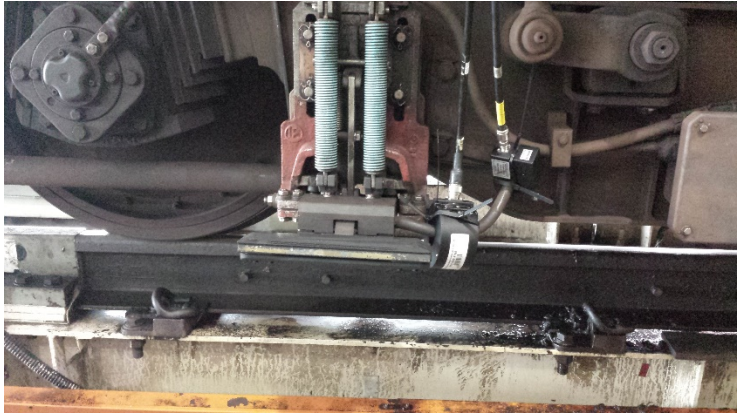## Fact Sheet on Featured SMRT-NTU Smart Urban Rail Corporate Lab Research Projects

Issued during a media briefing in conjunction with the Official Opening of SMRT-NTU Smart Urban Rail Corporate Laboratory on 29 August 2018.

S/N	Featured Rail Research Projects	
1		**Radio-Frequency Induction Technology to Detect Track Faults** A real-time condition monitoring system is currently being investigated and developed to monitor the electrical contact between the train and the track. Using a patented radio frequency inductive coupling technology mounted on the train, this system is able to pick up anomalies on the power rails and the running rails as the train travels along the network. Early detection will allow for quicker interventions by the engineers, reducing the risk of service delays due to track faults. A prototype has been developed and trial is expected to begin in the first quarter of 2019.
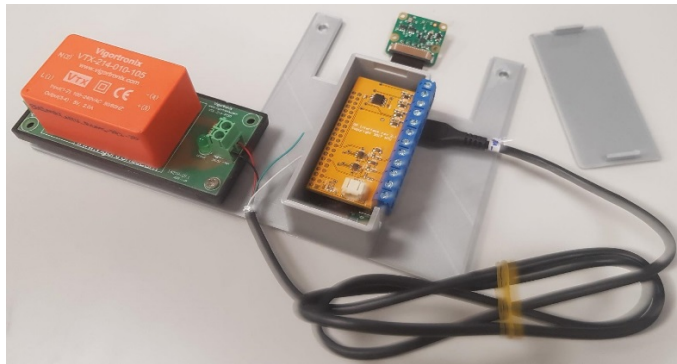
| 2 |
 | **Advanced Train Door Sensor System**

When mounted onto train doors, this sensor system is designed to identify train door faults. These sensors will record air pressure, door speed and supply voltage, and its purpose is to help facilitate engineers in identifying door faults and reduce the time required for troubleshooting.

The sensors also come with algorithms that aim to predict imminent train door failures, prompting for maintenance actions before a fault occurs. This condition monitoring system serves to reduce the risk of service delays due to train door faults and improve train service reliability in the long run.

The Door Sensor System has started live trials since June 2018 to evaluate its effectiveness. |

| 3 | | **Laser-Cladding Repair System for Worn Out Rails**

A high precision laser-cladding repair system that uses laser technology has been developed to repair defective rails along the tracks. This repair system can be mounted on wagon vehicles to perform rail steel repair works.

This laser-cladding repair system will make carrying out repair works less labour intensive and shorten the time taken to carry out the repairs to just a single night compared to three nights currently. This allows more repairs to be done during engineering hours so commuters are less affected by changes to train service hours, and resources can be redeployed for other engineering works to improve rail reliability.

This repair system is expected to be deployed for trial in 2019. |

| 4 |
 | **Automated Inspection System for Train Wheels and Axles**

Train wheels and axles are critical train components which are often tedious to inspect. A set of automated system is being developed to inspect train wheels and axles. This will improve train safety as structural checks can be done more thoroughly and frequently, providing early warning signals to potential defects.

Train Wheels
A set of rail-embedded sensor system is being investigated and developed to inspect the train wheels as the train returns back to depot. This allows trains to go through more frequent checks in an automated fashion.

Train Axles
An automated robot is being developed to inspect the train axles without the wheelsets being dismantled from the train. This automated robot will half the inspection time and improve reliability of inspection. |