M1 Limited (M1) of Nanyang Technological University, Singapore (NTU) Singapore is collaborating to improve Singapore’s best-of-class connected vehicle (C-V2X) research and testbeds — a first of its kind in Singapore — as part of Singapore’s ongoing efforts to transform into a global innovation hub for research in connected mobility.

C-V2X communications are used to enhance safety by relaying real-time traffic-navigational and hazardous information to users in advance. It can send traffic warning notifications at road junctions, which helps optimize road usage by reducing traveling time and maintaining the flow of traffic.

M1 will provide the infrastructure for a 5G connected motoring testbed and try to deploy by late Q3 this year several 5G base stations for C-V2X communications at the NTU Campus. The M1 Cloud: The connected cloud will deliver ultra-fast and reliable low-latency communications over a wider coverage area. The network’s reliability is further improved by massive Multi-Input Multi-Output (MIMO) that can support hundreds of thousands of onboard vehicles including transport infrastructure such as traffic lights.

This also allows industry partners to co-develop and test C-V2X connected motility solutions for a range of safety-related use cases such as collision avoidance, real-time traffic routing, and network security. C-V2X equipment will be installed in state-of-the-art autonomous vehicles that put the NTU Smart Campus.

This enables vehicle localization tests in a real-world environment and M1’s research assessment for C-V2X communications. Industry partners will also be invited to explore the integration of this technology with autonomous vehicles, traffic infrastructure, and related industries.

Supporting Singapore’s push towards a smart urban-connected mobility development, Minister of Communications and Information, Mr Yaacob Ibrahim announced the launch of the NTU Connected Smart Mobility Testbed to research, develop, and demonstrate new connected motility solutions alongside industry. This $2 billion testbed which spans the 200-hectare NTU Smart Campus, will put together several successful development and tests of transportation technologies using the international 5G/4G-airwaves standard for vehicular use.

Dr Marsden Sim, Chief Technical Officer, M1 said, “By being Singapore’s first to deploy a 5G network for C-V2X communications, this will serve as a beacon to M1 to develop its technical competency and strengthen its readiness in harnessing new 5G networking paradigms. Today’s announcement of NTU will underpin the significance of developing and allowing students to participate in experimental 5G/4G applications in real-world scenarios. M1 is working closely with technology innovators and leaders for Singapore’s Smart Nation journey.”

NTU Vice President for Research Professor Lar-Khin Yong said, “NTU is a world leader in smart mobility solutions and has partnered top companies like the VinAs, the BMW Group, the Bosch Group’s Blue Solutions, and Mobility-as-a-digital technology innovators for autonomous vehicles, electric vehicles and multi-modal mobility solutions. Today’s announcement sets a new benchmark in pushing the boundaries of connected motility solutions at the NTU Smart Campus, especially the expanding 5G/4G connectivity. Our partnership with M1 will leverage the vast 5G/4G cellular communications technology and integrates them into our existing 200-hectare testbed which will enhance real-world safety and reliability as notifications can be sent to users almost immediately. A connection is the future of smart transportation. 5G/4G solutions will offer optimal road usage by reducing traveling time and minimizing the risk of accidents for a safer and more enjoyable commute."

Mr Lim Kock Xiang, Assistant Managing Director, Singapore Economic Development Board said, “5G-enabled connected motility solutions have the potential to be at the forefront of driving innovation and impactful solutions for smart urban mobility. With world-class research universities and a rich ecosystem of industry players, Singapore is the ideal testbed for our connected motile testbeds to develop and commercialise the next generation of mobility solutions.”

Totev, NTU has completed 122 research projects with leading industry partners. For more information and details on these innovative research systems in the connected motility system. It provides drivers with advance warnings of road hazards such as when another car stops unexpectedly or when a pedestrian crosses the street and can prevent accidents. This will allow drivers and users of personal mobility solutions to be better informed.

Besides cellular communications technologies for vehicles on-road, NTU is also working on the development of drone smart traffic management. This will get better localisation and positioning on-board, and ensure a smoother flow on an otherwise congested road.

M1 has also made significant investment into R&D development and technology, and recently won a 50 Tri-Technology Grant Call by the Infocomm Media Development Authority (IMDA) and PESA Call for project proposals for 5G/4G applications, including vehicular-to-vehicle and infrastructure-to-vehicle communications. M1 has also signed a memorandum of understanding (MOU) with the Singapore University of Technology and Design (SUTD) to co-develop a joint research partnership around the remote-operation of tactical robots using 5G technology. These 5G technology will further strengthen the nation's 5G ecosystem, while driving Singapore’s Smart Nation transformation journey.

Mr Tan Kiat How, Chief Executive, IMDA said, “In recognition of our strong industry partnerships working to develop impactful services that benefit to our businesses and consumers, we are excited to see the kind of innovation that the 5G/4G ecosystem in Singapore can bring about.”

M1 and NTU Singapore ink partnership to develop Singapore’s first 5G C-V2X research testbed and trials.