NTU and NXP launch smart mobility test bed in Singapore

Zafirah Salim | April 10, 2015

The two entities aim to setup a four-year Vehicle-to-Everything (V2X) test bed on NTU campus to develop smart and secure V2X applications.

Nanyang Technological University (NTU) announced today that it is working together with NXP Semiconductors to build a living test bed for smart cars and traffic systems on the NTU campus in Singapore.

Supported by the Singapore Economic Development Board, this S$22 million research initiative will be led by NTU's School of Electrical and Electronic Engineering and NXP.

Under this partnership, both NTU and NXP will develop and test advanced Vehicle-to-Vehicle and Vehicle-to-Infrastructure technologies over the next four years. Also known as Vehicle-to-Everything (V2X), this new technology enables wireless communication between vehicles, as well as with intelligent roadside infrastructures such as traffic cameras and traffic lights.

According to Drue Freeman, Senior Vice President of global automotive sales and marketing at NXP, additional roads, tunnels and overpasses will not solve the traffic challenges in global megacities in the long run. What we need instead is more intelligent transport systems.

"Wireless communication technologies like V2X will bring significant benefits to society, saving lives by avoiding road traffic accidents as well as limiting congestion, travel time and carbon emissions. With this joint initiative with NTU and other leading industry partners, we are embracing an opportunity to make the secure, smart connected city a reality sooner and bring Singapore to the forefront of smart mobility innovation," he said.

V2X pushes new frontiers in mobility

In a V2X demonstration held at Nanyang Executive Centre earlier today, three connected cars were shown to interact directly with one another and exploit real-time data from each other and the roadside infrastructure.

The intelligent V2X system, which is capable of wirelessly collecting and analysing data from other vehicles and the surrounding smart infrastructure over a distance of up to two kilometres, will ultimately be required to enable
widespread adoption of fully autonomous driving.

This technology improves road safety and traffic flow by giving drivers advanced warning of upcoming hazards such as dangerous road conditions, unexpected traffic jams, approaching emergency vehicles and road works - long before they enter the drivers’ field of vision or become detectable by other Advanced Driver Assistance System (ADAS) sensors.

Besides having the ability to receive information from intelligent road signs, V2X-capable vehicles can also automatically recognise the operating cycle of traffic lights.

According to a study by the U.S. Department of Transportation, V2X safety functions can reduce multi-car accident figures by more than 80 percent.

**Smart Mobility test bed by end 2016**

The Smart Mobility test bed is expected to be fully implemented by the end of next year, according to Professor Lam Khin Yong, NTU's Chief of Staff and Vice President for Research. By then, the campus-wide V2X infrastructure will comprise more than 100 vehicles and 50 roadside units.

"It will offer a unique platform for companies to bring in their innovative ideas, to develop solutions using our campus as a living laboratory, and eventually to commercialise such advanced technology solutions," he said.

In addition, NTU and NXP said that they want to invite partners such as high-tech companies, research organisations, academia and government agencies to participate in this test bed so as to build a Smart Mobility Consortium together. This proposed consortium is aimed at researching and testing secure, smart connectivity and mobility solutions that can improve the traffic flow in cities, avoid road accidents and enhance the user experience for mobility services.

Beyond the test bed, NTU will also collaborate with NXP to work on research projects consisting of seven core areas critical to the advancement and real world adoption of V2X. These include the enhancement of V2X communications for maximum reliability, security of systems against potential cyber threats, as well as protection of drivers' personal data.

This collaboration will also pave the way to realise Singapore's Smart Mobility 2030 vision to optimise transport systems and enhance commuter travel experience with the latest advancements in transport technologies.

"Over the past year, we have started to transform NTU into a living lab, starting with our EcoCampus initiative, which saw the deployment of Singapore's largest solar power plant, the test bedding of various electric vehicles, and the installation of smart building technologies," said Professor Lam Khin Yong, NTU's Chief of Staff and Vice President for Research.

"This partnership with NXP is another big step forward in the transformation of the NTU campus, as the university continues to develop next generation technologies that will contribute to Singapore's smart mobility eco-system and network," he added.