To the power of five

Wireless applications powered by 5G networks have far-reaching implications for just about every part of the economy. But what are the applications and opportunities for the built environment, asset owners, managers and investors?

By **James Wallace**

More than a decade ago, the introduction of 4G wireless broadband paved the way for high-speed access to the internet. It created a surge in data consumption which led to demand doubling every two years, according research to cited by investment manager Cohen & Steers.

In the subsequent years, network providers have concurrently expanded 4G data capacity and coverage and laid the foundations for 5G, the next generation of network technology. 5G works in tandem with existing 4G networks to deliver speeds matching wired fibre connections, while eliminating lag times and drastically reducing power consumption, says Cohen & Steers.

But 5G is not simply an extension of 4G, nor should it be considered simply in terms of its faster wireless capability, estimated to be at least 20 times faster than 4G. '5G is more than just a new wireless interface protocol offering more capacity and better performance for smartphones. It is that, but it is also a myriad of technology innovation like antenna designs and device communication protocols to standardise both the way licensed and unlicensed networks interact and the way network applications collaborate,' explains Dan Littmann, principal at Deloitte Consulting.

'With this array of capabilities, 5G technology will influence everything we do. Instead of just connecting people to people through their smartphones, 5G connects an unlimited number of things to other things, which can communicate all day, every day.

'As a result, the value that 5G can create is not constrained by the number of people and the amount of time we have for consuming information. The opportunity for technology to influence productivity and automation could have a seismic impact on our macroeconomy.'

UNDERLYING TECHNOLOGIES

The applications within real estate are best conceptualised on two levels. First, in terms of the underlying technologies, for example the internet of things (IoT), autonomous vehicles, smart cities, augmented and virtual reality, remote robotics and smart manufacturing. Second, how these use cases fit into existing real state sectors and business models, and how 5G could help foster new ones.

In sum, while IoT and smart cities will cut across the entire built environment, many of the technologies cited will be sector specific. For example, autonomous vehicles, remote robotics and smart manufacturing will be utilised

in warehousing and logistics, as well as in the increasingly blurred overlap with retail, while augmented reality (AR) and virtual reality (VR) will be used to enhance the customer experience, whether that is in leisure and entertainment at a shopping centre, or in the virtual viewing of a new home or holiday.

In addition, AR and VR will permeate into investment deal-making and transform the way investors buy and sell real estate, according to Kanav Kalia, chief sales and marketing officer at Oxane Partners. 'Immersive telepresence and 3D holographic capabilities will allow investors to explore real estate assets in greater detail remotely, significantly saving time and effort,' he says.

WINNERS AND LOSERS

5G will destroy and create jobs unequally, meaning winners and losers are inevitable, but retail could be a big beneficiary. It has been a torrid start to the year for the embattled British retail sector. The Centre for Retail Research says almost 10,000 jobs have already been lost in less than the first month of 2020, including store closures at Debenhams, GAME, HMV, Arcadia and Mothercare.

Despite changing consumer habits, owners of retail property are turning to 5G wireless technology to save their business models through digitalisation. Retailers have been forced to focus on the most critical tasks, such as inventory management, the checkout process and fulfilment, as well as online order returns.

'5G presents a great opportunity for retailers to further improve the underlying performance of their physical stores by transforming the customer experience and shifting the role of their store personnel towards higher-value tasks,' says Scott Morey, an executive director at real estate services and software company Altus Group.

'Shoppers fundamentally rely on stores during various stages of their shopping journey and 5G has the potential to further improve that interaction.'

