

Jointly Building the Engine of a Smart Society

- 12 Building Digital Infrastructure
- 15 Leading Innovative Digital Ecosystem
- 18 Empowering Construction of a Smart Society
- 22 Ensuring Trusted Digital Consumption



Helping Win the Fight against COVID-19 in the Spirit of Solidarity

Sustainability Context

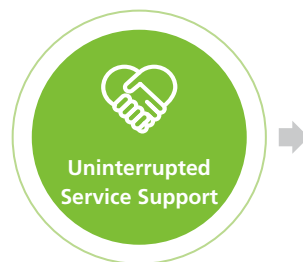
Every technological advancement in the information and communications sector produces a strong boost to economic and social development. The advent of 5G will make digital information a key factor of production. The attributes of digital information, namely duplicability, shareability, unlimited growth and free flow, break the constraints of the limited supply of natural resources on growth and augment the internal driving forces and external space of economic growth, thereby laying the foundation for continuous growth and sustainable development. In 2019, 5G commercial services were officially launched in China, providing crucial support for strengthening the role of 5G in driving the integration and application of areas such as industry development, information consumption and public services. As the development of 5G takes the fast lane, its impact on economic growth, industry innovation, and the construction of sustainable cities and communities will also be further accentuated.

China Mobile thoroughly implements the "5G+" plan. From daily activities to industrial manufacturing and from healthcare to the Internet of Everything, we are poised to join hands with industry partners to integrate 5G into all aspects of people's life and work and put well-developed 5G networks to good use, thereby fueling the development of a smart society together.

In spring 2020, a battle against the COVID-19 epidemic has taken place across China. In the face of the first "big test" in the 5G era, China Mobile quickly launched the Level 1 emergency response and formed the China Mobile Steering Group for Responding to COVID-19 Outbreak. The Group was tasked with comprehensive coordination work to ensure reliable information support for the prevention and control of the epidemic, such as ensuring reliable communication coverage and services, and providing communication support for disease prevention and control.



- Strengthened shift arrangements for emergency support, heightened the support level of base stations in key areas to the highest level, strengthened the monitoring and inspection of the network operation status, and continuously optimized network experience, thereby ensuring the network remained stable, reliable and uninterrupted.
- Cooperated with local governments and promptly provided full 2G/4G/5G network coverage for Huoshenshan Hospital and Leishenshan Hospital in Wuhan, fully supported the network construction at temporary hospitals in Wuhan and other cities, and provided 5G high-definition live broadcast of the construction of the Huoshenshan Hospital and Leishenshan Hospital through MIGU video which was viewed by over 490 million times.
- As of March 16, 2020, the Company had deployed emergency support personnel for over 1.24 million person-times and emergency vehicles for over 350,000 vehicle-times.



- Activated its customer service response plan to provide tariff reduction and waivers for medical staff engaged in the epidemic prevention and control efforts in Hubei; exempted epidemic prevention and control command and dispatch steering groups, frontline medical staff, and users in key epidemic or quarantine zones from service suspension; and collaborated with other telecom operators to provide each frontline medical staff in Hubei with RMB1,000 of prepaid mobile account credit for free.
- Adjusted the business hours of stores, required all service personnel to wear masks and carry out disinfection regularly, and provided walk-in customers with temperature checks and hand sanitizer.
- Expanded the service capabilities of electronic channels and disseminated over 50 billion epidemic control public announcements for government agencies; optimized online services processes such as SIM card application and broadband installation application, and integrated key operations and inquiries into a new "Convenience Service" section online, to ensure that customers could have their business needs served without leaving home; and launched new services through electronic channels such as broadband self-service troubleshooting and epidemic information inquiry, covering about 70 million customers.
- Leveraged advantages in 5G and AICDE fields to develop innovative applications to enable scientific and accurate prevention and control of the epidemic, such as applications for epidemic monitoring and analysis, infection tracing and patient tracking; and offered a variety of information services to meet customers' needs during the epidemic, such as telecommuting, remote learning and entertainment.



- Ensured prioritized supply of protective gears for key epidemic prevention and control areas and front-line employees, strengthened the epidemic monitoring, prevention and control of returned employees, devised flexible work arrangements with telecommuting and flexitime, and ensured employees on shifts were properly compensated with allowances and shift arrangements.
- Disinfected and ventilated stores, canteens and equipment rooms to avoid cluster and group infections.

Mounting New Defense against the Epidemic by Leveraging Strengths

Early detection, early quarantine and early treatment are crucial to the prevention and control of the epidemic. We worked together with partners and applied 5G+ smart medical solutions to the “battlefront” of the fight against the epidemic.

5G remote medical services system

We built a 5G remote medical services system for designated hospitals for treating COVID-19 including the Beijing 301 Hospital and Taikang Tongji Wuhan Hospital to realize “face-to-face” communication between medical personnel in Beijing and Hubei and enable greater expertise in patient treatment. In addition, the application of technologies such as “5G remote medical services cart” and “5G+VR remote observation” has also made diagnosis more convenient and efficient.

5G intelligent medical robots

With the support of 5G networks, a number of service robots and disinfection and cleaning robots went on duty in hospitals in Hubei, Zhejiang, Shanghai and other places, where they provided assistance to medical personnel, disseminated knowledge on epidemic prevention, and carried out tasks such as disinfection and cleaning as well as medicine distribution and delivery. The use of those robots greatly reduced the possibility of cross-infection among medical staff in the wards and improved the quality of quarantine management.

5G Thermal Imaging Temperature Measurement System

In response to the risk of the epidemic further spreading due to the peak travel period following the Spring Festival, we launched the 5G Thermal Imaging Temperature Measurement System in Zhejiang, Shanghai, Guangdong, Jiangsu, Sichuan, Guangxi and other places. The technology provided high-precision, safe and continuous temperature screening in places with dense crowds, effectively reducing the risk of cross-infection caused by contact temperature measurement.

5G online outpatient consultation

The Sun Yat-sen Memorial Hospital of Sun Yat-Sen University in Guangdong province provided online doctor consultation based on the 5G online outpatient solution to reduce the risk of cross-infection.

Facilitating Normal Functioning of Society by Sharing Resources

To help maintain normal day-to-day functioning of society, the Company launched a variety of solutions for working, studying and living at home, thereby supporting people's efforts to return to work and contributing to epidemic control.

