



Joint News Release

Singapore, 20 May 2016

SMRT and NTU launch joint research laboratory to boost rail reliability

SMRT and Nanyang Technological University, Singapore (NTU Singapore) have launched a joint research laboratory to develop technology-driven solutions to build an urban rail system that is even more resilient and reliable as Singapore moves towards a car-lite future.

The new **SMRT-NTU Smart Urban Rail Corporate Laboratory** was officially launched today by the Coordinating Minister for Infrastructure and Minister for Transport, Mr Khaw Boon Wan.

The \$60 million Corporate Laboratory will integrate the rail operations and engineering capabilities of SMRT with NTU's research strengths in engineering.

The joint laboratory is supported by the National Research Foundation (NRF) Singapore under its Corporate Laboratory@University Scheme, which funds key corporate laboratories set up through public-private partnerships.

It is aimed at driving the effective translation of research into solutions that have direct relevance in addressing our national needs and meeting global challenges. The SMRT-NTU Smart Urban Rail Corporate Laboratory is the first laboratory under this scheme to focus on rail transport capabilities.

NRF Chief Executive Officer Prof Low Teck Seng said, "The SMRT-NTU Smart Urban Rail Corporate Laboratory is yet another collaboration under NRF's Corporate Laboratory@University Scheme that will enable Singapore universities to carry out industry-relevant research. We are hopeful that the two partners will establish a strong collaboration that enables research to be translated into eventual benefits not just for the industry, but also Singaporeans."

NTU President Professor Bertil Andersson said, "Singapore's rail system is an important pillar supporting public transportation and economic growth, and it is important that it remains reliable and sustainable. This joint lab will leverage NTU's

established strengths in engineering and technology to develop innovative rail solutions that will not only enhance Singapore's rail system but benefit the global transportation industry."

SMRT President and Group Chief Executive Officer, Mr Desmond Kuek, said, "The SMRT-NTU Corporate Laboratory marks a significant milestone in SMRT's journey to improving rail reliability and delivering commuter-centric services. It is an excellent collaborative platform that brings together the operational and engineering experience of SMRT, and the scientific and research capabilities of NTU to deliver operational solutions that better serve the needs of our ageing and expanding rail transport network. These innovations will help solve some of the more intractable problems faced today, as well as proactively address the anticipated future challenges of a sustainable rail system that is safe and reliable for all."

The SMRT-NTU Corporate Laboratory will focus on two complementary research tracks in the development of innovative urban rail solutions. Projects include developing real-time condition monitoring systems and enhancing the reliability of rail infrastructure and assets.

Track One: Eliminating problems before they occur

The first research track focuses on developing better detection methods and monitoring systems so that potential issues can be addressed quickly and accurately, even before they happen.

With real-time data from sensors which monitor critical rail equipment, timely and accurate decisions can be made to address a fault before a potential service delay.

For example, new condition monitoring sensors such as thermo-acoustic sensors which detect temperature fluctuations within materials, can be used to find cracks and defects that lie deep within components such as rail foots and joints.

Through 3D printing, these sensors can also be customised to fit inaccessible spots.

This research track aims to allow components and parts to be repaired or replaced immediately on the same day. This greatly reduces the need to disrupt train services during operation hours and prevents technical issues from escalating into a problem.

Track Two: Enhancing reliability of existing rail assets

The second research track aims to enhance the reliability of existing rail assets by optimising maintenance and servicing processes.

By using prediction methodologies and analytical tools to produce accurate data, the life span of train components and systems can be better assessed.

For example, prediction-analytical methods will be used to accurately assess wheel-rail wear and fatigue, and vibration and structural stresses that affect the longevity of critical rail and train components.

Track Two's research projects will help in refining maintenance schedules to reduce potential problems, and ensure that train and track components are performing at their best.