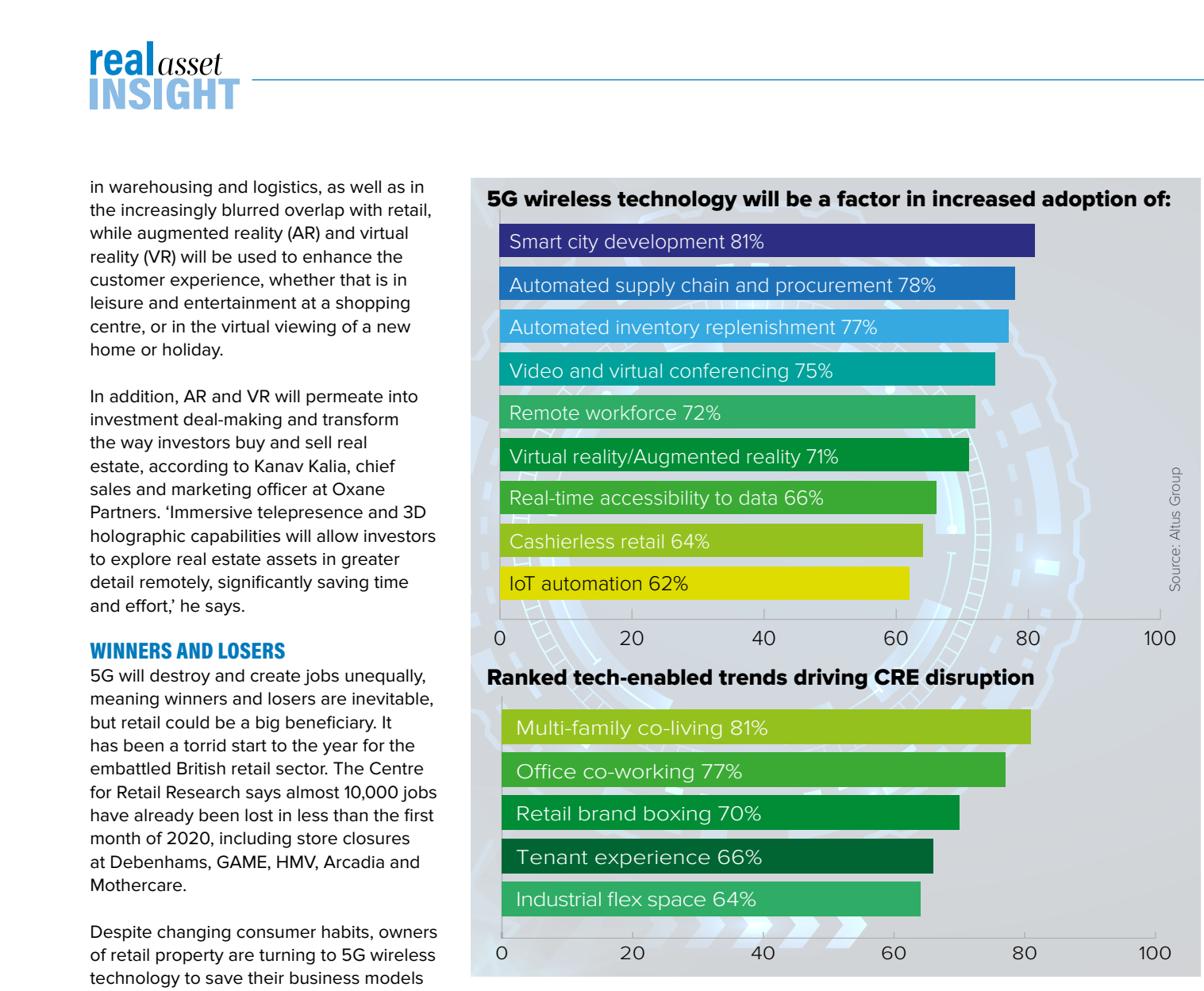
Oxane's Kalia adds: 'Retail is undergoing significant change with the advancement of communication technology and is adapting rapidly. With the further penetration of 5G, retail will move from an ambiguous view of the customer to a more precise view supported by big data. Based on intelligent analytics derived from tracking customer behaviour through the store, retailers of the future will be able to optimise products' layout, generate real-time personalised promotions based on purchase history and move to automated checkouts as customers walk out of the store, something we already see with Amazon Go.'