Telecommuting

The Company provided free services for enterprises including remote conference, multi-party call, Fetion (instant messaging), voice notifications, etc. It also offered users telecommuting services available across all networks to meet the need to work anytime and anywhere, thereby enabling employees to work during the quarantine period.

Smart education

The Company launched the “National Primary and Secondary School Network Cloud Platform” in cooperation with the Ministry of Education to meet the need of 190 million primary and secondary school students nationwide to study at home and ensure that schooling continued while schools stayed closed. Utilizing its strengths in information and content distribution, the Company facilitated differentiated online education in different places by providing three modes including multi-screen interaction, big-class live broadcast and small-class interaction as well as various forms such as on-demand videos and live broadcast. As of March 5, 2020, the Company has started 690,000 online classes, covering a total participation of 387 million person-times. Meanwhile, the Company actively responded to the needs of students in remote areas for internet connection to study online by setting up base stations and broadband equipment.

Online entertainment

The Company offered users services such as MIGU video, Mobile Box and MIGU Reading to allow them to embark on high-quality spiritual journeys without leaving home.

Smart epidemic prevention and control

The Company launched a smart epidemic prevention and control platform in provinces including Zhejiang, Henan, Shanxi, Fujian and Guangdong, providing enterprises with functions such as epidemic prevention inspection, visitor registration, employee health tracking and employee daily health check; and offered products like “And-Easy Report” and “Easy Epidemic Statistics”, satisfying epidemic prevention and control needs such as data collection, counting and analysis.

Sale of agricultural products

The Company used the China Mobile 12582 Agricultural Information Network to support the sale of agricultural products and help rural population secure employment by collecting and distributing information on unsold agricultural products and employment opportunities through channels such as free text messaging service, video ringback tones and the 12582 service hotline.

Apart from that, we also launched the “Warm Spring” initiative to help our 500,000 channel partners resume work and reduce loss by offering special assistance, ensuring channel availability and empowering innovation, etc.

01

Building Digital Infrastructure

Bolstering Connectivity Foundation

Acting on the strategy of building a world-class enterprise, China Mobile is committed to developing high-speed, safe, ubiquitous and smart infrastructure of the highest standard and continuing to improve network quality so as to bolster the connectivity foundation of a smart society.

The Company fully implemented the “Double GB Plan” by intensifying the construction of cloud computing infrastructure, accelerating the development of network capacity and the construction of novel information infrastructure, converging different infrastructure into next-generation information and communications technologies, and driving the effective transmission and integration of all kinds of information in the digital world.

GB 5G Mobile Network

Built over 50,000 5G base stations and offer 5G commercial services in 50 cities; to deliver 5G network coverage in all urban areas at the prefecture/city level or above by 2020.

GB Fiber Broadband Network

Commenced building the GB broadband network, equipping around 80% of the facilities in urban areas with the capabilities for the rapid expansion of GB broadband business.

We continued to narrow the digital divide in 2019, providing broadband access to 43,000 administrative villages through the Telecommunications Universal Service Project that had cumulatively finished installing wireline broadband in 38,000 administrative villages and 4G network in 4,564 administrative villages; and launched special projects on the daily maintenance of rural networks and the guarantee of normal network functioning for users to enjoy the same networks and same speed in rural and urban areas.

Taking Roots in Southern Tip of China to Make Sansha More Digitally Advanced

Sansha City is the southernmost prefecture-level city in China. It administers Xisha, Zhongsha, Nansha Islands and their territorial waters. Despite its strategically important location, Sansha experiences harsh natural conditions, leading to difficulty in network construction and scarcity of telecommunications supplies. Overcoming the challenges in transportation, construction and other aspects, China Mobile has managed to provide residents on the islands with the same high-quality telecommunications network enjoyed by mainland residents by switching on 2G and 4G services over the years. Those efforts have helped put the Nansha territorial waters on the “information fast lane”.

2019 saw us actively push forward 5G construction in Sansha City as the Company built 5G base stations in Xisha and Nansha. We then introduced information-based applications that took advantage of the high speed and low latency of 5G networks such as remote medical services and HD videos. By doing so, we provided local island residents with customized services, laying a solid foundation for the development of a smart Sansha.



Launching 5G network along the Guangzhou-Shenzhen-Hong Kong Express Rail Link on November 20, 2019



Putting up fiber optic cables across the Dulongjiang River in Nujiang, Yunnan

Enabling Digital Access for Relocated Families in Chaya County

To deliver the "TV in Every Village" project to relocated families in Chaya County of Changdu City, Xizang, China Mobile set up the "Thousand Households Action" team and formulated the Home Broadband Program Plan and the Network Design, Survey and Pre-coverage Plan for Poverty-alleviation Relocation Sites in Chaya. We deployed construction supplies in advance and appointed staff to take care of user-side setting-out, all in an effort to guarantee the quality of the project.

As of the end of 2019, the "Thousand Households Action" initiative had finished pre-coverage of home broadband in 1,761 relocated households, providing them with access to convenient and stable broadband services.

Supporting Emergency Communication

2019 has been a highly challenging year loaded with heavy support tasks. China Mobile further expanded the scope of our emergency communication management and developed an agile and highly efficient emergency communication support system, attaining the goal of "zero major network failure, zero major network security incident, and zero major complaint from customers".

Emergency Plan

Devised a comprehensive emergency plan fully covering the customer, home, business and new markets.

Innovative Approach

Conducted management and maintenance of emergency plans, drills, resources, personnel and events through emergency management platforms.

Equipment Upgrade

Deployed high-altitude drone base stations to enable fast low-altitude communication coverage and to meet the capacity needs and public communication coverage needs in times of extreme disasters.

Personnel Deployment

Held emergency contest for five consecutive years and organized rehearsals and drills in greater administrative area, thus continuously enhancing quick response and reporting abilities.

Communication Support for a Series of Events for China's 70th Anniversary

October 1, 2019 marked the 70th anniversary of the People's Republic of China. To provide communication support for the celebration events, China Mobile had kicked off relevant network planning and construction at the beginning of the year.

We increased the capacity of nearly 600 base stations, 100 transmission nodes as well as content and Internet TV systems, and built 43 new base stations. We developed the "One Emergency Plan at One Place" and "One Emergency Plan at One Site" measures in key support areas to ensure the smooth running of networks in the Tian'anmen area. We deployed five emergency vehicles and temporary base stations such as light-stand base stations and small emergency stations in the core viewing areas in Tian'anmen. We increased our network capacity to 3.5 times and, for the first time in the world, realized 2G/4G/5G full-spectrum, fully compatible network capacity support in open areas with the highest unit density. Based on all those pioneering and original technologies, we maximized the network capacity and provided reliable network services for China Mobile users who spectated at Tian'anmen Square on the National Day.

