News Release

Land Transport Authority
We Keep Your World *Moving*

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TOWARDS AN INNOVATIVE LAND TRANSPORT INDUSTRY ENABLED BY TECHNOLOGY AND A HIGHLY COMPETENT WORKFORCE
Up to 8,000 new public transport jobs by 2030, $25 million funding for mobility-related innovation and technology adoption

Co-ordinating Minister for Infrastructure and Minister for Transport, Mr Khaw Boon Wan, launched the Land Transport Industry Transformation Map (ITM) this morning. The ITM serves as the blueprint for growing and transforming the land transport industry into one that is enabled by technology and a highly competent workforce.

2   Developed by the Land Transport Authority (LTA) in close consultation with union and industry partners, the ITM ensures that the land transport industry and its workers continue to stay relevant despite long-term challenges such as an ageing population as well as land and fiscal constraints. The ITM also responds to disruptive technologies such as Autonomous Vehicles (AVs), Big Data and Artificial Intelligence, and harnesses their transformative potential as an opportunity to enhance the land transport system and create even better jobs for the industry.

3   To achieve our overarching vision for a people-centred land transport system by 2030 with more connections and better service for all, the Land Transport ITM has outlined numerous initiatives which leverage emerging technologies to make the land transport system smarter, drive productivity growth and deliver better services to commuters; as well as to future-proof the workforce through comprehensive programmes for up-skilling and re-skilling (see Annexes).

Up to 8,000 new public transport jobs by 2030

4   Today, about 123,000 people work in the land transport industry – this includes bus captains, bus mechanics, customer service officers, railway engineers, station managers, as well as taxi and private hire car drivers. Of that number, more than 21,000 are employed by the rail and public bus sectors to support the 5 million daily commuter journeys on public transport. With the expansion of our public bus and rail networks to meet Singapore's future needs, we expect to create up to 8,000 new public transport jobs by 2030 to support this.

5   LTA will work closely with our union and industry partners on initiatives that support the growth in public transport jobs. For example, LTA will carry out industry manpower planning to identify employment opportunities and formulate targeted workforce interventions. To attract, identify and manage the growing pipeline of talent, LTA will also partner with the industry to provide more enhanced and structured internships for students from Institutes of Higher Learning.

6   LTA will also continue to develop the capabilities of the workforce, particularly through up-skilling and re-skilling of our public transport workers. To ensure that these

workers can keep pace with industry developments, the Singapore Bus Academy and Singapore Rail Academy will offer new programmes mapped against the soon-to-be-launched Public Transport Skills Framework (PTSF)[1]. In addition, more Professional Conversion Programmes will be developed to equip mid-career switchers with the relevant competencies to pursue a successful career in the land transport industry.

$25 million funding for mobility-related research & technology trials

7   Through the Land Transport ITM, LTA will harness technology and innovation to improve productivity for our land transport workers and deliver a transport system that is safe, efficient, reliable and comfortable for commuters. For instance, the use of smart sensors and data analytics to monitor the status of railway systems for predictive maintenance will enable railway engineers to be more productive in their work, which translates into a smoother and more reliable ride for commuters.

8   LTA is also actively exploring how the use of automation and AVs can be applied in our land transport system to improve efficiency, reduce human error and deliver better services. For example, the introduction of robots and drones to inspect MRT and road tunnels will reduce the need for tedious manual inspections and free our engineers to focus on analysing the data captured. Autonomous buses and dynamically-routed, on-demand shuttles can also be deployed to enhance public transport by providing more responsive, efficient and convenient transport modes for commuters.

9   Moving forward, LTA expects the continuous adoption of technology and innovative solutions to play an integral part in the land transport industry's development. To further encourage mobility-related research and technology trials, LTA will set aside $25 million over five years for the Land Transport Innovation Fund to spur innovation and collaborative projects with industry partners.

10   LTA's Chief Executive Mr Ngien Hoon Ping said: "In developing the Land Transport ITM, LTA has consulted and engaged union and industry partners extensively. The close tripartite partnership we have built lays the foundation for the successful transformation of the land transport industry. Together, I am confident that we can implement our ITM well. With the Land Transport Innovation Fund, I hope to see even more innovative solutions emerge to shape the transport of tomorrow."

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[1] The PTSF is jointly developed by LTA, SkillsFuture Singapore and the public transport operators. It provides key information on the public transport sector and employment, career pathways, the various occupations and job roles, as well as existing and emerging skills required.