A global survey of 400 commercial real estate (CRE) executives by Altus Group implies the sector – notoriously slow to adapt to technological evolutions – has reached a tipping point in technology adoption. Half of survey respondents believe 5G wireless will create a major disruptive impact on the CRE industry, with four out of five respondents (81%) saying it will support increased adoption and use related to smart city development.

CASHIERLESS RETAIL

Furthermore, two-thirds (66%) of British executives placed cashierless retail in the top two beneficial innovations to come with the introduction of 5G. And more than three-quarters (77%) expect automated stock ordering to become industry standard after the introduction of 5G.

'Whilst 5G will transform the consumer experience, the starting point will be for telecom companies and real estate owners to provide the infrastructure and physical



The number of buildings needed as 5G cell sites is expected to increase and this could lead to tensions between landowners and operators

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‘There is **likely to be tension** between the **owners of the land** on which infrastructure will need to be placed, and the owners of the networks.’

Julian Barker, British Land

location points so 5G can reach its full potential,’ Morey adds.

In terms of the office sector, 5G will bring opportunities for massively increased data capture along with efficiency savings, which in turn will enhance sustainability. ‘In the smart cities arena, 5G will supplement and extend the network capabilities currently available in these areas via wifi and Bluetooth,’ says William Newton, president and managing director at WiredScore, which provides certification of buildings’ digital connectivity.

‘This extension from the office to the street, for example, will enable a blossoming of the capabilities of these use cases with the extended reach of the data capture and analysis.’

Oxane’s Kalia continues this thread. ‘With smart buildings, asset owners will leverage the vast data collected that gives them actionable insights on how their assets are performing, making energy use more efficient, decide on which assets to spend capital on and better understand the risks at an asset level. We see a growing trend among large asset owners investing in proptech companies to tap these technologies for their use.’

5G AND INVESTMENT

There are several investment implications that could influence the built environment’s readiness for 5G. Property owners, investors, telecom companies and respective governments need to align on the strategies in rolling out these networks, which will not be an easy process.

Julian Barker, head of smart places at British Land, says: ‘Buildings will require more internal fibre runs for 5G and a higher number of internal masts than are currently needed to support 4G DAS systems. Externally, the expectation is that more buildings will need to have masts on to achieve good coverage in built-up areas, but the economic model for this hasn’t been shown yet. The impact of this on landlords is therefore still not fully understood, but it could potentially create a new revenue stream.’

‘There needs to be investment to ensure individual buildings have the capacity for physical space for equipment and cabling to support an in-building 5G solution,’ Newton says. ‘However, beyond this, there will also need to be investment in the wider built environment including ensuring “macro” cell towers and small-cell nodes are deployed to provide capacity in areas of higher population density.

‘A lot can be learnt from the pains felt of underinvestment and planning from trying to get 4G into the underground networks. Buildings will need 5G to be proactively pumped into them rather than the situation

Adobe Stock/Kinwun

‘For a landlord, the threat of rising voids through **poor digital infrastructure** is very real, as is the possibility of **building obsolescence** over time.’
Faidsal Durrani, Knight Frank

we are currently in, which relies on signal permeating into buildings from the outside.’

Global cities like London are expected to be in the top tier of 5G-ready cities, but it will not be easy. Laying direct fibre connections to buildings in a city as densely packed as London will be a tremendous challenge, says Faisal Durrani, head of London commercial research at Knight Frank.

‘For investors, it will be important to bear in mind that digital connectivity premium will come hand-in-hand with a well-designed and specified scheme: a sub-par scheme with good connectivity is unlikely to drive a premium and could lead to an increased void,’ he says. ‘For a landlord, the threat of rising voids through poor digital infrastructure is very real, as is the possibility of building obsolescence over time.’

WiredScore’s Newton notes interest in telecommunications company investment has been significant, but there is a challenge. ‘At the moment, the challenge relates to the number of stakeholders involved in the deployment of a solution, from the operator to the mast owner, to local authorities, developers and landlords, tenants and equipment manufacturers and system integrators.’