During the support time, we dispatched a support team of almost 2,000 members who worked around the clock to complete all support tasks with high quality.



Communication support service commando for China's 70th anniversary celebration events

Developing New Disaster Relief Models Using New Technologies

China Mobile actively applies new technologies to innovate emergency communication support measures in light of the actual conditions of different regions. The tectonically complex Sichuan Province located in southwestern China has one of the country's highest frequencies of geological disasters. The Company developed a new disaster relief management model accordingly, prioritizing the protection of homes and people's safety in its emergency support efforts.

Strong Support Team

- Formed a disaster relief command center comprising provincial, city-level and county-level leaders, taking charge remotely or on-site in disaster relief efforts
- Employees stepped forward to be volunteers, amplifying the relief efforts

Complete Emergency Plan

- **Before disaster:** Intensify drills and related education
- **During disaster:** Activate communication "lifelines" and deliver the swiftest relief efforts
- **After disaster:** Provide affected people with life supplies and help them rebuild homes

Advanced Technologies

- Developed the first earthquake early warning system together with Sichuan Earthquake Administration
- Used drones for disaster relief
- Provided emergency medical support for patients through China's first 5G emergency medical system, with the 5G ambulance that was jointly developed by our Sichuan subsidiary, Chengdu Industry Research Institute and Sichuan Provincial People's Hospital

Under this management model, the Company dispatched personnel and supplies quickly in response to the fire in Muli County of Liangshan in 2019, becoming the first telecom operator to repair networks and reactivate services in the affected area. We dispatched nine drones including a high-altitude drone base station, unmanned aerial vehicles (UAVs) and firefighting drones. With a coverage of around 30 square kilometers, the high-altitude drone base station provided nearly 1,000 on-site rescuers with all-round communication services; the UAVs and firefighting drones offered data support for delivering accurate rescue directions and effective rescue efforts. Our well-developed management model continued to allow us to provide affected people in ensuing natural disasters with timely communication support, such as the storm and mudslide in Wenchuan and earthquake in Changning, Yibin.



High-altitude drone base station put to use during Muli forest fire



Rescue personnel generating electricity for communication equipment after Changning earthquake



Communication support at the 14th Guizhou Tourism Development Conference



Communication support during Typhoon Lekima

Deepening Open Cooperation

Thanks to the help of industry partners, China Mobile has developed into the world's largest telecom operator in terms of network scale and customer base in the past 20 years. In response to the vast opportunities made possible by 5G, we have continuously optimized our strategic cooperation plans and enriched the fruits of our partnerships, thereby laying a solid foundation for the use of 5G technology to propel economic and social development.



We have signed strategic partnership agreements with many provincial local governments, national departments, key cities and national-level new areas. We have implemented nearly 100 key cooperation projects in areas such as regional development, new types of infrastructure, smart society, digital services and 5G innovation, effectively catalyzing the transformation and upgrade of local economies.

Focusing on the two directions of "empowerment platform" and "vertical applications", we have entered into strategic partnerships with many enterprises in the six key areas of 5G, IoT, big data, customer market, smart home and vertical industries. The partnerships have produced sound cooperation value in various aspects such as leveraging advantageous resources, making up for lack of key capabilities, and leading industry ecosystems.

Since we entered into a strategic cooperation framework agreement with NTT DOCOMO of Japan and KT of South Korea in 2011, a cooperation organization mechanism involving top management of all three parties has been established. Over 190 cooperative projects have been conducted in key areas such as 5G and international roaming, boosting the development of the industry globally.

Through strategic partnerships with renowned universities such as Tsinghua University, Sichuan University and Nanjing University, we have been actively and deeply engaged in the R&D of next-generation information technologies, commercialization of scientific research findings, construction of scientific research platforms, joint talent cultivation and other areas, facilitating the coordinated innovation efforts among companies, universities, research institutes and the market.

We stay open and embrace cooperation. We strive to work closely with industry chain partners from around the world to carry out in-depth implementation of ecological cooperation plans.

Every
Cooperation is
Possible

- Product cooperation – open up the largest 5G product market
- Brand cooperation – create the largest customer privilege cooperation platform

Everything
can be
Shared

- Share 600,000 physical channels and create the largest ecological product direct-sales system
- Share more than 1 billion customers and develop platform economy

Everything
can be
Customized

- Optimize cooperation mechanism and develop specialized subsidiaries into the driver and builder of ecological cooperation
- Embrace greater openness and deliver better services to partners through the all-network concentrated matching mechanism and procedure
- Provide partners with business models of billing by the number of connections, rate or usage to accommodate their different needs for monetization

Everything
is Done for
the Benefit of
Customers

- Implement the 5G Leadership Plan, accelerating the scale-up of 5G customers, services and devices
- Implement the Double 10-billion Plan, including investing RMB10 billion to introduce ecological customer privileges, household smart devices, and content for large screens, and sharing RMB10 billion of new values with partners in the fields of mobile cloud, DICT integration and application, and industry intelligent hardware

Promoting Technological Innovation

Deeply implementing the innovation-driven development strategy, China Mobile convened the second Technology Innovation Conference-cum-China Mobile Science and Technology Association Inauguration Ceremony in 2019, further expanding innovation plans, enriching innovation models and boosting innovation capabilities, thereby constantly fueling the Company's digital transformation. The Company has won a multitude of national awards for technological advancement, and our standardized work places us among the world's top rank. In terms of patent capabilities, we are becoming stronger and have cultivated a number of influential technology industry leaders.

