simulator and flood zone to test the AVs’ navigation abilities under different weather conditions. It also has pedestrian simulators for testing scenarios such as aggressive driving and interactions with other road users, including cyclists and users of Personal Mobility Devices.

ST Kinetics and NTU ERI@N have plans to commence their autonomous bus trials at the CETRAN AV Test Centre next year. Together with NTU, CETRAN will work closely with industry partners such as Siemens and SystemX to explore various areas of AV research. This includes exploring support infrastructure for AVs such as sensors and signalling systems, and perform independent verification of autonomous vehicles through computer simulations.

CETRAN also inked partnership agreements with four organisations during the ceremony. They are PTV Asia-Pacific Pte Ltd, a leading corporation in traffic and transportation solutions, the National Physical Laboratory, United Kingdom’s largest applied physics organisation, and NXP Semiconductors Singapore Pte Ltd, global automotive semiconductor supplier in secure connected cars, and Diamond Energy for energy management technologies for electric autonomous vehicles.

Coordinating Minister for Infrastructure and Minister for Transport, Mr. Khaw Boon Wan, officiated the opening of the CETRAN AV Test Centre this morning, and experienced the smooth commute on board an AV.

**Smart Urban Mobility solutions part of continued Smart Nation efforts**

All this is part of Singapore’s continued Smart Nation efforts to develop Smart Urban Mobility solutions that leverage data and digital technologies to enhance the public transport commute.

Minister Wan, said, “AV technology can greatly enhance the accessibility and connectivity of our public transport system, particularly for the elderly, families with young children, and the less mobile. Through the pilot deployment, we can gain insights into how we can design infrastructure, organize services and formulate regulations to better facilitate the safe use of AVs in Singapore.”

“The pilot deployment will take us into the next phase of the roadmap set out by CARTS for the deployment of AVs in Singapore, when we begin to progressively deploy AVs as a form of public transport in our towns. Safety and accessibility will be our top priorities,” commented Mr. Loh Ngai Seng, Permanent Secretary for Transport and Chairman of the Committee on Autonomous Road Transport in Singapore (CARTS).

Previously, in August 2017, LTA called a tender to seek proposals from the industry to trial on-demand, dynamically-routed public bus services. In April this year,
LTA signed a partnership agreement with ST Kinetics to develop and trial autonomous buses. This was the fourth such agreement signed, in addition to LTA’s ongoing partnerships with the Energy Research Institute @ NTU (ERI@N) to develop and trial autonomous bus technology, as well as with Delphi and nuTonomy to conduct autonomous mobility-on-demand trials.

Singapore’s first Smart Mobility consortium was launched in January 2017 to test new tech on NTU campus, bringing together 12 industry partners.