



Where to Now? — The Future of Airport Car Parking

Airports have historically developed successful ground transport businesses anchored around highly profitable parking assets. Sustained revenue growth has been tied to maximising passenger growth potential that translated with a high degree of predictability into higher parking volumes.

However, the landscape is changing. Parking growth rates at many major global airports are slowing and the direct correlation with passenger growth is weaker than that observed historically.

The consumer is also changing, becoming more tech savvy, and demanding increased choice.

Pick-up and drop-off (PUDO) in various forms is increasing in importance at airports. Across cities, the number of options for car and ride sharing and the emergence of other “new mobility” options such as shared demand responsive services is growing. Digital technology is allowing rapid innovation in business models.

Ride share has been accepted by the market and continues to evolve, including the recent introduction of “ride pooling” by transport network companies (TNCs) and increasing competition via new entrants in many markets. The scale of the investment and range of players participating in the development of new mobility are resulting in the rapid acceleration of the technology

into market applications. With the rise of electric vehicles (EVs), connected and autonomous vehicles (CAVs), aerial mobility, and the increasing adoption of mobility as a service (MaaS), more technological and business disruption is on the horizon.

These trends bring uncertainty for airport operators and investors as they consider their strategies and infrastructure investment decisions.

Airport ground access over the next 20 years

Ground transport is already being disrupted. In the short term, the most rapid innovation will relate to new services rather than new vehicle classes.

Airports around the world have been responding to current disruptors. TNCs offering shared ride services are commonplace at airports globally and the usage of multi-occupancy or pooled rides is increasing (e.g. 30% of Uber rides from Los Angeles International Airport are now pooled rides).

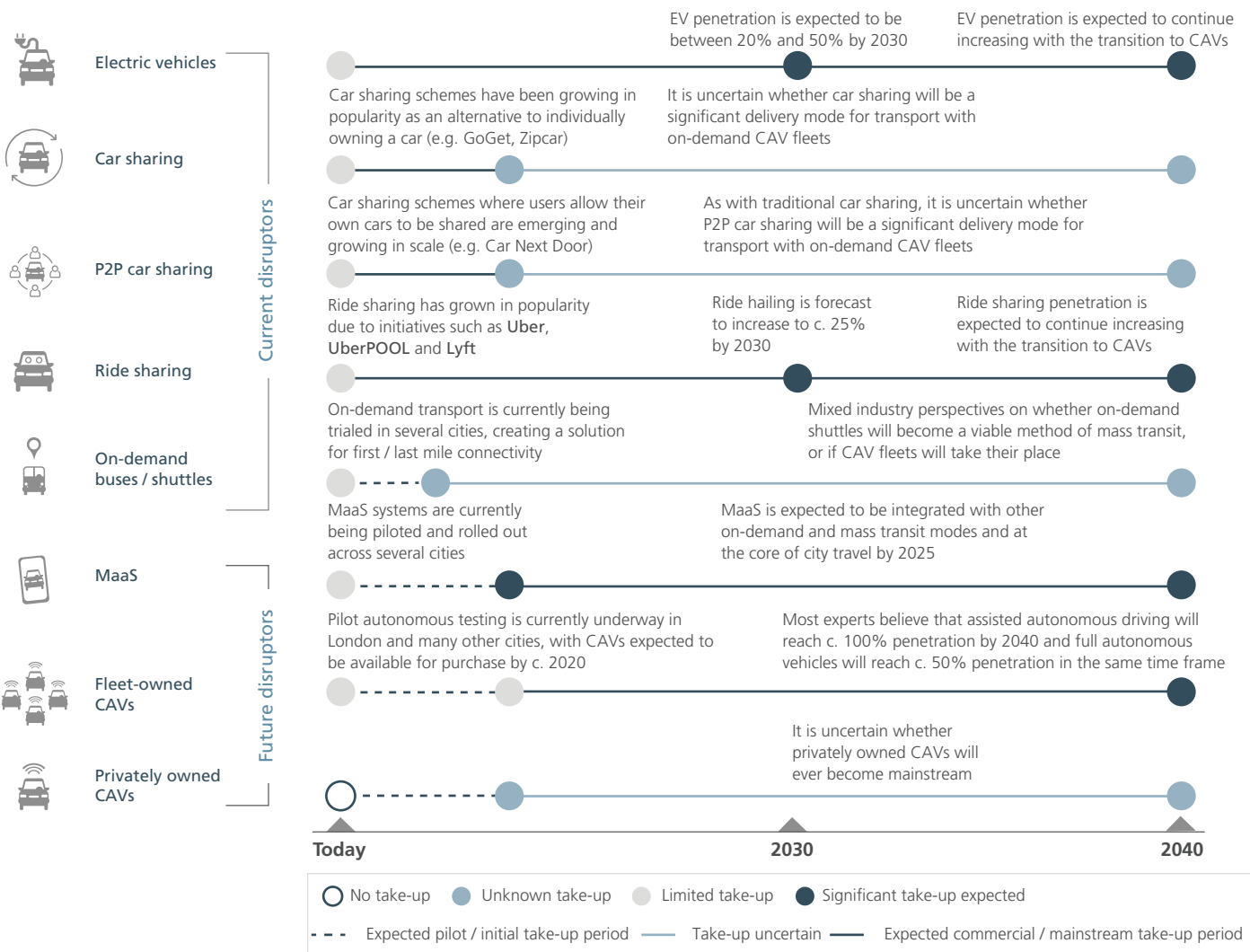
Future disruptors are well within the typical investment time frame of car parking infrastructure, with CAVs likely to cause the greatest long-term impact. Level 4¹ and 5² CAVs will support fleet services to airports and “self-valet” parking. Estimates of CAV (levels 4 and 5) penetration are sensitive to a number of assumptions including fleet turnover, customer acceptance, government policy and continued advances in technology. It is likely that a significant proportion of vehicle fleets in first world countries will be level 4 or 5 by 2040.