- **Putting together the list of breakthroughs in core technologies in key fields:** We have clarified key technologies and paths based on the R&D capabilities map, and worked with upstream and downstream industry chain partners to step up resolving "bottleneck" problems.
- **Establishing an application-oriented basic research system:** Focusing on seven directions, namely new mobile communication, new basic network, next-generation information technology, next-generation AI, new types of information processing, future safety intelligence and new energy materials, and with the localization of core chips, devices and basic software (operating system), we intensify pioneering technological innovations with collaboration among companies, universities, research institutes and the market.
- **Giving out technological awards:** We give out on-the-job innovation awards to stimulate the innovative vitality of frontline staff, and commercialization awards to boost innovation effectiveness.
- **Founding Science and Technology Association:** The association has over 70,000 registered members and has held a series of brand events such as science and technology publicity campaigns, academic forums and thesis collection to spur a stronger cultural atmosphere of cultivation.
- **Refining talent support mechanism for core technological breakthroughs in key fields:** We hold company-level "Chief Scientists" and "Chief Experts" elections based on the Company's technical expert system to build a high-caliber team of talents.
- **Building up a pool of core talents:** We match application-oriented basic research with R&D resources, and build stronger connections with and continue to introduce high-caliber talents and experts from around the world, in order to build the core capabilities required by key areas in the future.

Achievements of China Mobile Scientific and Technological Innovations

Capacity Building

11,000 full-time R&D employees

6 national labs

45,000 person-times of technological awards covered

Standardization Leadership

30+ leadership positions in key international standard organizations

No.1 among all telecom operators in terms of the number of proposals regarding 5G network

No.1 among all telecom operators in terms of the number of 3GPP standardization project initiations

Patent Application

19,000+ patent applications cumulatively, with **2,000+** being 5G related

Provided patent licensing for **60+** overseas companies, including companies from Japan, the US and European countries

Ranked among **the top** telecom operators in terms of patent applications numbers

International Influence

Headed the establishment of the world-leading open source networking project **ONAP** and contributed **470,000+** lines of codes, ranking second in the world

Initiated the **GTI (Global TD-LTE Initiative)**; being the **1st** China-led international cooperation platform in the telecom sector

Cultivating Innovation Ecosystem and Distinctive Entrepreneurship and Innovation

In keeping with the national strategic planning of “mass innovation and entrepreneurship”, China Mobile continued building the national-level Entrepreneurship and Innovation Demonstration Bases as we worked towards the goal of constructing an “And-Innovation Ecosystem”. We strive to fully unleash the internal potential in innovation of all our employees and actively explore the Entrepreneurship and Innovation model where large enterprises can engage small- and medium-sized enterprises (SMEs), resources are shared, and integrated development is enabled, in order to gradually foster an industry ecosystem that thrives on cooperation and all-win.

Diversified platforms for innovation and entrepreneurship

- Online: On the basis of the “R&D Cloud” platform, we have introduced development tools and resources suitable for innovation teams to meet the incubation management and resource needs for Entrepreneurship and Innovation.
- Offline: We have set up nine “And-Creation” Spaces in such professional fields as digital home, smart city, IoT and digital content to provide a full suite of integrated incubation and cooperation services. Over 40 projects have been incubated in our “And-Creation” Spaces. We have built 25 5G open labs providing 5G-oriented innovation R&D and test services. Through cooperation with universities and leading enterprises, we are dedicated to setting up a hundred joint labs with universities, a hundred industry demonstration bases and a hundred joint labs with enterprises as carriers of innovation.

Well-established procedures and mechanisms

- We have established the “crowd innovation, crowd sourcing, crowd funding and crowd evaluation” innovation model, constructed the “entry, incubation, exit and commercialization” end-to-end channel.
- We have established crowd sourcing models like “major propositions”, “minor propositions” and “promotional propositions”, and put in place a reward system to mobilize the collective wisdom of different units to solve practical challenges in operations.
- We have established the off-the-job incubation and shared benefits and risks models and mechanisms such as fault-tolerant incubation, personnel flow and intellectual property rights management to integrate various aspects of the incubation process and safeguard the rights and interests of the Entrepreneurship and Innovation members.
- We have established a “unit, cross-unit and multi-unit” multi-channel commercialization mechanism that is convenient and highly efficient and a quantitative evaluation system that assesses the comprehensive value of research findings, guaranteeing maximum commercialization effectiveness with just and objective evaluation of incubation results.

Rich competitions and events

- Internally: We have held the Self-development Contest for five consecutive years that covers all our lines of business, with a total of 15,000 employees participating, embedding all-involved innovation throughout our corporate culture.
- Externally: We have held the China Mobile Hackathon for four consecutive years. Our contests covered eight major themes in 2019, and we compiled the 2,817 innovation projects submitted into the *Outstanding Hackathon Projects List* and had them pilot-run across all network.

In 2019, China Mobile Entrepreneurship and Innovation demonstration bases were included in the *100 National Best Cases of Entrepreneurship and Innovation Demonstration Bases* and won the first prize for corporate management modernization of the telecom industry.

With the advent of 5G, we have launched an ecology cooperation plan for deepening Entrepreneurship and Innovation – the Star Plan. We will bring together multiple stakeholders along the industry chain, including upstream and downstream companies, innovation capital, incubators, universities and scientific research institutes, and empower our internal innovation teams, SMEs and innovators in society to boost the rapid growth of the innovation teams and the Company. Progressively, we will build up a star cooperation ecosystem that accommodates full-range service scenarios with booming and varied industry applications and integrated industry innovations.

“Regardless of which company it is or which geographical region it belongs to, innovation can only bear fruits and create value when applied to address real problems. That’s also what makes our work meaningful.”

—— Gold Medal Project “I-link – Smart-link Sensing” Team at the 2019 Self-development Contest



2019 Self-development Contest



2019 China Mobile Hackathon

03

Empowering Construction of a Smart Society

Serving the General Public

In step with users' changing information consumption needs, China Mobile has been promoting its distinctive 5G applications with a view to engaging users in a "novel, immersive entertainment experience" and facilitating an upgraded information consumption experience.

New Ways to Watch	Delivered the initial application of 4K ultra HD live broadcasting at a scale of hundreds of million users, with over 30 pioneering applications in the world.
New Ways to Listen	Pioneered full-screen video CRBT (Coloring Ring Back Tones) integrating watching, listening and touching and provided novel audio/visual services for the four ecosystems of "short videos, media communication, industry and commercial advertising" by enabling functions such as all HD, all size, all interactive, and CRBT plus vibration.
New Ways to Play	Initiated the China Cloud Gaming Association and launched the East Wind Developers Plan, thus delivering a more engaging and convenient gaming experience based on such features of carrier-grade cloud gaming platforms as "ultra HD, no latency, running on cloud, and click and play".
New Ways to Shoot	Launched a series of innovative application scenarios such as VR same-screen interaction and photos with celebrities using 5G and AR technologies, thus providing a novel short video experience in the 5G era.
New Ways to Use	Implemented full-scale upgrade of basic telecom services such as phone number, SMS and cloud service.

