CARS OCCUPY

UP TO

20%

OF OUR CITIES'

PUBLIC SPACES.

IMAGINE WHAT

WE COULD DO

WITH IT

IF WE

TOOK THEM

OFF THE ROADS?

WORDS BY KATIE PUCKETT
PHOTOGRAPHY BY WILSON HENNESSEY

What would it take for you to give up your car? Better public transport? A really good bike or car-sharing scheme? Being able to summon a driverless car to pick you up from your door and take you wherever you want? Or how about all these things and more, accessed via a single smartphone app that would allow you to plan any number of journeys in your area, using any combination of methods, all for a flat monthly fee?

This is mobility-as-a-service or MaaS, coming soon to a city, town or even village near you. MaaS is the logical, some say inevitable, conclusion as the millennial-led "sharing economy" converges with innovations in the automotive sector, cloud data processing and mobile communications. It's often overshadowed by autonomous vehicles (AVs), but it's a far more radical concept that could consign vehicle ownership to the past, thus massively reducing the number of vehicles on the road. There are therefore profound implications for a built environment that has been overwhelmingly designed around the car, and the need for parking spaces, on-street or otherwise.

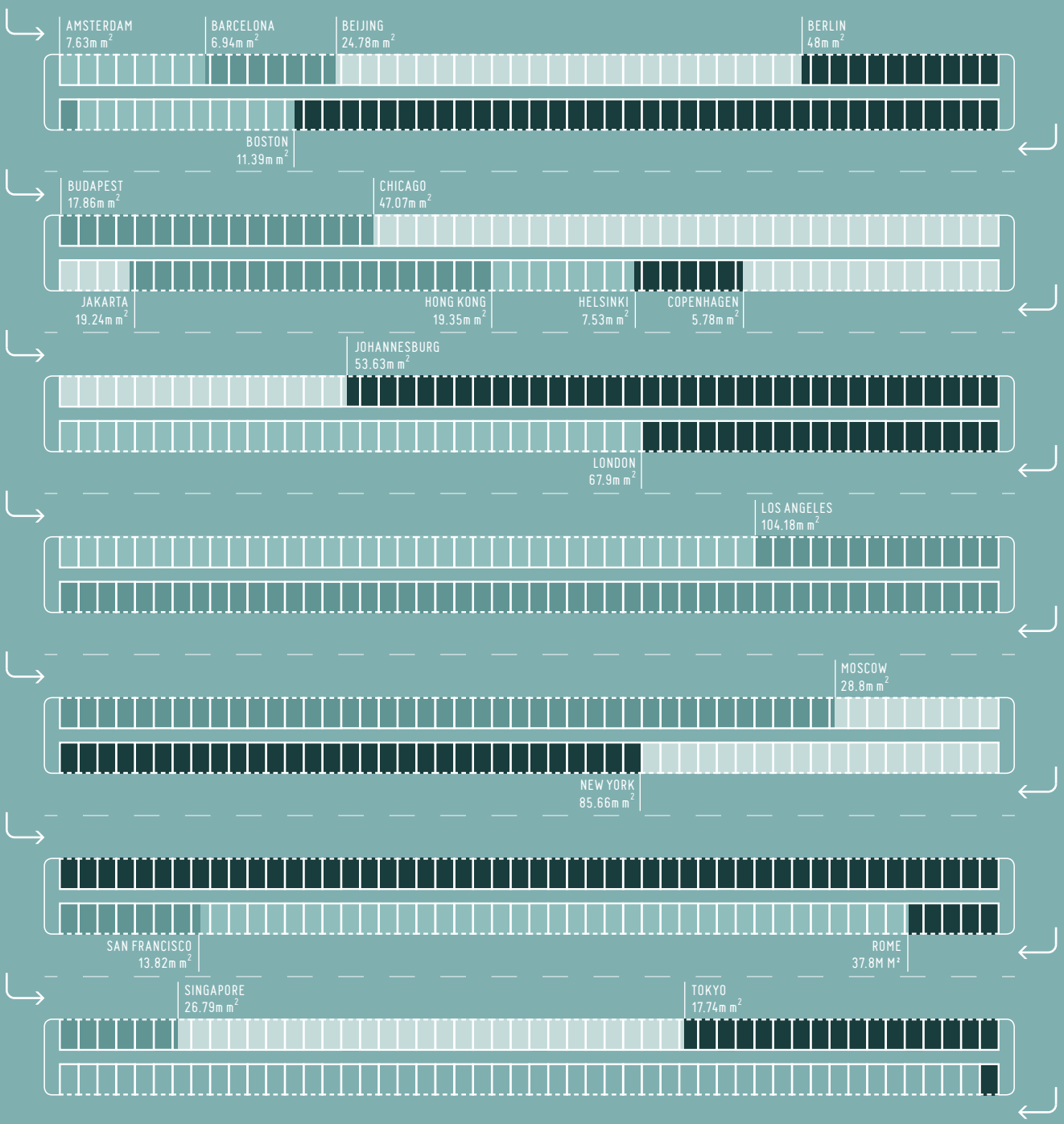
"The transport network is the skeleton of the city. If demand changes, it would be kind of strange if the city didn't change as well," says Sampo Hietanen, co-founder of Finnish start-up MaaS Global, which operates the world's first MaaS service through the Whim app in Helsinki, the UK's West Midlands, Antwerp and, soon, Singapore.