Land Transport Industry Transformation Map (ITM) Infographics
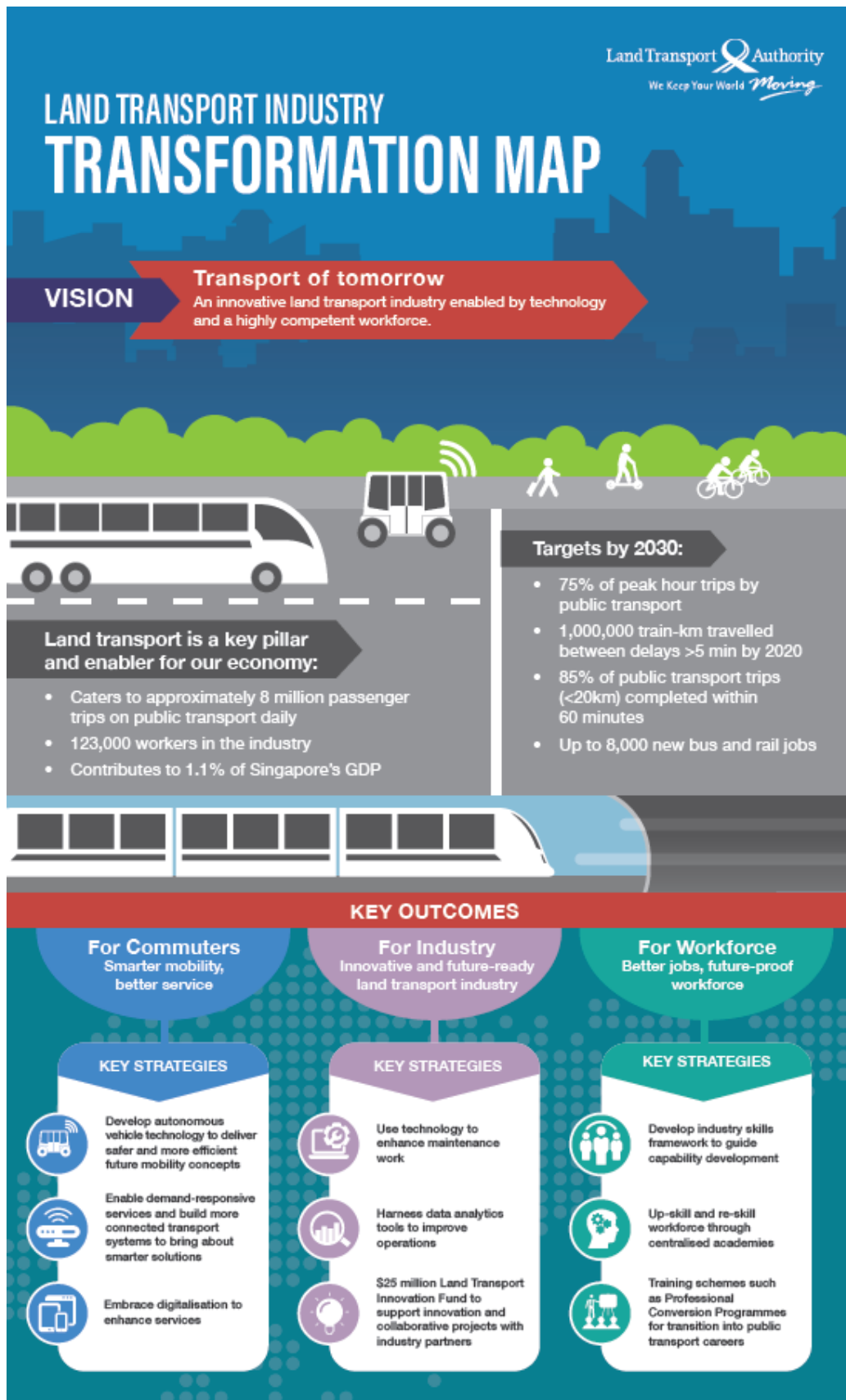
Land Transport Industry Transformation Map Initiatives

A. BETTER JOBS, FUTURE PROOF WORKFORCE

a) **Public Transport Skills Framework (PTSF):** Technological advancement has created areas of new and emerging skills. LTA, SkillsFuture Singapore (SSG) and the industry have jointly developed the PTSF to identify current and emerging skillsets, and map these against possible career pathways. The framework will help identify training gaps as well as guide the development of programmes to professionalise public transport workers and help them meet the changing demands of the workforce.

b) **Professionalising the workforce:** To help the workforce up-skill and re-skill to take on new and better jobs as the industry evolves, the government has set up specialised academies to cater opportunities for continuous learning and mastery.