In terms of products, the Company has introduced our proprietary innovative 5G commercial products – the 5G Smart Hub "Pioneer No.1" and the 5G cellphone "Pioneer X1". Both are examples of our exploration in the new application of 5G on devices. The 5G Smart Hub "Pioneer No.1" won the "2019 Red Dot Design Award" of Germany, the "5G Device Innovation Leadership Award" presented by the *People's Posts and Telecommunications News (PPTN)*, and the "Best 5G Commercial Solution

Award 2019" presented by the *Communications World*. The 5G smart parking solution developed on the basis of our 5G smart devices won the "Best 5G Commercial Solution Award 2019" presented by the *Communications World All-media*.

In terms of product benefits, the Company provides 5G users with a rich selection of benefits including Internet, brands, business and memberships that cover videos, reading, travel, and discounts on 5G devices and on international roaming.

5G HD Video CRBT (Coloring Ring Back Tones)

We have launched 5G HD video CRBT products to provide users with a new window to showcase their personalities. Users of this product can select featured content from the China Mobile short video library or custom-make a video CRBT with their own videos. When a call comes in, the caller can watch this personalized short video and like or share it in real time, making the wait more engaging and fun. As of the end of 2019, 5G HD video CRBT had been officially put to commercial use in 29 provinces, played over 1.2 billion times per month.

5G Live Broadcasting

In 2019, MIGU performed multiple 5G+4K ultra HD live broadcasts and 41 "industry/global-first" 5G+4K+VR+AR live broadcasts. MIGU also launched the first cafe with 5G coverage in the world.



Organizing the "Sing for the New Era, My Ode to Motherland with 5G" Weibo 5G video live stream event in Hubei

Integrating into Various Sectors and Industries

China Mobile works with outstanding partners of the various industries to tap personalized long-tail needs and develop 5G applications in key sectors to facilitate their digitization.



China Mobile's Mobile Authentication, the Facilitator for Industry Digitization

China Mobile's Mobile Authentication supports one-click registration and login and is an optimization and upgrade from traditional identity authentication methods such as "account + password" and "mobile phone number + SMS verification code". Based on our unique data network authentication and data capabilities as a telecom operator, we provide companies with a comprehensive one-stop solution for user account use and data management, thus turning mobile phone numbers from a communication industry-specific account system into a multiple-industry account system serving communication, Internet, IoT, banking and other industries

and boosting the rapid development of video, e-commerce, online office and other fields.

Additionally, using the Super SIM security encryption chip as a digital credential carrier, we have launched a series of innovative products such as SIM authentication, SIM card messaging, SIMeID, SIM signature, SIM all-in-one card and SIM car key, which enable authentication on a number of security levels and Near Field Communication (NFC) services in the 5G era. As of the end of December 2019, more than 670,000 users had activated the Super SIM feature.

Providing Accessible High-quality Networks to Help Build Orderly Urban Villages

As a phenomenon of rapid urbanization, urban villages are densely populated with high mobility but are weak in network infrastructure construction. To help improve the network quality in Wanxiu Village in Nanning City of Guangxi, China Mobile summarized scenarios reflecting the local conditions and characteristics, and set up a "matrix + module" joint project team accordingly. We effectively improved the user experience with methods such as education and publicity on network,

inspection and removal of unqualified signal amplifiers, optimization of signal layout, and construction of new base stations. After taking down 212 unqualified signal amplifiers and building over 700 new communication spots, we raised the 4G coverage in pilot urban villages to 98%, benefiting over 600,000 users and providing a foundation for guaranteeing the safety and stability of the urban villages.

Assisting in Automated Mine Management

In 2019, our Neimenggu subsidiary worked with business partners and launched the "5G Smart Mining" project in Baotou. We transformed vehicles into unmanned vehicles and formed an autonomous driving work cluster for transportation in the open-air iron, mineral, ore and rough stone mine, realizing functions like remote vehicle control, integrated vehicle positioning, precise parking and autonomous obstacle avoidance. This has effectively improved the efficiency of mining vehicles in special environments and minimized the number of workers at the project sites, thus

ensuring personnel safety. A remote intelligent dispatch and monitoring platform and a vehicle-vehicle, vehicle-network and vehicle-ground communication system have also been built, enabling automated management of mine production and operations. As of the end of 2019, we had completed transforming 4 vehicles into unmanned vehicles. We estimate over RMB9 million to be saved in fuel consumption annually and the production efficiency to increase by 10% when we finish the transformation of all 17 vehicles.

Supporting the World's First 5G Remote Surgery at Beijing 301 Hospital

In March 2019, we assisted the Beijing 301 Hospital to perform the world's first 5G-based remote surgery - the "brain pacemaker" implantation surgery for a Parkinson's patient. The features of 5G networks can effectively guarantee the stability, reliability and safety of surgeries and always allow experts to monitor the surgical process and patients' status. In 2019, the project won the Asia Mobile Awards (AMO) "Award for Best Support for the United Nations Sustainable Development Goals Mobile Innovation" presented by the Global System for Mobile Communications (GSMA).

As the application of 5G networks continuously expands in the medical field, the Company also supported the nation's first 5G remote fundus laser surgery, 5G remote orthopedic surgery, 5G teleconsultation, 5G remote ultrasound and other projects, effectively improving the quality of medical services and management.

"I work in rotation between Beijing and Hainan. This surgery took place during my rotation in Hainan. A Parkinson's patient in Beijing needed surgery, but his condition did not allow him to fly to Hainan. With the support of China Mobile's 5G network, a remote surgery between Hainan and Beijing was performed for the first time. Free from 4G problems such as video lagging and significant remote-control delays, the surgery was performed in near real time and I hardly felt that the patient was actually 3,000 kilometers away. Through remote surgeries, high-quality and high-level experts in higher-level hospitals will be able to perform surgeries directly on patients in remote and backward areas, making possible surgeries that were once too challenging to deliver at the grassroots level."

— Ling Zhipei, Director of Neurosurgery, First Medical Center and Hainan Hospital of Beijing 301 Hospital



Empowering the Whole Agricultural Industry Chain

China Mobile has built the smart "And-Agriculture" product suite that helps reduce agricultural production costs and improve production efficiency, product quality and the ecological environment, thus contributing to the implementation of the Rural Vitalization strategy.



