中华人民共和国科学技术部
Ministry of Science and Technology of the People´s Republic of China

CHINA S&T NEWSLETTER

No.11 2019

Contents

2019 China International Industrial Internet Innovation and Development Conference focuses on 5G

Focus: 5G development in China

2019 China International Industrial Internet Innovation and Development Conference focuses on 5G

On the sidelines of the 2019 China International Industrial Internet Innovation and Development Conference held at Xiamen International Exhibition and Convention Center, Xiamen China Telecom set up three pavilions--5G display, intelligent connectivity and industrial internet, with a focus on industrial innovation applications and public services such as Tianyi cloud, internet of things, 5G intelligent video surveillance, and 5G intelligent policing.

The conference was held during the 2019 China International Fair for Investment and Trade (CIFIT) sponsored by the Chinese Ministry of Commerce during September 8-11.

Based on the high speed, large bandwidth and portability of 5G network, Xiamen China Telecom opened 5G live streaming. A big advertising stand “Hello 5G” was put up in the middle of the exhibition area, and guests could experience what it felt like as an anchor. Real-time videos were automatically uploaded to the Tianyi live streaming platform, offering innovative interactive experience.

5G concept

5G is the 5th generation mobile communications standard or technology, the follow-up of 4G. According to IMT2020 (5G) Promotion Group, 5G is defined by the iconic competence indicator, which refers to Gbps rate for user experience, and a set of key technologies, which include large-scale antenna array, super-intensive network, new multiple access, full-spectrum access and new web architecture.

