

FUTURE CITIES SERIES: TECHNOLOGY AND TELECOMS KEY TO TRANSFORMING FUTURE CITIES

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Post-pandemic cities must be more digitally connected to unleash their potential.

The effects of Covid-19 have been felt around the world. The pandemic has significantly impacted the technology and telecommunications sectors, but simultaneously these sectors are being posited as major drivers to lift urban areas and their residents out of the current crisis through sustainable and lasting economic growth.

This article is part of our Future Cities Series where our experts explore the pressures facing our cities in the post-Covid era and map out the key issues and industry themes in re-thinking urban life.

Here we look at four trends impacting the redesign and restructuring of cities to reflect learnings from lockdown, drive economic recovery and ensure resilience against future disruption: greater connectedness; more dispersal; increased digitisation; and accelerated innovation, and consider what these trends mean for the technology and telecommunications sectors.

GREATER CONNECTEDNESS

Being connected has been front-of-mind for people and businesses. Collaboration tools including video calls have become essential for friends and family to remain in contact and have also proven highly-efficient in a business context. The consumption of online content such as Netflix has also increased significantly. Communities and groups have thrived by using social media, and governments and health authorities have been giving real-time updates via social media and apps. The onus is on governments and businesses to react to this pressure for greater connectedness and increased demand for data by consumers in an accessible, effective, and cost-efficient way.

Throughout the pandemic, the connectivity provided by the telecommunications industry has proven vital to global social and economic stability. The increase in demand for digital connectivity and the amount of data being consumed has placed significant pressure on national networks, and operators have rightly been focussed on increasing network resiliency and reliability.

Looking beyond the pandemic however, there is a huge opportunity for the further rollout of 5G and fibre networks, and adoption of emerging technologies, to be a key driver for economic recovery.

In order to facilitate fast and large-scale 5G deployment and incentivise fibre infrastructure investment, operators will need to consider:

- sharing agreements for 5G RAN;
- co-investment and other forms of partnerships for network deployment;
- innovative infrastructure solutions, such as virtualisation, network slicing and SDN; and
- the adoption of open and interoperable interfaces in the RAN.

Governments will need to support these initiatives, including through policy and regulatory reform, which will in turn stimulate the uptake of new technologies facilitated by 5G, such as AI and automation. For example, governments should be at the forefront of fighting misinformation, particularly the conspiracy theories surrounding 5G, as well as ensuring that 5G spectrum auctions are timely and spectrum prices are not an impediment to 5G investment.

COVID-19 AND 5G

Covid-19 has caused delay to 5G rollout plans, with operators and 5G equipment suppliers being impacted by health and safety issues and many countries putting planned 5G auctions on hold.

Uncertainty over the medium to long-term impact of Covid-19 on the telecoms sector has also focussed operators on managing their cost bases and caused them to reconsider the scale and pace of their 5G rollout plans. Looking beyond the pandemic however, we would expect, subject to a number of factors including the timing of spectrum auctions and equipment availability, most operators to restart their full 5G rollout programs as soon as possible.

The opportunities in the enterprise and SME sectors would have formed a key part of operators' 5G business cases. Examples include in-building 5G coverage solutions, fixed wireless access for remote, temporary and mobile locations, and the use of 5G for drones, robots, AR/VR, autonomous vehicles and HD video across a range of verticals. However, the demand from business may not in a post-pandemic world meet these expectations. Operators were also targeting the opportunities to provide private 5G industrial networks for manufacturing and logistics businesses, but these opportunities may have contracted as a result of the economic impact of the pandemic on enterprises and operators may need to explore other options to monetise 5G.

With consumers faced with a prolonged period of financial uncertainty, it is expected they will shift their spending to essentials, and cut back on most discretionary categories such as a 5G upgrade (holding on to their 4G handsets for a longer period). This will make it harder for operators to monetise 5G. There may be some exceptions for verticals such as collaborative gaming, consumer AR/VR, 3D calls/holograms and smart wearables, but the 5G business case will be impacted and operators may need to look elsewhere to save costs and make the business case stack up. Network sharing and switching off legacy networks are two examples.