The 5G precision greenhouse tomato planting solution is based on the key capabilities of agricultural AI and 5G advantages. Drawing on analysis by the AI brain, it performs intelligent control over the planting conditions, water and fertilizer to improve the quality and efficiency of tomato production.



Drawing on the advantages of 5G, the intelligent pig farming platform overcomes the problems of deploying GPU (Graphics Processing Unit) servers in farms, such as high cost and poor maintainability, and enables functions like pig weight measurement, backfat measurement, body temperature measurement and sow lactation monitoring based on 5G capabilities and AI platforms.



The circular aquaculture system under the control of 5G networks detects and analyzes the dissolved oxygen, temperature, pH value and other parameters of the water and performs remote intelligent control over water injection, aeration, sewage and pump bacteria. A smart, convenient, efficient and safe management model has been created through the establishment of a scientific and technological aquaculture log.



The automated agricultural machinery control system is based on 5G and can work around the clock. It accurately plans the work route to ensure high-precision operations of the agricultural machinery at all times, thus improving the efficiency and increasing the income generated by the machinery.

Making Education Smarter and More Scenario-based and Accessible

China Mobile has developed comprehensive 5G-based smart campus solutions that focus on three core issues, namely better teaching, quality resources sharing and smart campus management.

5G smart classes with dual teachers

We have helped Shenzhen Longgang Science and Technology City Foreign Languages School launch 5G remote synchronous classes, where real-time class footage is transmitted between Shenzhen and Guizhou to allow classes to be shared between two locations.

5G cloud AR immersive and interactive learning

Utilizing the Cloud XR (Extended Reality) educational platform, we have helped the China Science and Technology Museum build a virtual science and technology pavilion that breaks the constraints of time and space, providing more visitors and schools with richer and more convenient educational resources and services.

5G remote holographic teaching

We set up a holographic teaching facility at Beijing Normal University. It allows teachers to give lectures in a green screen studio and transmits life-size footage of the teachers to other places through 5G networks.

5G safe campus

We have built the "And-Recognition" smart reception system that enables college freshmen to complete all registration procedures based on face recognition using only their ID cards. Besides, the 5G Safe Campus solution offers a variety of customization functions tailored for real-life campus scenarios, such as family video calls, face recognition in exams, see-through kitchens, and face-recognition authentication for parents when picking up their children from school, greatly improving safety.



5G Classroom for Future



Immersive interactive learning with 5G Cloud and AR

Providing Technological Solutions to Livelihood Supervision

Our Hunan subsidiary was actively involved in assisting Hunan Province to build "Internet + Supervision" platform, empowering livelihood supervision with technology.

External public portals

Breaking information barriers and advancing connectivity, the platform supports visits on computers, WeChat subscription accounts, mobile applications (apps) and query machines. With one click, people can access a variety of information, such as information on the remittance of their subsidies, targeted poverty alleviation policies and special grants as well as spending status of village-level organizations, and can file complaints or whistleblowing reports.

Internal supervision portals

We have set up a web portal that consolidates a variety of functions, such as data input, complaint handling, data collision analysis, performance evaluation and platform management, allowing the platform to operate smoothly, efficiently and safely.

As of the end of 2019, the "Internet + Supervision" in Hunan had enabled the identification of over 1.7 million problematic data entries, and displayed the account information of 208 livelihood subsidies and over 6 million pieces of transaction information of villages. The total views of the provincial, city-level and county-level web portals and the WeChat subscription account exceeded 1.2 billion person-times, and the WeChat subscription account attracted 3.37 million followers. The platform had become an important channel for people to carry out livelihood supervision. We upgraded the platform in 2019, intensifying efforts in areas like big data, cloud computing, standard system, and safety operations and maintenance. The major related project "Hunan Province Unified Financial Software for Village Finance" is the first in China to enable unified accounting and centralized supervision of village-level finance across the province.

Providing Enjoyable Services

China Mobile firmly adopts the “Customer-centered and Service-oriented” approach and has built a comprehensive, full-process and all-hands service system. We have set up the China Mobile Service Leadership Project Steering Group headed by main company leaders to improve our customer service on all fronts, enhance the building of a service-oriented culture, and strengthen the formulation, application and management of regulations¹ in areas like customer rights protection, thereby delivering enjoyable customer services.

Improving Customer Perception

- Carried out the “Leading Projects” for customer satisfaction, comprehensively improving customer perception.
- Ran the 10080 service quality supervision hotline to upgrade the centralized handling, supervision and management of complaints.
- Utilized new tools such as voice robot, text robot, intelligent quality inspection and intelligent strategy center to improve service efficiency.
- Implemented a series of service measures, including an upgraded version of the 0000 value-added service subscription inquiry and unsubscription and a more transparent complaint handling process.
- Built a comprehensive customer perception evaluation system to acquire customer perception in real time; the system has reached over 620 million person-times of customers in total. Our 4G customer satisfaction rate was 78.37% in 2019, maintaining a leading position.

Building a Service-Oriented Culture

- Held a series of “Enjoyable Services 365” customer opinion collection activities, of which the “Enjoyable Services 365 – Network” activity attracted the participation of 1,163,000 customers.
- Held General Manager Customer Reception Day activities which were attended by over 140,000 customers, and handled nearly 130,000 inquiries and complaints over the year.
- Established a two-tier User (Supervision) Committee, cumulatively recruited more than 2,000 users as committee members, and established diversified customer communication channels.
- Conducted activities like service star and star team selection and service management best practice selection to encourage quality service demonstration and promotion.
- Promoted the “Voice of Customers” project, and delivered more effective problem-solving and better service management by having managers at all levels listen to customer complaint recordings.

Giving Back to Customers

- Introduced measures such as “free data on checking user seniority” and “quick installation and quick repair with free data for overtime”.
- Upgraded the three brands of GoTone, M-Zone and Easyown and launched a series of services and benefits around users’ lives.

Protecting Customer Rights and Interests

- Optimized customer bills and regulated key contact services such as data inquiry display, customer service numbers and 5G business service reminders.
- Comprehensively strengthened regulations on public notifications of tariffs of available services, simplified the tariff structure, and promoted transparent consumption.
- Carried out the “Sunshine Action” for the protection of customer rights and interests, continued to standardize operations like outbound marketing and deduction reminders, and formulated management measures on billing security and transparent consumption to fully protect customers’ right of choice.