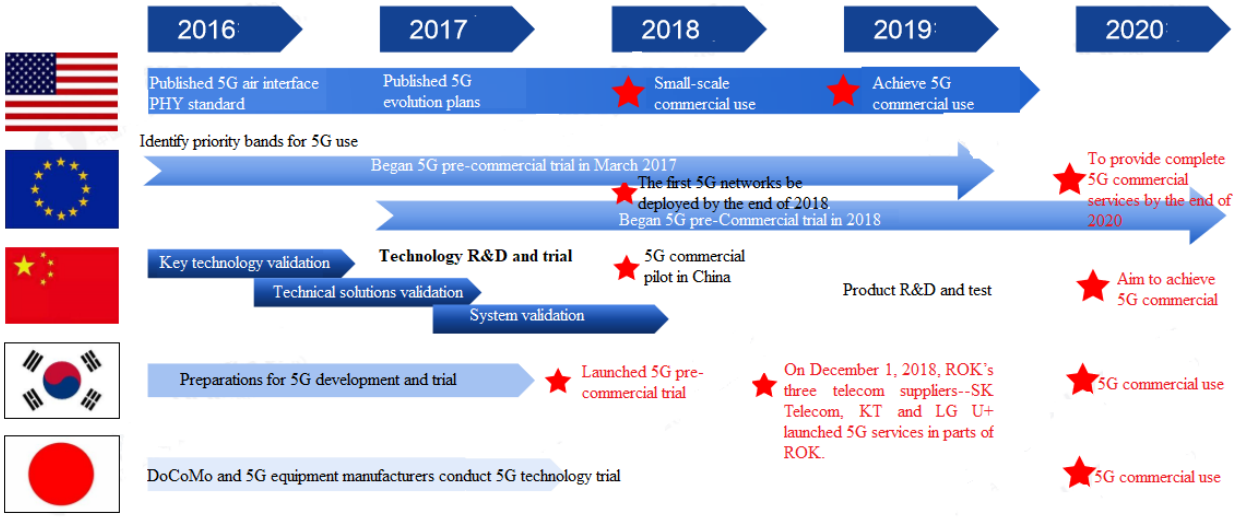
5G application scenarios

Three application scenarios of 5G defined by ITU

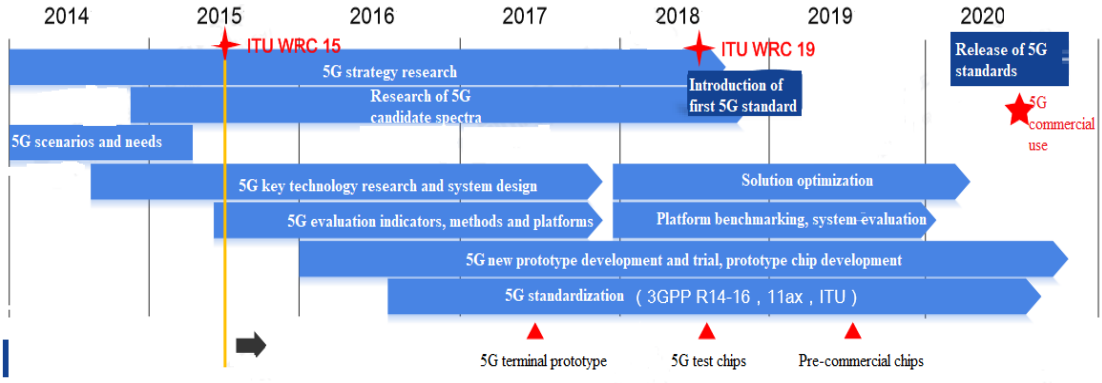
eMBB	Enhanced mobile broadband, referring to high-flow mobile broadband services such as 3D/ultra-HD video.
URLLC	Ultra-reliable ultra-low-latency communications, such as autonomous driving (3G response time is 500ms, 4G 50ms, and 5G is required to be 0.5ms)
mMTC	Massive IoT

Top 10 industrial application scenarios of 5G

Global 5G initiatives



China's 5G has entered a critical standard-setting period

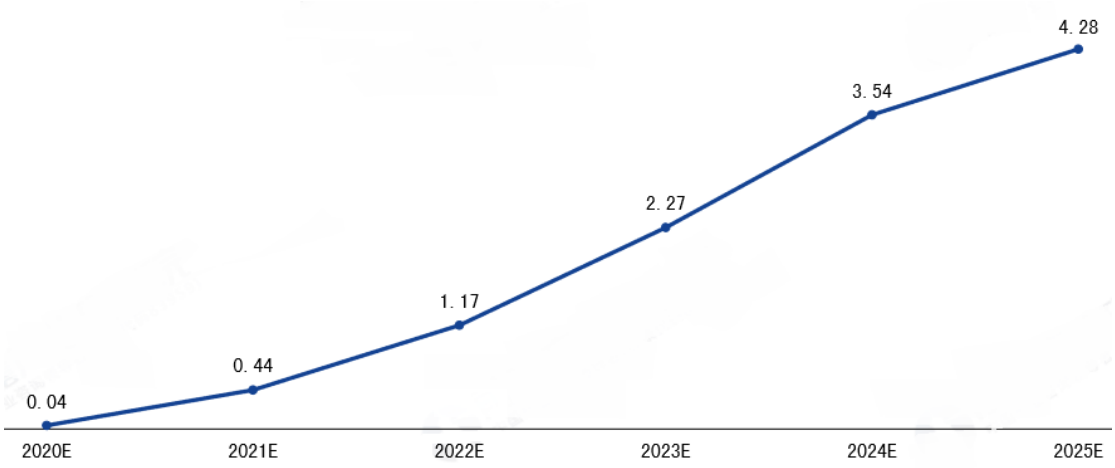


Key milestones for 5G development in China

Year 2013	In February, the Ministry of Industry and Information Technology (MIIT), the National Development and Reform Commission and the Ministry of Science and Technology support the industry for the establishment of IMT-2020 (5G) Promotion Group.
Year 2015	In October, IMT-2020 (5G) Promotion Group, EU 5GPPP, Japan's 5GMF, ROK's 5G Forum and 5G Americas signed an MOU.
Year 2016	In January, China Academy of Information and Communications Technology launched 5G technology trial. In September, IMT-2020 (5G) Promotion Group completed 5G key technology validation.
Year 2017	In June, Datang Telecom Group-developed 5G Beijing trial network was launched. In November, MIIT announced the launch of phase 3 of 5G technology R&D and trial.
Year 2018	In January, specifications for phase 3 of 5G technology R&D and trial were published. In September, IMT-2020 (5G) Promotion Group announced the completion of phase-3 NSA trial of 5G technology R&D and trial in China. In December, China's top three telecom operators completed their 5G spectrum distribution plan.
Year 2019	In January, MIIT announced that temporary 5G licenses would be issued in selected cities in 2019. In April, the very first 5G mobile phone was connected in Beijing.