Where to Now? — The Future of Airport Car Parking was written by **Mark Streeting** and **Ashish Khanna**, Partners, and **Natasha Santha**, Principal at L.E.K. Consulting. Mark is based in Sydney, Ashish is based in London and Natasha is based in Melbourne.

For more information, please contact strategy@lek.com.

Executive Insights

Figure 1
Disruption time frame



Key infrastructure implications

Our customer research (based on passengers using a major international airport) suggests that, with some notable exceptions, the vast majority of airport passengers will continue to want to drive or be driven to and from airports for the foreseeable future (i.e. park or be dropped off). However, fewer and fewer will want to store their cars at the airport. In the medium term (i.e. to 2030), penetration of PUDO (particularly pooled rides offered by TNCs and shared demand responsive services) is expected to increase.

The impact for each airport will depend on the geographic distribution of passengers in the airport's catchment. Passengers living closer to the airport and those in densely packed urban locations (with several mobility choices) will rely less on parking than those farther away. Trips made by those who have traditionally parked from a distance of up to 20 kilometres from

the airport are most susceptible to switching to TNCs and shared demand responsive services.

Beyond c. 2030, the progressive impact of CAVs will further reduce the growth in at-terminal parking demand. Specifically, CAVs (individual and fleet owned) are likely to drive further growth in PUDO. CAVs owned by individuals are likely to return "home" rather than park at the airport, while fleet-owned CAVs will secure another trip at the airport in the same way taxis and TNCs do today.

In aggregate, we see a declining demand for traditional self-park parking bays.

1. Ground access real estate

Space is likely to become even more constrained at the kerb and in the forecourt, as demand for drop-off, ride sharing and on-demand services grows. More vehicles (albeit with slightly

Executive Insights

higher occupancy) will be looking to access already constrained terminal frontages. Airports will need to consider the quantum of kerbside and non-kerbside space offered to enable an efficient PUDO process. Specifically, it will be necessary to future-proof the design of the next generation of terminal access areas and parking infrastructure to allow for the transition from a parking model to a drop-off model.

Current holding areas are likely to be increasingly used by CAVs rather than traditional taxi and limo services, and could also be redesigned to optimise for space.