In the immediate future, the most obvious impact of MaaS will be a reduction in the space needed for roads, parking and driveways. Transport researcher Paul Barter estimates that around the world, the typical car is parked for 96% of the time. With an intelligent management and distribution system uniting all modes of transport, it should be possible to achieve far higher utilisation rates, especially when connected autonomous vehicles can move from fare to fare on their own, drive more closely together and park in far tighter spaces. "MaaS is likely to be the preferred model for cities in the future, because it has the potential to optimise the transport system, not only of the city but of the suburb and out into rural areas," says Dr Maria Kamargianni, head of University College London's MaaSLab research team. "It offers a future where there is no need for private vehicles, so we will have an opportunity to reallocate space to make more room for people."

The 2016 white paper *Making Better Places: Autonomous vehicles and future opportunities*, by architect Farrells and engineer WSP envisages future towns and cities with narrower, safer roads and wider areas for pedestrians, cyclists, leisure use and greenery. Road signs and traffic lights would no longer be needed, and designing out on-street parking would create 15-20% additional land at ground level for more valuable uses. Using government data on residential land value uplifts, they estimate that a 100ha (274 acre) AV zone could gain more than £1.25bn in central London, £300m in outer London or £15m-£75m across the rest of the UK. "One of the biggest issues in all urban settlements is the integration of vehicles," says the report's co-author Nigel Bidwell, now director at London-based architect JTP. "There is going to be a different social contract with public space. At the moment, the priority is very much given to cars, but making healthy places is dependent

PARKING METRES

Moovel Lab's What the Street!? project uses OpenStreetMap to work out how much space in a city is given over to parking. While not an exact science, the resulting visualisations help us to understand how much space could potentially be put to better use



SOURCE: MOOVEL LAB, 2017

The growth of MaaS will reduce the need for parking, creating opportunities to repurpose spaces into more flexible commercial and leisure uses, such as returning town squares back to their original intended uses as market places

on prioritising pedestrians and creating places where people want to walk and to sit."

There is a tension here, and planners will face a dilemma over how newly available sites in high-value locations should be used, says Oxford Policy Management's director of urban economics, Jim Coleman. There will be pressure to increase density, but also a greater need for open spaces to mitigate overheating and flooding caused by climate change. "We need to think carefully about the balance between development and green infrastructure. The latter is a public good, so there could be a role for government to fund that alongside the private sector."

In housing areas, paved driveways could be turned back into gardens — the white paper estimates that this could reclaim around 14,000ha across the UK, an area equivalent to 100 of London's Hyde Park. Llewelyn Morgan, head of innovation at Oxfordshire County Council, is already talking to developers about building car clubs into new housing schemes: "It might not reduce the need to have a car, but you might not need to have two. In 10 or 20 years, you will probably just be thinking about where to place shared vehicles or pick-up points, so if you've got a development with a 15-year build out, the later phases could look very different."

MaaS will be easiest to implement in large cities, but it's in less well-served towns, suburbs and rural areas where the availability of rich, real-time data could bring the greatest benefits. Rural areas often have the lowest utilisation rates of public transport, with buses running near empty, so on-demand services would improve both efficiency and accessibility, and potentially make such areas more viable for development. Morgan points out that local authorities are big spenders on both public transport and on moving people around to access social care and health services. He has set up a study to see whether this investment could be used to lay the foundations for MaaS: "You're spending so much money running the transport because the commercial model can't work here, so why not actively invest to leave some sort of legacy? For us, it's a massive opportunity."

Introducing MaaS could also unlock development in lower-value locations, says Coleman. "Some sites are difficult to develop because the developer would have to fund new roads. But if the road system can be used more efficiently, maybe you don't need to." He also suggests that MaaS could reshape the retail sector, removing the divide between out-of-town shopping malls and high streets. Swathes of parking in retail parks could be redeveloped as leisure, residential or office space: "You could see places that are just retail destinations becoming mixed-use, or more like settlements." Self-driving electric vehicles will transform retail logistics too, enabling 24-hour deliveries even in city centres: "That will reduce the need for warehousing because vehicles will be moving pretty constantly."

Road hog

Car-parking spaces are another massive opportunity, accounting for a startling amount of a city's land use. Moovel Lab's What the Street?! project (see opposite) analysed open-source map data to reveal that 94% of Los Angeles is given over to parking space. This won't all become redundant: even self-driving cars will need to be stored somewhere between journeys, and electric vehicles will have to charge, ideally close to passengers. Paul Gallagher, car park consultant at JLL in London, believes car parks will still have a future, but they will be much smaller — with no need for aisles or gaps between vehicles — and some will evolve into transit hubs. "You might drive in or car share into a car park and then do the last mile on a scooter or bike or walking." Car park operators may themselves evolve into MaaS providers, he suggests, pointing to a spate of high-value acquisitions as investors target car parks as sources of income, data and portfolios of prime land.

Surplus car park structures could be converted into office, residential or self-storage space, depending on location, demand and the buildings themselves. "Some developers in the US are building parking garages with increased floor heights so they can be repurposed," says Revathi Greenwood, Americas head of research at CBRE. But she warns that this will present some tough calls for real estate advisers: "It's expensive to do and there's an optionality premium that you have to pay for flexibility. The real debate is whether it's worth paying the price, and that will depend on the city."

The opportunities of MaaS come with some very significant risks, particularly given the difficulty of accurately predicting when the tipping point will occur. Hietanen estimates that it will be around 2025 — "but to be honest, I always say a different year".

The greatest unknown is the transition, says Coleman: "One thing designing for the automobile has taught us is that it's very difficult to anticipate how technology will change movement. We've got this strange dichotomy, where the technology is available but the built environment is always going to lag behind. We could redesign it for another model and end up with the wrong built environment again because the technology always leaps ahead. I don't think there's any answer to that." ■