Professor Lam Khin Yong, NTU's Chief of Staff and Vice President for Research, said, "The new SMRT-NTU corporate lab will pave the way towards developing next-generation urban rail technologies and nurturing professionals that will contribute to Singapore's smart mobility eco-system and network. This partnership also builds on NTU's strong track record of collaboration with local and multinational companies including ST Engineering, Rolls-Royce, and BMW Group."

Managing Director, SMRT Trains, Mr Lee Ling Wee, said, "Both research tracks supported by the SMRT-NTU Corporate Laboratory aim to strengthen the operational resilience of our rail network.

"By leveraging on the expertise of NTU, we hope to strengthen our current condition monitoring system capabilities and enhance the resilience of our rail infrastructure and trains. SMRT intends to integrate techniques from both complementary research tracks to improve rail reliability and better serve our commuters. The collaborative effort will also provide an opportunity to nurture our rail engineers and instil greater engineering passion while acquiring new knowledge and skills."

Nurturing next-gen professional engineers

NRF's Corporate Laboratory@University Scheme ensures that universities achieve impact by developing cutting edge solutions for problems faced by industries. The scheme, which promotes multi-party collaboration, also seeks to create employment opportunities in technology-driven industries and train a pool of industry-ready research manpower who can push the technology boundaries for these industries.

The SMRT-NTU Smart Urban Rail Corporate Laboratory will nurture engineering specialists in the rail industry who are prepared to tackle future national transportation challenges and develop innovative transportation solutions that can be used globally.

The joint lab will provide training opportunities for over 100 undergraduates, 35 graduate students and 60 researchers, across a broad range of specialisations.

END

Media contact:

Nur Amin Shah (Mr)
Manager, Media Relations
Corporate Communications Office
Nanyang Technological University
Tel: 6790-4714; Mobile: 8189-1029
Email: aminshah@ntu.edu.sg

Joanne Xiao (Ms)
Senior Executive, Media and Marketing
Communications
Corporate Information and Communications
SMRT Corporation Ltd
Mobile: 9822 0902
Email: media@smrt.com.sg

Hoh Suk Mun (Ms)
Senior Officer, Corporate
Communications
National Research Foundation
Prime Minister's Office
Tel: 6694-5036
Email: Hoh_Suk_Mun@nrf.gov.sg

About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,000 undergraduate and postgraduate students in the colleges of Engineering, Business, Science, Humanities, Arts, & Social Sciences, and its Interdisciplinary Graduate School. It has a joint medical school, the Lee Kong Chian School of Medicine, set up with Imperial College London.

NTU Singapore is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre on Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI), Energy Research Institute @ NTU (ERI@N) and the Institute on Asian Consumer Insight (ACI).

Ranked 13th in the world, NTU Singapore has also been ranked the world's top young university for the last two years running. The University's main campus has been named one of the Top 15 Most Beautiful in the World. NTU also has a campus in Novena, Singapore's medical district.

For more information, visit www.ntu.edu.sg

About SMRT Corporation Ltd

SMRT Corporation Ltd (SMRT) is Singapore's premier multi-modal land transport provider. Our core businesses are in rail operations, maintenance and engineering as well as in bus, taxi and automotive services. Complementing these are our integrated businesses in media and marketing, as well as properties and retail management.

We are committed to Service and Business Excellence as we strive towards our vision of "Moving People, Enhancing Lives".

For more information, visit www.smrt.com.sg

About the National Research Foundation (NRF) Singapore

The National Research Foundation (NRF) is a department within the Prime Minister's Office. The NRF sets the national direction for research, innovation and enterprise (RIE) in Singapore. It seeks to invest in science, technology and engineering, build up the technological capacity of our companies, encourage innovation by industry to exploit new opportunities that drive economic growth, and facilitate public-private partnerships to address national challenges.

Under RIE2020, NRF is committed to create greater value in Singapore from our investment in research, innovation and enterprise through 1) closer integration of research thrusts, 2) stronger dynamic towards the best teams and ideas, 3) sharper focus on value creation, and 4) better optimised RIE manpower. Visit www.nrf.gov.sg/RIE2020 for more details.