

How technology can make Singapore a car-lite society

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Modern cities are embracing new digital technologies, the power of data and artificial intelligence to wane populations off the car and onto a new range of more sustainable transport modes. Singapore is leading the way in this challenge with its new strategy to become “car-lite” by 2030

Easy access to high quality and efficient transportation infrastructure already makes Singapore one of greatest cities in the world to live and work. But the desire to attract the best talent and businesses from around the world has prompted Singapore to embrace a new challenge to become “car-lite” and boost public transport use to globally leading levels.

Singapore currently boasts a public transport mode share of 66%. Policies such as the Vehicle Quota System (VQS) have been limiting the use of private cars since the 1990s and Singapore leaders understand that, in such a small state, the continuous construction of new road infrastructure is unsustainable.

Instead the population is being weaned off the car, and the transition to public transport use is underpinned by a programme of investment to improve public transport infrastructure. The government’s new target is to achieve a public transport mode share of 75% during peak hours by the year 2030.

However, despite substantial effort over many years, Singapore is still seen as being too car centric in

comparison to cities like Hong Kong, which has an even higher public transport mode share of 88%. The challenge, therefore, is for Singapore to not only hit its existing targets but to also embrace new technology to accelerate the change towards a new “car-lite” future.

The new technology trends_

Digital technology will be at the heart of this new “car-lite” future, a concept in which individual car ownership will disappear to make way for public transport and car use as a service. Advances in this technology, particularly around the application of Artificial Intelligence (AI), are set to revolutionise all aspects of life in the future, including transportation. Transport is set to be one of the early winners from this technology revolution with autonomous vehicles (AV) now one of the most talked about products to be driven by AI. Technology giants Google, Tesla and Uber are already testing their fully automated vehicles, and smaller companies like nuTonomy and Delphi are now conducting their respective pilot tests in Singapore. Singapore leaders predict that

within 10 to 15 years the technology will be mature enough to be deployed widely¹.

The key to the use of AI technology across transportation will be dependent on "big data", a concept which is already having a major impact on our lives as our consumer buying, browsing and movement trends are analysed and capitalised on. Singapore's Committee on the Future Economy has already identified such data use as "an increasingly important source" for the future development of the economy.

These technologies will not only directly change our lives, but will also increasingly trigger new business models, as we embrace the sharing economy and use the power of data and communication technology to maximise the use of our infrastructure capacity.

China, for example, now plays a leading role in this new model as it starts to transform the sustainable development and lifestyles of its growing and urbanising population using the real time transport data and information which is now made publicly available across the nation's cities. For example, mobile phone apps, driven by this publicly available live data, now enable dock-less bicycles to be found, unlocked and shared. In return, the enormous amounts of travel and behaviour data collected from these apps can be further analysed, helping cities to better understand travel patterns, and enabling resources to be planned and utilised more efficiently in future. This has helped communities to abandon cars and traffic jams and switch back to the low carbon bicycle transport culture that was commonplace in the last century.

Singapore's transition to a car-lite society_

Singapore expects to use similar technology to transform its society to a new "car-lite" model. Having started on the path to secure this future with investment in major new public transport schemes, it has already seen a significant drop in private car numbers this year, down to an eight-year low of just over 550,000.

However, the use of technology underpins the new strategic plans being implemented, and will see

Singapore make a step change by 2030 to reduce this number even further.

Effective and forward-looking master planning is key to maximising the benefits of big data and technology. To achieve the "car-lite" model, the appropriate demand-supply balance of city must first be established.

A good example of this is the design of Singapore's second Commercial Business District now under construction in the Jurong Lake District. A number of major government agencies such as BCA and LTA have already re-located there or are planning to move there, highlighting the way that, with appropriate public transport options, such decentralized urban planning can reduce commuting times and distances, and so reduce the reliance on the private cars.

The use of big data is vital in the planning stage to help city planners understand and target the drivers for such changes in human behaviour in Singapore's context, and to optimize the city structure accordingly. For example, Uber has already published point-to-point real-time travel time information which is aggregated from its huge database. As such information and data trends build up; it will be more and more useful for planning ahead over various time horizons.

An efficient and reliable public transport system_

Providing good public transport links to connect people to these new developments not only drives people out of their cars but also creates the most efficient means to move people and achieves the lowest cost-per-capita. Singapore's LTA targets to expand its rail network to about 360km by the year 2030 and to develop a more efficient and integrated bus system that aims to improve journey quality, such as improve waiting time and enable seamless transfers for the bus commuters.

New technology is set to improve the reliability of this vital public transport. For example, driverless buses are expected on the streets as early as 2020, to enhance the efficiency and reliability of the system, as well as improve the level of safety.

However, achieving last mile connectivity for public transport passengers - moving people between their

¹ "Can autonomous vehicles replace human-driven ones?" The Straits Times, 15 May 2017

homes or work places to main transport nodes such as MRT stations - continues to remain a challenge. Similarly, active mobility is another sustainable solution for the "last mile" provided you can persuade people that walking or cycling is both safe and convenient.

This transition will start in Singapore with newly constructed footpaths and cycle paths along Bencoolen Street, with additional active mobility connections provided within Singapore's central region. Three bike sharing service providers, Mobike, Ofo and Obike's have been launched in Singapore, providing more convenient and cost-effective cycling options on Singapore's streets. However, it is not without teething problems. There have been reports of indiscriminate parking in some areas, misuse of bikes, reckless riding, etc. To enable a sustainable ecosystem and bike sharing culture to take root as part of the Car-lite nation initiative in Singapore, bike-sharing operators, authorities and building owners, etc. will need to work out a practical framework to regulate (by merit or demerit systems) and establish the necessary bicycle infrastructure (designated bicycle parking zones, bicycle racks, etc.) in Singapore.

Conclusion_

Digital technology is evolving at the fastest pace ever and is set to transform the way that we live, work and travel. While some fear that developments such as AI and big data will either replace humans one day or undermine our privacy, in fact they are key to securing our sustainable future and creating models such as a "car-lite" transport system.

As these technologies are deployed to serve global populations, communities will continue to evolve and adapt to the new opportunities as they are presented. By upgrading ourselves with this new knowledge, and by thinking globally and systematically, we can make our environment more car-lite, more sustainable and a more attractive place to live.

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