2. Car park utilisation

In the short term as the popularity of car and ride sharing and on-demand services grows, parking demand growth is expected to slow.

Long term, CAVs will have the strongest disruptive impact on car parks once there is widespread level 4 automation (i.e. from the late 2030s). At that point, these vehicles will no longer need traditionally laid-out parking garages. At full level 5 penetration, it is estimated that up to 90% of parking spaces will be eliminated due to CAVs. This is unlikely for several decades, with a scenario of c. 15% penetration by c. 2040 considered likely.

When level 4 and 5 CAVs begin to dominate the vehicle fleet (i.e. post-2040), fleet operators will want to ensure that vehicles are conveniently located in close proximity to passengers requiring them. This will present an important opportunity for airports to provide short-term storage (during peak times and when the vehicles are not in use) together with ancillary services such as facilities for vehicle cleaning, charging and maintenance.

3. Car park configuration

Parking facilities are likely to evolve into mobility hubs, in which the parking structure becomes a transit stop and provides multiple options for passengers such as parking, last mile bike sharing or rental, and easy access to public transport.

The growing uptake of EVs in the next five to 10 years will require the need for charging stations. CAVs will enable applications of driverless functions such as valet parking. This, combined with the growing popularity of robotic parking valets and stacking, could be a way to improve user experience, optimise space in areas of high demand and avoid building new capacity.

Going forward it will be important to build flexibility into the design of garages so they will be multi-purposed to support high-volume PUDO in outer years, keeping in mind not to design / overengineer dedicated parking garages based on current longer-term storage requirements.

The outlook for airport car parking assets

Our research indicates that the outlook for car parking assets at major airports is likely to be characterised by three distinct periods.

- In the short term (to 2025), car park utilisation and growth will reflect the extent to which TNCs and on-demand services drive further growth in PUDO.
- In the medium to long term (2025 to 2040), strong growth in EVs is expected. While this will have no implications for the demand for car parking per se, it may create opportunities for airports to introduce and monetise fast-charging stations.
- It will be post-2040 before the proliferation of CAVs drives a significant reduction in the demand for “traditional” car parking given that it is expected that only 50% of the fleet will be level 4 or 5 by 2040.

While CAVs will cause the loss of revenue from individual self-parkers, CAVs will provide opportunities to monetise existing parking assets in different ways, such as CAV storage (although requirements will be significantly different than today) and facilities for cleaning and maintenance of CAVs.

Executive Insights

Endnotes

- ¹ Level 4 or “high automation” — the car can operate without human input or oversight but only under select conditions defined by factors such as road type or geographic area.
- ² Level 5 or “full automation” — the driverless car can operate on any road and in any conditions a human driver could negotiate.

About the Authors



Mark Streeting

Mark Streeting is a Partner in L.E.K. Consulting’s Sydney office and one of Asia Pacific’s leading thinkers on airport ground transport and transport economics, with over 30 years’ experience in these areas. Most recently, Mark has advised various major APAC airports on the successful overhaul of their multi-modal ground transport strategies.



Ashish Khanna

Ashish Khanna is a Partner in L.E.K. Consulting’s London office and is the Global Co-Head of New Mobility. He regularly advises on transport technology innovation and has been at the forefront of advising infrastructure investors and businesses globally on the potential impact and opportunities arising from new mobility trends.



Natasha Santha

Natasha Santha is a Principal in L.E.K. Consulting’s Melbourne office. She advises public and private sector client on strategic, policy, and commercial issues relating to major capital infrastructure and transport, often with a focus on mitigating the impact of new mobility disruption and future-proofing these assets.

About L.E.K. Consulting

L.E.K. Consulting is a global management consulting firm that uses deep industry expertise and rigorous analysis to help business leaders achieve practical results with real impact. We are uncompromising in our approach to helping clients consistently make better decisions, deliver improved business performance and create greater shareholder returns. The firm advises and supports global companies that are leaders in their industries — including the largest private and public sector organizations, private equity firms and emerging entrepreneurial businesses. Founded in 1983, L.E.K. employs more than 1,400 professionals across the Americas, Asia-Pacific and Europe.

For more information, go to www.lek.com.