1: The Company has formulated the following documents in 2019 for the protection of customer rights and interests: the *China Mobile Penalty Measures for Violation of Customer Rights and Interests (Trial)*, the *Notice on Further Strengthening the Service Guarantee of Customers’ Independent Right of Choice*, the *China Mobile Data Inquiry and Display Service Specifications*, the *China Mobile Individual Customer Billing Service Specifications V3.0*, the *5G Business Service Reminder Standards*, the *China Mobile Customer Service Numbers Management Measures*, the *Notice on Delimiting “Three Red Lines” for the Scope of Market Operations and Management*, etc.

Facilitating Worry-free Sails and Bringing Seafarers Closer to Families

China has the most seafarers of all countries and is the world's largest exporter of seafarer services. The seafarers spend more than half of the year on the sea, where there is no signal, making it difficult for them to communicate with their families.

To help seafarers meet their particular communication needs, our Beijing subsidiary and China Mobile International jointly launched the Seafarer Card, providing seafarers with the exclusive 1720711 number range and exclusive tariff benefits which, together with the Family Network, allow seafarers to enjoy free domestic calls with friends and relatives. Seafarers can also enjoy the benefits such as half-price data plans, free phone services and number hosting by logging in to the JigoTrip App using a Seafarer Card number. In the meantime, a communication group for Seafarer Card users has been set up with customer service available 24/7.

The Seafarer Card brings seafarers closer to their families, realizing true worry-free sails with a card number. The card has been well received among our seafarer users. China COSCO Shipping Corporation currently provides the Seafarer Card for its seafarer employees as a basic communication welfare.

- "The Voice of Customers" platform won the "Quality Service Project" award in the third National Quality Service Competition.
- The "Construction of IoT Service Quality Standard System Based on Customer Perception" project was recognized as a Highest-level Technology Achievement in the 4th National Quality Innovation Contest.



"5G Pioneer Cup" service skills competition in Shandong



Building a business environment with ethnic characteristics in Jilin

Promoting Speed Upgrade and Tariff Reduction

China Mobile actively promotes speed upgrade and tariff reduction to effectively improve people's sense of gain and well-being.

Individual Customers

Increased the value of data plans and basic plans, offered large-volume traffic plans, and continuously reduced tariffs charged when usage exceeding the plan.

Handset data tariff decreased by 47% in 2019 from 2018.

SME Customers

Carried out the inclusive dedicated Internet connection campaign, 100M enterprise broadband promotion campaign, GB enterprise broadband promotion campaign, etc.

The broadband and dedicated connection tariffs for SMEs decreased by 39% and 25% respectively compared with 2018.

Over the past five years since the Company began implementing speed upgrade and tariff reduction, we have implemented various tariff reductions measures, benefiting more than one billion users and four million enterprises, with data tariff dropping by more than 90% cumulatively.

Moreover, in November 2019, we officially launched the "Mobile Number Portability" policy, allowing users to switch to another telecom operator without changing their numbers. We issued the *Notice on Regulating Same-number Transfer between Operators*, ensuring orderly progress in strict compliance with requirements of the MIIT.

Maintaining Network and Information Security

China Mobile attaches great importance to network security. Under the united leadership of the Company's Network Security Leadership Group, we have set up network security leadership groups headed by the top leader of each of our 31 provincial subsidiaries and our specialized subsidiaries and directly affiliated units while prioritizing network security efforts. We actively respond to the risks brought about by the development of 5G and AICDE services and have produced security white papers on topics like AI, IoT and 5G to improve the overall level of security.

Campaigns	Talent Cultivation
<p>"Shield Building" Key Information Infrastructure Protection Campaign</p> <p>"Discerning Eye" Network Data Security Enhancement Campaign</p> <p>5G Network Security Defense System construction and standards and norms formulation¹</p>	<p>Network security expert team "Team Mountain Tai"</p> <p>Security training such as "Talent Honing Plan" and "5G – Shield Building"</p> <p>Certification of Certified Information Security Professional</p>

1: The Company formulated the following 5G network security specifications during 2019: the 5G Telecom Network Security Technical Requirements, the 5G Network Security Risk Assessment Specifications, the 5G Network Equipment Security Configuration Specifications, the 5G Security Risk Prevention and Control Work Guide, the 5G Network and Service Security Benchmark Evaluation Specification, the 5G New Technology and New Service Security Evaluation Reference Index, etc.



For possible network security emergencies, the Company has formulated the *China Mobile Network Security Emergency Response Plan (V1.0)*. It divides emergency responses to cyber security incidents into four levels, namely Critical (Level I), Significant (Level II), Moderate (Level III) and General (Level IV), with reference to "Information Security Technology – Guidelines for the Category and Classification of Information Security Incidents" (GB/Z20986-2007) to comprehensively improve the ability to respond to cyber security incidents. Our measures to deal with network security incidents include emergency bandwidth expansion, virus detection and the use of backup data.

The Company makes every effort to protect the security and reliability of customers' personal information according to laws and regulations. In the event of a major customer information breach, the Company would promptly inform the affected customers and propose measures to mitigate the damage. The Company had zero major customer information leakage incident recorded in 2019.

- Published 14 regulations including the China Mobile Customer Information Security Protection Management Regulations and established a normalized customer information protection system.
- Pioneered the "Vault Mode", including all high-risk operations on key system platforms that involve sensitive customer information into "Vault Management and Control".
- Fuzzified sensitive customer information on customer service system interfaces to prevent customer information leakage.
- Carried out data security compliance assessments to improve data compliance management and audited all maintenance operations.
- Strengthened real-time and follow-up inspection and supervision of customer information security incidents.

Managing Spam Messages

China Mobile makes dedicated efforts to manage all types of spam messages, effectively identifying and blocking spam SMS/MMS, nuisance/scam calls, etc. to help build a clear cyberspace.

 <p>Preventing Communication Information Fraud</p>	<ul style="list-style-type: none"> Released the <i>China Mobile Key Work Plan for Further Preventing and Controlling Telecom Network Fraud</i> to reinforce the security management of mobile phone cards, IoT cards, and new technologies and new services. Established the "Group, Key Regions, Provincial Subsidiaries" three-tier technical protection system to quickly monitor and tackle problematic numbers roaming to key regions. Built the "Customer Bad Credit Database" to prevent fraudsters from applying for new numbers to enter the network again. Blocked a total of 10.16 million international scam calls and 38.89 million scam messages and sent 2.4 billion free anti-fraud call reminders to 230 million users in 2019.
 <p>Tackling Nuisance Calls</p>	<ul style="list-style-type: none"> Launched a high-frequency nuisance call protection service ahead of industry peers, cumulatively blocked 1.2 billion nuisance calls for 7 million users.

