

# A Smart Life

## China advances the development of intelligent cities By Li Jing

As night falls on Xiongan New Area, about 100 km southwest of Beijing in Hebei Province, something unique happens: Streetlights come on and automatically adjust their brightness according to the number of pedestrians and vehicles around them. Passersby sit casually on the benches beside the streetlights, where they can charge their phones on the poles' outlets and access a free Wi-Fi network. The streetlights are also equipped with multifunction cameras, enabling them to automatically collect and transmit traffic information.

Since the first intelligent streetlights were installed on August 26 in Xiongan, what looks like a scene from a futuristic sci-fi movie is now part of local residents' day-to-day reality.

"The smart devices and 5G stations use a 48-volt direct current, which is absolutely safe for humans, even in case of contact. This helps prevent any risk of electric shock during the rainy season," explained Guo Tianhong, a technician at the China State Grid branch in Xiongan.

The new area, officially established on April 1, 2017, is an initiative to encourage the coordinated development of the Beijing-Tianjin-Hebei region. Among many tasks during the construction of Xiongan, the most important goal was to build a green and smart city.

Xiongan New Area has since established itself as a model for other smart cities being planned and built in China. However, this is not China's first attempt at creating a smart city, and, in fact, the country has been moving along this path for many years.

### Long-term exploration

The concept of a smart city was first put forward by U.S. information technology giant IBM in 2008. However, as technology is constantly evolving, the definition of this concept has changed dramatically over the past 10 years. Moreover, as countries have different understandings of the concept and its development priorities, there is currently no single definition of what constitutes a smart city. According to the China Wisdom Engineering Association, in simple terms, a smart city aims to increase the

efficiency of city resources; improve urban governance and programs; and provide practical and efficient urban services to citizens through digital and computerized management.

In order to promote a standardized approach to the construction of smart cities, the Chinese government has formulated a series of plans and measures, and has set up several research centers and launched pilot projects throughout the country. Since January 2013, the Ministry of Housing and Urban-Rural Development has announced the creation of 290 pilot smart cities, districts, counties and towns in three successive batches. In addition, several local governments have included smart city projects in their development schedules for the 13th Five-Year Plan (2016–20) period. By early 2018, more than 500 Chinese cities were planning to build or were in the process of building a smart city.

In addition to the central and local governments, businesses play a critical role in building

China's smart cities. According to Huang Qian, a professor at the College of Economics at Nankai University, the government should focus on formulating plans, improving industrial policies and creating an innovative environment, while companies should actively take part in the actual physical construction of smart cities.

Many companies are creating innovative urban solutions. Maintaining underground pipeline networks is a major headache for modern cities; excavation work on roads is not only labor- and resource-intensive, it also exacerbates public transit problems by blocking roads. To solve this challenge, Wuhan HopeTop Technology developed specialized robots, leveraging recent breakthroughs in Internet of Things (IoT) technology and artificial intelligence (AI).

"As soon as a problem is detected, such as a water leak, robots are inserted into the pipe, from where they will transmit data and images back to the control center. By analyzing this information with the help of Big Data technology, we can swiftly identify where the leakage point is located," Hu Zhen, HopeTop General Manager, told *Beijing Review*.

In addition to increasing efficiency, these new robots can help solve the problem of water waste. According to Hu, before tap water reaches urban households and commercial enterprises, a significant amount is lost due to numerous cracks in the pipelines. The rate of water waste can reach 30%, which means that 30 tons are lost for every 100 tons of water going through the system. This is a major chal-



A smart bus on display at the China Smart City and Intelligent Economy Expo in Ningbo, Zhejiang Province, on September 6.



An exhibition of the City Brain municipal management platform jointly launched by the government of Hangzhou, in Zhejiang Province, east China, and Alibaba Group on September 19 during Alibaba Cloud's Computing Conference 2018.

lenge on a global scale, but today, with the help of IoT technology and AI, even the smallest cracks can be quickly identified and repaired.

"For the long-term development of smart cities, the government must play the role of a general organizer, responsible for planning and promoting projects," said Feng Kui, a researcher at the China Center for Urban Development under the National Development and Reform Commission. "Governments, businesses and citizens each have their own part to play when it comes to the construction of a smart city, and the three must support each other."

In recent years, a number of organizations and events related to the construction of smart cities—such as think tanks, forums, exhibitions and even competitions—have been launched. These are all platforms for experts, government officials and entrepreneurs to exchange ideas and explore the meaning of a smart city. Together, they can seek better solutions to the numerous issues they typically encounter in the building process. For example, during the 2019 World Internet of Things Exposition in Wuxi, in Jiangsu Province in east China, solutions related to smart cities were put forward in several areas, including energy, healthcare and urban management.

### No one-size-fits-all

"As we build smart cities, large, small and medium-size cities must adopt different approaches because the problems they face are different," said Guo Renzhong, Dean of the Research Institute for Smart Cities, Shenzhen University, at the First Digital China Summit in April 2018.

With urbanization accelerating, many large cities are facing different types of urban maladies in several areas, such as urban governance, transport, the environment, public security and healthcare. For these large cities, the construction of smart city infrastructure must aim to provide effective solutions to these problems.

"Each city must find its own path forward according to its own conditions," said Hu.

The City Brain Project, developed by the Hangzhou Municipal Government and Chinese e-commerce giant Alibaba Group, has become a smart assistant to traffic police in Hangzhou, Zhejiang Province in east China. Powered by AI technology, City Brain analyzes road conditions using real-time video feeds and adjusts the duration of traffic lights according to traffic flow. The system can also provide advice to the police in case of emergency.

In 2019, the Smart Approval System was introduced in Haidian District, Beijing, and thanks to this addition, most administrative approvals can be completed online. Registering a company name, for example, now takes only 20 minutes, compared to two business days in the past.

One of the 10 largest ports in the world, the Port of Qingdao, in Shandong Province in east China, opened Asia's first fully automated container terminal in May 2017. Two years later, Qingdao Port successfully carried out the automatic operation of a container crane via a 5G connection. According to Li Fengli, General Manager of the Qingdao Port Group, the facility's cranes can now handle up to 36 containers per hour—50% more than in similar terminals around the world.

### The road ahead

China and many other countries are firmly committed to building and developing smart cities. To do so, they will have to meet many challenges.

First, they will have to find stable and reliable sources of funding. In order to provide the huge investment needed to build a smart city, relying solely on government funding is not a sustainable long-term solution. According to Wang Shouqing, a professor at Tsinghua University's Center for Public-Private Partnership (PPP), the PPP model provides an effective solution for the government to expand its financing sources, while giving companies an opportunity to take part in the construction of smart cities.

Data integration and security are other major challenges to be tackled in the process of building smart cities. "Data is the basic foundation for an intelligent city," Guo said. Data is handled by the government along with private companies, such as e-commerce firms and communication network operators, and Guo added that many questions remain around issues of data ownership and security. He said laws must be introduced to ensure data security and fair use to better contribute to building smart cities.

Today, although China has made several breakthroughs in smart city construction, there is still a long way to go. "The development of a smart city is like raising a child. As the child grows older, he or she constantly needs new clothes. The same applies to urban construction. We must never stop making new plans as the situations change," explained Guo. ■



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