

China makes strides in the Internet of Things

Telecom firms are taking the lead in the sector with innovative technology and smart solutions

By **MASI** in Beijing and **HEWEI** in Wuxi, Jiangsu

Driving in a metropolis is never easy, but finding an open space can be more difficult in Chinese cities given that over half the demand for parking lots is not satisfied.

Due to the development of Internet of Things (IoT) technology, drivers in Shanghai, however, are having an easier time. A driver can use an app to find an empty space in a parking lot, navigate to the location and pay the bill with a smartphone.

Moreover, the app can calculate the probability of a space becoming empty by using information from the likes of parking ticket machines.

The pilot project is being conducted by China United Network Communications Group, or China Unicom, the country's second-largest mobile carrier, and telecom equipment maker Huawei, in the Minhang district of Shanghai.

It is part of China's broader push to gain a lead in the race toward the era of IoT, with the global market value of such subsystems — in equipment and online-connected devices — projected to surpass \$100 billion in 2018, according to Luo Wen, vice-minister of the Ministry of Industry and Information Technology, the top industry regulator in China.

"Developing the Internet of Things is a strategic move to nurture a new momentum in China's economy," Luo told the 2017 World Internet of Things Wuxi Summit on Sept 10.

IoT is the concept of connecting electronic devices, such as cell phones, coffee makers, washing machines and headphones, to the Internet to streamline management and enhance efficiency.

Bolstered by the government's Made in China 2025 and Internet Plus initiatives, China has made strides in building the IoT's infrastructure, commercial applications and technological advancements, Luo said.

Such advancements include the narrowband IoT, a radio technol-

ogy, which can connect billions of devices in a smarter way than WiFi and Bluetooth.

The market size of China's IoT industry is expected to exceed 1.5 trillion yuan (\$230 billion) in 2020, up from more than 900 billion yuan in 2016, according to the *China Annual IoT Development Report (2016-2017)*, released by the China Economic Information Service.

Favorable government policies and fierce market competition inside the world's largest manufacturing powerhouse of electronics have already placed China in the driver's seat in IoT adoption, said Charlie Dai, principal analyst at consultancy Forrester.

"First, the government places great value on strategic IoT initiatives for the nation's digital transformation, having inked IoT into its 13th Five-Year Plan, which steers China's economic and social development between 2016 and 2020," Dai said.

To be more specific, the Ministry of Industry and Information Technology unveiled a plan earlier this year to boost IoT development, with the goal of enabling more than 1.7 billion public machine-to-machine connections by 2020. There were 100 million connections in 2015, accounting for 31 percent of all global connections, official data show.

Beijing also selected cities to pilot the smart city projects, through which they established database and sensor networks to collect, store and analyze information related to transportation, electricity, public safety and environmental factors.

In the eastern city of Wuxi, a government-backed heartland for IoT adoption, the number of IoT-connected gadgets by the end of August had, for the first time, surpassed that of mobile subscribers, said Li Qiang, Party secretary of the Communist Party of China Jiangsu provincial committee.

"This is thanks to the full coverage of China's narrowband IoT network four months ago across the city," Li said. This marked another technical

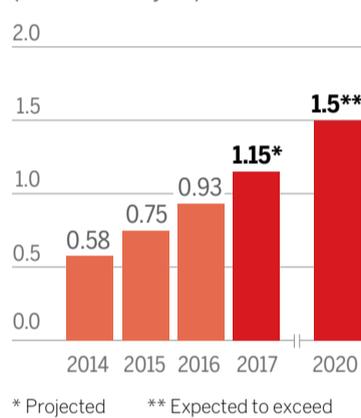


Children look at an industrial drone at the 2017 World Internet of Things Wuxi Summit, in Wuxi, East China's Jiangsu province, on Sept 10. GAO ERQIANG / CHINA DAILY

Market forecast

The size of China's Internet of Things sector

(Unit: trillions of yuan)



Source: The Annual IoT Industry Development Report of China CHINA DAILY

breakthrough that Wuxi has made since the city built the nation's first high-standard all-optical network.

An IoT demonstration zone has also been established in Wuxi's Xuelang town, codeveloped by the municipal government and tech giant Alibaba, to create synergies for the country's wealthy Yangtze River Delta Region to push ahead with IoT technologies, he added.

The other driver is the competitive market in China, said Dai from Forrester, so companies in sectors from manufacturing to services have the impetus to improve product performance and better differentiate themselves from peers by using IoT technologies.

Since China makes so much of the world's electronics, such as sensors, microchips and other electronic devices, it will form the backbone of the expanding IoT technology market.

Market research firm IDC has predicted that Chinese manufacturing spending on the IoT will reach \$127.5 billion by 2020, with an average growth rate of 14.7 percent.

"Around 28 billion devices will be

connected to the Internet by 2021 globally, among which 16 billion are related to the IoT. The technology is set to transform public infrastructure, such as power grids, railways and ports, by making them interconnected and smart," Luo, the industry minister, said.

The smart parking solution in Shanghai is one of the typical application scenarios of IoT. It is enabled by the narrowband IoT technology that can connect billions of low-power devices like smart meters, which transmit small amounts of bandwidth and may need to be deployed for many years without interference.

"Narrowband IoT is the latest IoT battlefield that global telecom carriers are scrambling for so they can establish a beachhead," said Xiang Ligang, CEO of telecom industry website Ctime.

"It can connect the Internet of hidden things, such as water and gas meters that often lie in basements, deeply shadowed areas and even underground pipes, making large-scale connection really possible. China is leading global efforts in commercializing the technology."

In a report published in May, the Ministry of Industry and Information Technology encouraged narrowband IoT's commercial use in industrial Internet and urban public service and management. It also supports smart factories and the Internet of vehicles.

China Telecom, the country's third-largest telecom carrier by mobile subscriber base, said in May that it had established a commercial narrowband IoT network with the widest coverage in the world. The company has upgraded 310,000 telecom base stations nationwide to support narrowband IoT connectivity.

Li Shengfei, general manager of China Telecom's Shenzhen branch, said the company delivered the world's first commercial narrowband IoT-based Smart Water meter-

ing project in March by partnering with Huawei and Shenzhen Water, the local water utility provider.

About 1,200 narrowband IoT-enabled smart water meters have been deployed for Southern Pearl Garden and other residential areas in the Yantian District of Shenzhen. With a chipset inside, these smart water meters can intelligently read and upload data to Shenzhen Water's online platform.

Liu Chang, a resident in Southern Pearl Garden, said the smart water avoids the service charge loss caused by false or missing meter reading and water loss from pipeline leakage. "I don't have to wait at home for meter readers coming every month," she said.

The project can also help water utility providers analyze water usage patterns of different consumer groups to build up or reconstruct the water pipe network to provide more convenient and reliable consumer water services.

China Mobile, the country's largest telecom carrier by subscribers, is catching up. It independently developed the M5310, the world's smallest embedded SIM narrowband IoT module. It is highly power-efficient and can save more than 30 percent of the space of its nearest rival.

Having started field tests on narrowband IoT in Shanghai, Guangzhou, Hangzhou and Fuzhou, China Mobile is set to launch a large-scale field test later and commercialize narrowband IoT by 2018.

Nearly 100 companies are developing products based on the module to bring market innovation through narrowband IoT services, such as smart agriculture, smart parking, air quality monitoring and asset management applications, according to China Mobile.

Cheng Yu contributed to this story.

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