MORE DISPERSAL

The urban populace has been decentralised, leading to the rapid adoption of technology such as remote working and cloud computing. As we emerge from the pandemic, it's clear that this decentralisation is here to stay, and the technology industry is well positioned to empower this change in how we work and live.

To ensure a motivated and engaged workforce, the most successful businesses have put in place structures predicated on technological solutions which integrate easily adoptable systems and cross-platform operations, enabling decentralised and dynamic working.

Using solutions provided by the technology and telecommunications sectors such as online work-management platforms or large-scale video-conferencing will assist businesses to protect themselves against the economic impact of urban population dispersal and the global shift towards remoteness accelerated by lockdown restrictions and the pandemic more generally. This will require capital investment, the upskilling of employees, and the integration of different working habits, creating opportunity for suppliers in this space as well as for businesses who are most able to leverage these technologies and practices.

However, as businesses further enable and encourage remote working, greater exposure to cyber attacks and data breaches is inevitable. Cyber attacks can be hugely damaging, leading to substantial financial loss from stolen information or disruption to trading as well as potential reputational damage and serious regulatory sanctions. When relying on virtual working solutions businesses must protect themselves with an effective cyber security risk management system and comprehensive cyber security training for employees, and should consider mitigating risks with data breach insurance.

EDUCATION

The dispersal of children and adults to individual residences has required education providers from primary to tertiary to leverage technology solutions to enable virtual teaching. This has proven to teachers and parents that children can engage with and learn from technology platforms, and in doing so may drive a reconceptualisation of the norms of education.

The impacts of this may remain for the long term, from term and school day times being remodelled from the traditional agrarian-based calendar to resolve issues such as smaller class sizes, geographical spread of students, and the availability and ability to teach from home.

Technology solutions such as cloud-based, online teaching platforms which can provide secure online classrooms, deliver on-demand webinars and enable students, teachers, and staff to work seamlessly together will thrive. Governments will take a more favourable view of online learning as a result of the impact to standard education delivery models caused by the pandemic; there are significant opportunities for disruption, investment and growth in this space.

INCREASED DIGITISATION

Governments, companies and urban communities have tackled Covid-19 utilising technology, including open sharing with citizens about the spread and management of COVID-19, mobilising community-led responses and leveraging urban makerspace ecosystems to rapidly develop medical equipment. But what about increased digitisation beyond the immediate impact of the pandemic?

The ability to offer higher quality and cost-efficient services remotely coupled with restrictions placed on the traditional means of providing goods and services as a result of the pandemic has made digitisation hugely attractive for retailers and service providers.

This is highlighted in the consumer sector, where shoppers faced with inconvenience and restrictions have unsurprisingly switched from the high street to e-commerce platforms. We have witnessed the acceleration of consumers adopting digital channels in banking, entertainment, grocery and apparel in particular. Zara (the Spanish apparel retailer) saw a 95% year-on-year increase in online sales in April. Where previously physical presence was routine for many businesses (often alongside a digital presence), businesses who now are unable to engage with customers digitally are faced with reduced custom and risk losing appeal. Small independent traders to international retailers have been hit by a lack of online presence in the pandemic. Being able to quickly pivot the business agenda to address these changes will be critical for a successful recovery. And digital will undoubtedly play a centre-stage role.

As lockdown measures relax, people may revert to traditional habits. However, temporary closures and the catastrophic economic impact of the pandemic will reinforce the importance of digital platforms and presence from an operational and consumer-facing perspective, as well as the acceleration of the public introduction of technological solutions. An appealing and accessible digital presence provides huge benefits for engaging with a dispersed consumer base and ensuring post-crisis growth.