    i. <u>Singapore Rail Academy</u>
    To meet the rail industry's long-term manpower needs, we launched the Singapore Rail Academy (SGRA) in February 2017 to build and deepen local rail engineering and research capacities. SGRA works with the industry and academia to build up research capabilities, certify the proficiencies of railway professionals, and promote careers in the rail industry.

    ii. <u>Singapore Bus Academy</u>
    The Singapore Bus Academy (SGBA) was launched in October 2016 to offer enhanced training through foundational, refresher and advanced modules for all bus professionals to support continual learning to deepening of skillsets.

c) **Close collaboration with National Transport Workers' Union (NTWU):** The future is not just about tapping on the latest technologies to find innovative and integrated solutions for land transport. It is also about nurturing the sustainable and mutually beneficial growth of the industry and the workers. Over the years, the NTWU has worked closely with the industry to engage workers and to enhance their employability through structured training and development programmes. To prepare the workforce for the next lap, LTA will continue to work closely with the NTWU to further develop worker's capabilities and help open doors to new and exciting career opportunities.

B. INDUSTRY UPGRADING AND PARTNERSHIP

a) **Research & Development:** To build up a critical mass of research capabilities and provide a platform to facilitate collaborative research, LTA has established a number of Transport Research Centres (TRCs). Currently, four TRCs have been established with NTU, NUS, SIT and SUTD to foster collaborative research and develop transport solutions.

b) **Building Local Enterprise Capabilities:** To develop local Small and Medium Enterprise (SME) capabilities, LTA will encourage SME participation in Government projects through the Government-Partnership for Capability Transformation (Gov-PACT) programme. This programme positions Government agencies as the lead organisations for SMEs and start-ups to work with to test-bed innovative solutions that have not yet reached market maturity.

C. SMARTER MOBILITY, BETTER SERVICE

a) **Rail Condition Monitoring:** Equipped with condition monitoring tools and advanced analytics, our rail systems will collect more extensive data to monitor the condition of the rail network in real-time. This will help to guide maintenance and repairs to address faults before they can impact operations.

b) **Automatic Track Inspection System:** Imaging sensors and laser scanners will be installed below train carriages to monitor track conditions in real-time, making it easier for the maintenance team identify track defects and rectify these quickly.

c) **Rail Enterprise Asset Management System (REAMS):** To facilitate condition monitoring, REAMS will consolidate and integrate information collected from all trains to better assess and predict the condition of the entire network and its components.

d) **Common Fleet Management System (CFMS):** CFMS allows bus operators track bus fleets in real-time. This empowers bus operators to better monitor and manage the efficient operations of all public buses across Singapore.

e) **Next-generation ERP:** With our next-generation ERP system, real-time, targeted traffic updates will be pushed to vehicles' on-board units, recommending alternative routes that are less congested in order to optimise road usage.

D. AUTOMATION

Autonomous vehicle (AV) technology has the potential to dramatically improve public transport. Singapore is exploring how AV technology can be applied to bring about new efficiencies and forms of shared mobility. Autonomous buses and dynamically-routed, on-demand shuttles will be deployed to enhance existing transport solutions.

E. SUSTAINABLE TRANSPORT

a) **Electric Car-Sharing Programme:** Launched in 2017, BlueSG is the largest electric car sharing service in Singapore. Each vehicle can travel up to 200km on a fully charged battery, and the cars are equipped with on-board information and GPS navigation systems.

b) **Electric Buses:** We will continue to explore the feasibility of electric bus deployments in Singapore. This follows LTA and the Energy Research Institute at Nanyang Technological University earlier assessment that the electrification of the public bus fleet offers the highest carbon abatement potential amongst the different vehicle fleets in Singapore.

F. INNOVATIVE & FUTURE-READY LAND TRANSPORT INDUSTRY

a) **Drones:** In the future, inspection of MRT tunnels will be faster and safer with the use of drones. Using such technology will free up engineers' time so they can focus on analysing the data collected to identify and address potential problems sooner.

b) **Planning for Land Transport Network (PLANET):** This data warehouse was developed by LTA to carry out advanced data analytics on travel patterns by car, bus and train. PLANET enables more accurate prediction of commuter travel patterns, which supports the development and fine-tuning of land transport models so that our transport planners can develop better transport policies.

c) **Digitalisation of Vehicle Services:** To provide the public with seamless and convenient access to vehicle-related services, LTA intends to provide more self-help services on its digital platforms in the coming years. This will allow vehicle owners to complete transactions securely, anytime and anywhere.