



The Rise and Rise of the Megacity: How the Data Centre is at the Heart of Urban Sprawl

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Biography

With over 25 years of experience in the data centre, technology and banking industries, building successful, high growth, profitable businesses with a reputation for quality, innovation and customer service, Neil joined VIRTUS Data Centres (<https://virtusdatacentres.com>) as CEO in April 2013. Since 2013, Neil has grown VIRTUS from one data centre of 3MW to now being the 3rd largest UK data centre provider with six of London's leading facilities providing over 90MW of capacity. His leadership has transformed VIRTUS into one of the most innovative and fastest growing data centre providers in Europe with customers including leading global organizations in the financial services, technology, media and education sectors.

Previously, Neil worked across UK, Europe, Asia and the US for companies such as BNP Paribas, IBM and Fiserv and Savvis (a leading global supplier of cloud and data centre service and a division of CenturyLink Inc), for 6 years, where he was Managing Director of the EMEA Region and the global financial services sector.

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Abstract

By 2025, the developing world will be home to 29 megacities as the prospect of better employment and a brighter future continues to lure people from rural outposts to urban centres. In this article, the author explains the challenges we face as cities in which we live grow exponentially bigger and develop into megacities, and the role that the data centre plays in resolving these issues.

Introduction

Alongside technology innovation and rapidly evolving financial markets, accelerated urbanization is one of the major forces shaping the future of the global economy.

Today there are 33 urban areas that meet the definition of a “megacity” (home to ten million people or more) – from London to Cairo and Beijing to Sao Paulo. As the urban population continues to increase, so will the number of cities joining the “megacity” club. By 2030, experts predict that there will be 41 megacities, including 12 in China and six in India. Like those already in existence, these new megacities will pose different challenges and opportunities.

On one hand these spaces will be the epicentre of people, ideas, business innovation and economic growth bringing economic success. London, for example,



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is the fifth wealthiest city in the world with a GDP of \$731.2 billion¹, making it's GDP greater than countries like Argentina, Poland, Sweden and Belgium². On the other, rapid growth will put strain on infrastructure such as power distribution, sewage, water systems, transport, education, policing and welfare. Fast flows of data underpin all of these, in addition to increased streaming of rich graphical and video content.

It can be argued that the real heart of the megacity is the infrastructure, and more specifically, the IT that powers a city. The heart of the IT is a network of connected data centres close to the dense urban populations, increasingly in a hub and spoke/ Edge configuration. According to Hitachi³, the ability to make megacities productive and successful lies in making cities as smart as possible and that technology-enabled living will be crucial to the success and improved quality of life in the age of megacities.



The smart city and the network that supports it

What unites all 33 megacities is that they thrive, or otherwise, on shared public systems and services, and Governments, technology companies and businesses all want to leverage this urban interconnection and the data it produces. The ultimate goal is for cities to use data to bring intelligence to urban environments, and to improve the quality of life for residents.



The backbone of the smart megacity is the smart network that underpins it. Electricity, supply and disposal systems will all be electronically linked. Automatic traffic control systems will respond to real-time data, reducing traffic and redirecting it if necessary. The workplace and the home will merge and supply chains will be optimized.



Indeed, we see megacities learning from each other as they move to embrace the newer and smarter technologies. Viewed this way, London has more in common with cities like Shanghai than its closer (but smaller) European counterparts, as it struggles with the challenges that come with very high population density. So we see London moving towards Shanghai-style smart transport systems to alleviate congestion, hoping that innovations in autonomous vehicles, data & AI, electric vehicles and shared mobility will help solve its transportation issues.

Whilst the benefits of the smart megacity are extensive, they will only be realized when digital infrastructures can physically link dispersed machines and sensors so they can exchange information in real time. If they are to tap into the potential value of “big data”, interconnections between people and applications, data, content, clouds and the network needs to be seamless.

The big capacity challenge – the role of the data centre

We know that smart applications require lots of connectivity, data storage and computing power and so it's no exaggeration to say that data centres will be at the heart of the smart megacity.



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The extensive nature of big data needs something beyond a company or Government department's in-house storage capabilities, and this presents significant opportunities for data centre providers to help Governments and businesses alike to deal with their big capacity challenge. Being able to store IoT generated data, the ability to access and interpret it as meaningful actionable information – very quickly – is vitally important and will give huge competitive advantage to organizations and municipalities that do it well.

The implications of not getting it right are potentially disastrous. Failures in the network could result in energy systems being shut down, companies unable to do business and huge transportation disruptions – as well as hospitals and schools suffering if there was a huge outage. So smart megacities are turning to decentralized energy-generation and storage systems which will be able to minimize the impact of power outages or natural disasters.

Singapore is a great example of a forward planning smart megacity – which is significantly upgrading its systems in order to tackle this new wave of smart applications and to mitigate the potential of failure. Here the Government plans to migrate some of its systems to the cloud and to build a suite of standardized software components, that can be used to more quickly develop new applications; it is a forward looking move that others can learn from.

However, when it comes to data centre infrastructure, Singapore, like other smart megacities will have to mix the old and the new – dealing with legacy infrastructure



as well as creating new facilities. For some this might mean that traditional “core” connectivity hubs will have to work alongside smaller data centres optimized for Edge computing. Providers may also need a work-around to cope with disparate local energy regulations and prices – and work out where data centre facilities can be optimally located. As more and more applications are required to service immediate engagement – such as streaming, ecommerce and financial services – data centres must be located and selected correctly for this type of need too.

Multi-tenant colocation facilities have been cornerstones of the Internet economy since the 1990s, and will continue to be important as we enter into the age of the smart, tech powered megacity environment, providing the best in interconnectivity, flexibility and scalability. High Performance Computing (HPC) will also likely power smart megacity applications, as it presents a compelling way to address the challenges presented by IoT and big data, and data centre managers will continue to adopt High Density innovation strategies in order to maximize productivity and efficiency, increase available power density and the physical footprint computing power of the data centres; vital in power heavy big data application.

In conclusion

While it is still too early to predict the extent to which smart megacities will take hold across the globe, one thing is clear – technology infrastructure will be the foundation, and the sheer scale involved in turning a megacity completely “smart” is not to be underestimated. The world will be home to 9.8 billion people by 2050, according to the United Nations⁴, but the number of devices we own will dwarf this figure, with Gartner predicting 20.4 billion connected devices to be in circulation only two years from now.

When we look specifically at the needs of the megacity, this translates into escalating demand (and competition) for the fastest connection speeds, greatest access to connectivity and the ability to instantaneously scale data and workloads up into the cloud.

For megacities to become smart megacities, and to improve the quality of life for tens of millions of people, the onus is on the technology infrastructure that underpins the innovation. Get the data centre strategy right and Governments, companies and people have an intelligent and scalable asset that enables choice and growth. Get it wrong and it becomes a fundamental constraint for innovation and change.

Reference

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