E-COMMERCE PLATFORMS

Lockdown has accelerated the general willingness of consumers to purchase goods and services online via e-marketplaces or businesses' digital platforms. Although retail sales in the UK fell by a record 18.1% from March to April, businesses with an established online presence have fared better, with global sales on Amazon up by 26% in the first quarter of 2020.

We will likely see a huge rise in activity in e-commerce as the functionality of these digital platforms improves, advanced logistical solutions are put in place and as consumers (particularly those who are adapting to the digital environment for the first time) move further away from traditional high street retailers.

The relaxation of lockdown restrictions may provide comfort to traditional retailers, but with reports suggesting that only 6% of UK shoppers plan to make more effort to shop in-store, and two in five intend to make more frequent online purchases after the end of the pandemic, the outlook does not look good. This suggests a more permanent shift in consumer behaviour, meaning that businesses will need to adapt their digital offering to retain consumer appeal.

ACCELERATED INNOVATION

Unprecedented times often act as a stimulus to innovation. Unicorns (startups above \$1 billion in valuation) such as Uber, Airbnb, Nutanix, Square, and more were born from the global financial crisis in 2008-09 and grew to reach new highs.

The Covid-19 pandemic has fundamentally changed the way businesses will have to face the market in response to the impact on their customers' needs and wants. Whilst in the short term businesses have been focussed on shoring up their core business, pursuing opportunities within existing business models and reducing discretionary spend, those who will succeed post-pandemic will also now be adapting their business models to meet changing customer demand and identifying and pursuing new opportunities presented by the 'new normal'. A key to executing successfully a re-evaluated innovation agenda is having the technology, expertise and resources available to pursue these new growth opportunities.

HEALTHCARE

Globally, telehealth medical technology solutions (such as health status tracking apps or the public use of thermal imaging) are being created and implemented to respond to a unique situation.

For urban populaces, particularly those subject to less restrictive governmental regimes, the use of such solutions and data-driven public health interventions may become more acceptable in a post-pandemic world.

For instance, where health data can be analysed at a macro level to identify demographic groups with elevated risk profiles, will we increasingly see targeted interventions in both infectious disease, and other, scenarios?

OPPORTUNITIES

So what opportunities are there for businesses to change their technology innovation portfolios to support stable, predictable growth?

- Modernise operations through technology such as predictive modelling and applied intelligence. For example, the use of 'digital twins' to analyse virtual models of business processes, products and services and address issues in advance.
- Collaborate more closely with other ecosystem players to enable fast technological innovation and tap into new opportunities. For example, banks and fintech start-ups working together on user identification using biometrics and other advances, remote signatures, digitising back-office processes and moreover increasing the use of digital transactions.
- Innovate on existing business models and technologies to deliver best-in-class customer interactions using AI, data and real-time insights, assisting the teams that require actionable insights to make data-driven decisions in real time.
- Use software which can be easily and quickly downloaded to employee devices thereby enabling businesses to be flexible and adaptable in times of change.

- Adopt cloud-based solutions to enable capacity to be increased or decreased within minutes, taking advantage of SLA commitments and eliminating security risks present in on-premise deployments.
 - Make access to data and scalability internet-based so that employees can access company information, files, and other business-critical data anywhere at any time.
 - Use collaboration software and video-conferencing tools such as Cisco Webex, Microsoft Teams, Slack and Zoom as an integral part of businesses' digital toolkit.
 - Use regulatory change as a tailwind for the adoption of new innovative technology. For example, the decision of the US Treasury to begin accepting applications from non-depository fintech companies for special purpose national bank charters, which forced traditional institutions to think creatively in order to outperform their new competition.
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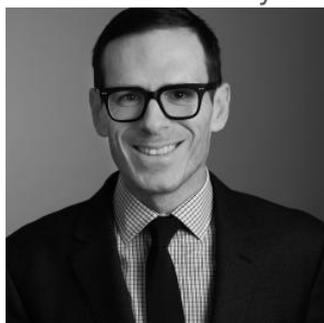
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