

## Telehouse White Paper

# Smart Cities How Data Centers Are Enabling the Metropolises of Tomorrow

*Smart cities are no longer a dream of tomorrow, but becoming an increasingly popular option for enhancing the sustainability and livability of major metropolitan areas throughout the world. To enable the functionality of the advanced technologies that make up a smart city, a superior level of connectivity is not only advantageous but essential. Mission-critical data centers located in the heart of these smart cities are making this level of connectivity possible with low latency interconnectivity, resilient infrastructure to securely house critical data, and scalable capacity for future growth.*

### Introduction: Defining the Smart City

With the global population steadily increasing, major cities around the world are experiencing a massive influx of new inhabitants each year. According to the World Health Organization (WHO), 54 percent of the world's 7.5 billion people currently live in urban areas, a number that is expected to grow by two percent every year until 2020.

In order to maintain a high quality of life for residents, cities around the world are becoming smarter, incorporating innovative information and communication technology (ICT) and Internet of Things (IoT) devices to manage a variety of city assets such as transportation, government, education, law enforcement and waste management. These so-called 'smart cities' are changing the way people live on a fundamental level by continuously collecting and analyzing data that is used to improve a city's livability.

### Growth, Trends and Forecasts

As a growing number of people congregate within urban areas, it has become increasingly important to make cities greener and more efficient through the utilization of smart technologies. According to a study by research firm Frost and Sullivan, there are eight key factors that define smart cities, including smart governance, smart energy, smart building, smart mobility, smart infrastructure, smart technology, smart healthcare and smart citizen. Based on its research, Frost and Sullivan reports that these eight elements provide a combined market potential of \$1.5 trillion globally.

A multitude of sensors and IoT devices are critical to the enablement of smart cities. Gartner predicts that 9.7 billion devices will be used in smart cities by the year 2020, rising from just 1.1 billion in 2015. Gartner also predicts that climate change, resilience and sustainability will be among the chief objectives surrounding smart cities in upcoming years, as major metro areas around the world launch various projects utilizing IoT technology for data collection and resource management.

These diverse projects create an opportunity for the implementation of green technologies throughout smart cities such as solar-powered trash compactors, remotely controlled LED street lights and vehicle emissions sensors. In addition, the daily lives of residents and visitors are also directly impacted by smart technologies, as many gain the opportunity to use emerging applications such as driverless cars, Wi-Fi kiosks, and solar-powered charging stations.

### **The Smart City Challenge**

To enable IoT technologies and the 5G networks that support them, high-bandwidth, low-latency connectivity inside smart cities is absolutely critical. Without superior connectivity, it will be physically impossible to process the high volumes of data necessary to create a network of communicating devices. This need presents the opportunity for telco providers to become involved in the next generation of technology and communications.

To facilitate constant connectivity, which is the cornerstone of smart city infrastructure, data must be exchanged virtually instantaneously between businesses, organizations and government entities. Leveraging their ability to provide enhanced connectivity, and their substantial experience managing complex networks and mitigating cybersecurity threats, telecom providers, global network operators and mobile businesses are in a prime position to serve the technological requirements of smart cities.

### **A Multi-Layer Ecosystem**

Smart city enablement lies within the integration of a new multi-layer telecommunications ecosystem built to support enhanced connectivity. Making up the first layer of this ecosystem, telecommunications companies, Internet Service Providers (ISPs) and managed services providers (MSPs) were among the first wave of data center adoption in the 1990s. During this time, providers found that colocating in close proximity to one another significantly reduced the costs associated with peering. In addition the lower latency resulted in increased performance, enabling a competitive advantage over rivals.

Over the last two decades, market growth has resulted in the emergence of a large number of highly-connected data centers. This dense network connectivity enabled the next major wave of market disruption via the Cloud and Over-the-Top (OTT) content, followed by IoT providers and Big Data analytics, making up the second and third layer of the telecommunications ecosystem. In many cases this interconnectivity is facilitated by leading Internet Exchanges such as NYIIX, LINX and JPIX.

These three layers interact to form the necessary backbone to enable the emergence of smart cities. Enterprises looking to claim their stake early on are adopting colocation with direct connectivity to key partners for faster and more efficient design and deployment of new technologies and offerings.