5G connections are expected to reach 400 million in 2025

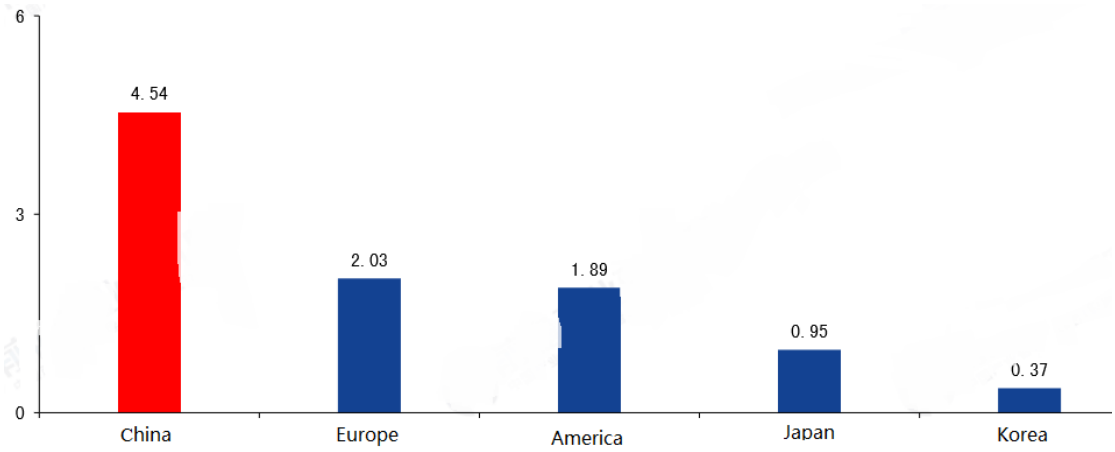
If 5G is put into commercial use by 2020, 5G connections are expected to reach 4 million by then, and over 428 million by 2025 as 5G is more widely used.



Forecast for 5G connections from 2020 to 2025 in China (unit: 100 million)

The number of 5G users is expected to reach the world's No. 1

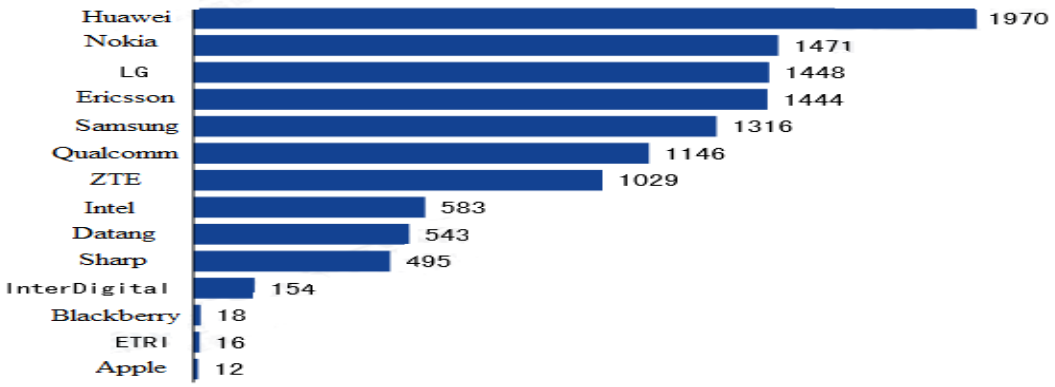
According to a report by Global System for Mobile Communications Association (GSMA), the number of 5G users worldwide is expected to hit 1.36 billion by 2025. China will be home to the largest number of 5G users, or 454 million, followed by Europe, which will have 203 million. The United States will have 189 million, Japan 95 million and ROK 37 million. Given the number of users and big market demand, China has an edge in advancing emerging industries or technologies.