LONG-TERM RETURNS

With up to a £90bn boost to the UK economy by 2030, there are plenty of funds prepared to take the long-term view on whether income generated from 5G investment will provide some good returns, says Miles Ede, partner at law firm Addleshaw Goddard. The issue is whether they can get the scale. A public infrastructure fund opened to global institutional investment is one possible capital route, suggests Ede.

‘With the right fund structure, it could be possible to seed assets into a fund offering a modest yield to global institutions, pension funds and insurers, delivering new,

Wikipedia/SounderBruce

Above: Amazon Go is one of the retail outlets making use of wireless technology where customers can check out without cashiers

shared infrastructure at a city, regional or even national level.'

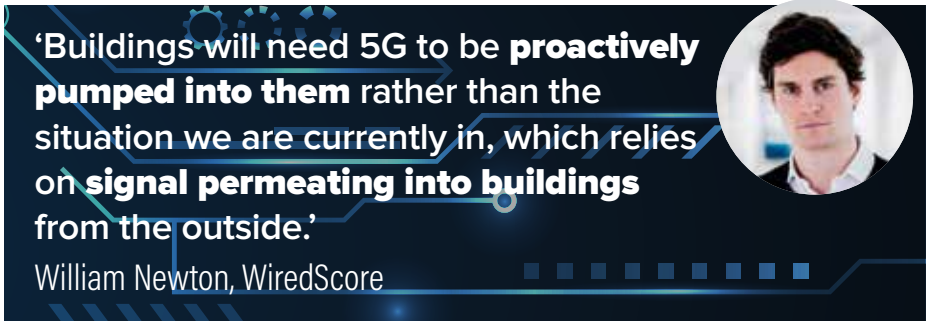
No doubt one of the leading advisory firms will create an index to measure the 5G readiness and connectivity of global cities which could help to inform investors and occupiers which over time become increasingly reliant on 5G for the business.

There is expected to be some friction between landlords and mobile network operators (MNOs) over 5G installation. The issue is complex and represents a significant shift in power in the industry. 5G installation is managed between landlords and MNOs under new laws, called Code Powers, which favour MNOs and are there to ensure that the UK does not fall behind in the global race to become 5G ready.

British Land's Barker says: 'There is likely to be tension between the owners of the land on which infrastructure will need to be placed, and the owners of the networks – both will be competing for the same space, and the value of each antenna location is not yet proven. This may be exacerbated by long payback periods, with infrastructure companies requiring long commitments from real estate owners, which could potentially go beyond the useful life of 5G itself.'

INEVITABLE TENSION

'It is not hard to see why there is an issue,' adds Ede, while WiredScore's Newton says: 'There is no doubt going to be tension owing to the increase in the number of buildings that will be needed to be used as cell sites for 5G, along with what much of the industry is seeing as unfavourable modifications to the new electronics communications code (ECC).'



Another problem could be the backhaul and transmission infrastructure – if it needs many more local masts than 4G did to achieve pervasive coverage, then these will have to be installed before the technology is viable – and this could require substantial investment. 'It is also not clear how this will be rolled out in less densely populated areas,' says Barker.

While the old Code meant landowners were rewarded for allowing installation, or at the very least adequately compensated – under the new Code, the power lies with the MNOs when it comes to requisitioning space. 'Landlords don't have much of a defence to refuse access, still less the right to terminate a licence once it is in place,' explains Addleshaw's Ede.

However, Newton says this could an opportunity. 'There is going to be an increased demand for landlords to ensure mobile connectivity within their buildings. As quid pro quo, where a mobile operator offers in-building coverage in exchange for the building being used as a cell site, this could be revolutionary to the market.'

Ultimately, landlords need 5G, their tenants will demand it. So, one way or another, this tension needs to be resolved to the mutual benefits and opportunities can be realised. ●