## **How Telcos Can Position Themselves to be Ready for Smart Cities**

In order to become more involved in the development and enablement of smart cities, telcos must position themselves in highly-connected data centers located within the city limits for fast, secure and resilient connectivity at all times. By colocating network infrastructure within these data centers, companies can innovate faster and launch new offerings virtually instantly with direct and immediate access to connectivity resources.

As smart cities grow both in number and complexity, the technologies they employ are putting a major strain on the supply of colocation and Cloud resources. Today's telecom providers should never underestimate the sheer amount of data traffic that will be generated by a fully-developed smart city. As a result, it is critical for those involved in the development of smart cities to identify secure, resilient and scalable infrastructure that will ensure networks are future-proofed.

### **Smart City Enablement by Telehouse**

Telehouse provides highly-connected colocation facilities within multiple smart cities around the world, including New York, London and Tokyo. By colocating within one or more of these global facilities, companies have the opportunity to introduce innovative technologies and services to advance smart city development and the proliferation of IoT with direct, low-latency connectivity to end users.

#### **New York**

Reinforcing Mayor Bill de Blasio's promise to help the city of New York maintain its position as a technologically and economically advanced city, the Mayor's Office of Tech + Innovation has been hard at work creating one of the most innovative and tech-friendly cities in the world through its Smart + Equitable City initiative. As a result of this initiative, New York was announced as the Best Smart City of 2016 at the Smart City Expo World Congress in Barcelona.

Making New York a global benchmark for smart technology, this initiative rests on four pillars of innovation. Among these, LinkNYC, which replaces the city's payphones with Wi-Fi kiosks to expand connectivity among citizens and visitors; Marketplace.nyc, a digital platform to help government institutions identify smart city solutions; Urban Tech NYC, an accelerator program to help entrepreneurs create smart technologies and solutions; and a comprehensive set of guidelines for the deployment of smart technologies and practices.

#### **Telehouse New York Facilities:**

[Telehouse Teleport, Staten Island](#)

[Telehouse Chelsea, 85 10th Avenue](#)

## London

Boasting a combined worth of £19 billion, London serves as the largest tech market in all of Europe with 40,000 digital businesses and 200,000 employees in its technology sector alone. The Mayor's Smart London Plan, published in December 2013, outlined the ways in which smart technology will be utilized throughout the city to improve the lives of citizens and visitors through three overarching work-streams: Engaging and empowering Londoners and their businesses with smart technology; enabling growth for London's infrastructure, environment and transportation systems by harnessing data and digital technology; and working with businesses to help leverage opportunities for further growth and innovation.

As the largest city in Europe, London is leveraging smart technology to solve real-world problems such as rapid population growth, and to maintain its global business competitiveness while ensuring livability.

### Telehouse London Facilities:

[Telehouse North Two](#)

[Telehouse West](#)

[Telehouse East](#)

[Telehouse North](#)

[Telehouse Metro](#)

## Tokyo

Japan's smart city market, which stood around ¥1.12 trillion in 2011, is expected to increase to ¥3.8 by 2020 thanks to significant subsidies from the Ministry of Economy, Trade and Industry (METI). In Tokyo, smart technology solutions such as automation of energy supply and production of highly-connected vehicles are being utilized to help solve regional issues in the pursuit of enhanced sustainability and livability throughout the city.

In addition, as Tokyo prepares to host the 2020 Olympics, urban development has greatly accelerated making sustainability a key consideration. Organizing the Olympic games provides Tokyo with an opportunity to make additional smart upgrades throughout the city, including enhanced energy efficiency within buildings, sustainable construction and renewable energy production.

[Telehouse Tokyo](#)

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## **About Telehouse**

Telehouse is the pioneering data center colocation provider established in 1989. It is an owner operator of global data centers, connectivity and managed ICT solutions to over 3000 corporations around the world. Telehouse is the data center subsidiary of Japanese corporation KDDI, a leading Japanese mobile and fixed-line telecommunications and ICT solution provider with 106 offices in 28 countries around the world and a Global Fortune company.

## **Contacts**

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