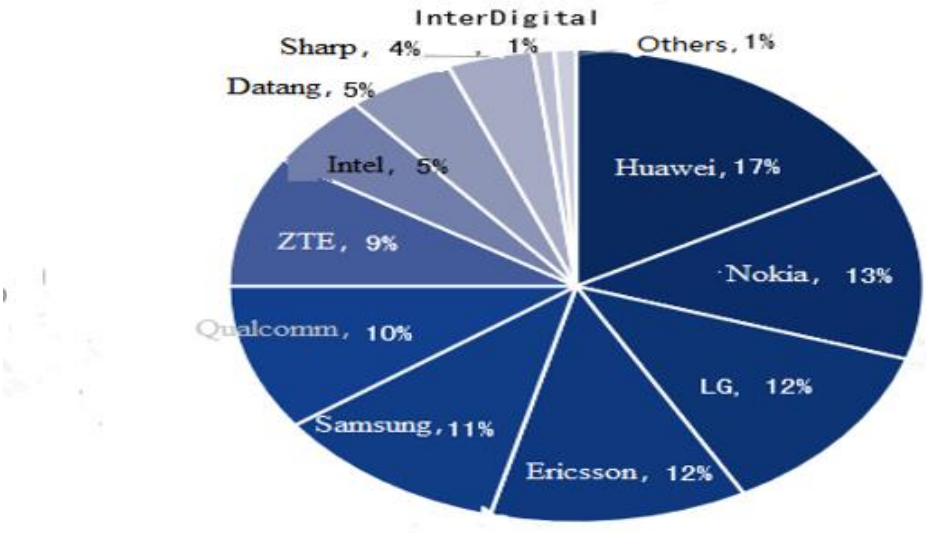
Forecast for the number of 5G users in main countries by 2025
(unit: 100 million persons)

Chinese companies have the biggest share of global 5G patents

Companies with more than 1,000 patent claims over 5G standards include Huawei, Nokia, LG, Ericsson, Samsung, Qualcomm and ZTE. Huawei has the largest number of 5G patent claims, or 1970, accounting for 17% of the total. ZTE has 1029, or 9% of the total, ranking No.6. Datang has 543, or 5%, ranking No.9. Together, the three Chinese enterprises claimed 3,542 patents, taking up 30.3% of the total.



ETSI-declared 5G standard-essential patents (SEP) by the end of 2018 (unit: pieces)



ETSI-claimed 5G SEP ratio by the end of 2018 (unit: %)

Policy incentive--5G has been put on the national agenda

During the NPC and CPPCC sessions in March 2017, Premier Li Keqiang specifically mentioned the importance of 5G to China's future development in the 2017 Government Work Report. In the 13th Five-Year Plan for National IT Development released by the State Council, 5G is mentioned 16 times.

Time	Policies and initiatives	Contents
2013	Established IMT-2020 (5G) Promotion Group	Identified 5G technology scenarios, potential technologies and key performance indicators
2014	National 863 Program	Launched a preliminary study on 5G mobile communications system and initiated 11 topics on 5G core technologies

May 2015	Made in China 2025	Proposed to actively promote 5G development, put into place a future web architecture, and achieve 5G commercial use by 2020
Jul. 2016	National Outline for IT Development	Proposed to make breakthroughs in 5G R&D and standards by 2020
Dec. 2016	13th Five-Year Plan for National Strate-gic Emerging Industries	Push forward 5G joint R&D, trial and pre-commercial pilot, and improve the distribution of national spectrum resources
Jan. 2017	IT Industry Deve-lopment Plan (2016-2020)	Support 5G standard development and technology test, promote 5G spectrum planning, and launch 5G commercial use Aim to become one of global leaders in 5G standards and technologies by the end of the 13th Five-Year Plan period.
Dec. 2018	Issued 5G licenses	China's top three operators have obtained permits to use 5G low- and medium frequency. Spectrum allocation plan has come out and a nationwide trial will be rolled out.
Mar. 2019	2019 NPC and CPPCC sessions	Promote joint development and sharing of 5G networks and rapid penetration of 5G terminals, develop an ecosystem for 5G applications and speed up 5G commercial use

(Source:China Academy of Information and Communications Technology)