AI Anti-fraud Application "OneAI Smart Detective"

Our Guangdong subsidiary and our online services specialized subsidiary jointly developed the AI anti-fraud application "OneAI Smart Detective" and the whole-process real-name authentication solution, carrying out black card and channel identification at the beginning of registration and in real time, thus effectively reducing the number of nuisance calls. The system also cooperates with law enforcement departments, providing suspected scam numbers and fraud locations for reference to improve the efficiency of crackdown on fraud. At present, the accuracy rate of "OneAI Smart Detective" identification and real-name authentication is 81% and 99.9%, respectively.

Emergency Protection System against "SMS Bomb"

If a mobile phone receives a large number of verification code messages within a short period of time for no reason, it is likely that the user has been attacked by a "SMS Bomb". In response, we launched the "SMS Bomb" Emergency Protection System to intercept "SMS Bombs" in real time. As of the end of 2019, the system had provided protection services for 1.32 million users and intercepted 270 million nuisance "SMS Bomb" messages.

- The Company's *Using AI Technology to Manage Cyberspace Spams and Protecting Users' Legal Rights and Interests* won the "WSIS Prizes 2019 Champion" award presented by the United Nations World Summit on Information Society (WSIS) 2019.



Offering "10086" dedicated customer service seats to elderly customers



Hosting "Convenience Services Brought into the Community" campaign to offer anti-fraud education in Anhui

Strengthening Product Responsibility

In 2019, China Mobile made comprehensive progress in the quality management of key products such as individual, home and intelligent hardware. We further improved the product quality evaluation standards and clarified the quantitative evaluation indicator system on product quality. We also optimized the closed-loop management mechanism for problem grading and classification, classifying problems as high, medium and low levels according to the scope of influence and probability of occurrence, thereby further refining the closed-loop management requirements. For non-conforming products, we implement measures such as upgrade and optimization, or repair, recall, rework and fines, according to the severity of the problems in accordance with our quality guidelines. The Company had zero product recall incident for quality issues throughout the year.

We act in strict compliance with the *Advertising Law of the People's Republic of China* and the *Trademark Law of the People's Republic of China*. We have formulated regulations including the *China Mobile Management Measures on Advertising and Publicity*, clearly requiring all types of information published for advertising purposes to be true and accurate, forbidding the use of unregulated pictures, terms or texts, and strictly prohibiting the unauthorized use of other people's portraits, registered trademarks, works, etc., to ensure that our product information and labeling are faithfully communicated and that we engage in transparent and effective communication with our customers.

Managing Electromagnetic Radiation (EMR)

The EMR monitoring of base stations is a key challenge for EMR management. China Mobile took the initiative to communicate with the community and customized an EMR publicity vehicle equipped with a vehicle-mounted dynamic EMR monitoring system and professional testing devices. Professional technicians fully participated in educational tours conducted in various residential communities, towns, rural areas and ethnic minority areas, effectively alleviating or dispelling negative public perceptions of EMR. In 2019, our EMR educational publicity vehicles carried out 120 educational activities in the three provinces of Hubei, Jiangsu and Henan, covering 42 cities and 88 districts and counties.

Summary of Our Key Performances



Our Achievements in 2019

- Officially launched 5G commercial services, implemented the “5G+” plan and the “Double GB Plan”, thereby improving network quality, narrowing the digital divide, and accelerating the construction of a new type of information infrastructure in the 5G era.
- Built an agile and efficient emergency communication support system, and attained the goal of “zero major network failure, zero major network security incident, and zero major complaint from customers”.
- Held the second Technology Innovation Conference-cum-China Mobile Science and Technology Association Inauguration Ceremony, deepened the “One System Four Rings + Three Verticals” scientific and technological innovation system, and continuously inspired internal innovative vitality.
- Carried out strategic cooperation, continuously opened up capabilities, supported the Entrepreneurship and Innovation, and pursued shared development with micro, small and medium enterprises.
- Undertook in-depth explorations in the customer market and verticals, thereby boosting higher-quality consumption and the transformation and upgrade of different sectors and industries.
- Adhered to the “Customer-centered and Service-oriented” approach, improved the service system, promoted speed up-grade and tariff reduction, safeguarded information security, practiced compliant marketing, and made every effort to protect customers’ legitimate rights and interests.

Our Goals for 2020 and Beyond

- To expand 5G coverage to all cities at the prefecture level or above, achieve a net addition of 70 million 5G package customers, and strive to realize the commercial use of 5G SA networks at scale by 2020; to release over 100 5G smartphones and over 100 5G devices for industry use; to develop 100 industry-transforming and scalable 5G demonstration applications focusing on 14 key vertical industries.
- To optimize 5G integrated innovation capability system and continuously augment the eight major innovation capabilities of AI, IoT, cloud computing, big data, edge computing, security, blockchain and location.
- To deepen open cooperation, bring into play the “multiplier effect” of 5G, and build a 5G ecological community with worldwide industry partners.
- To promote satellite-aerial-terrestrial integrated emergency communication, cross-domain integration of emergency resources across all networks, and building of emergency management platforms capacity to comprehensively guarantee successful support efforts.
- To optimize the service system, build a leading service quality control mechanism, and provide customers with smart, convenient and efficient services.
- To continue to improve the three major capabilities of security situation awareness, security protection and emergency response and strengthen the ability of critical infrastructure in resisting cyber security attacks.

Key Performance Indicators

Economic Performance

Indicators	2017	2018	2019
Operation revenue (RMB100 million)	7,405	7,368	7,459
Taxation (RMB100 million)	337	359	353

Connection Scale

Indicators	2017	2018	2019
Number of total mobile customers (million)	887	925	950
Number of 4G customers (million)	650	713	758

Indicators	2017	2018	2019
Number of household broadband customers (million)	109	147	172
Number of corporate customers (million)	6.02	7.18	10.28
Number of IoT customers (million)	229	551	884
Number of countries and regions with 4G international roaming services	172	181	191
Number of countries and regions covered by our data roaming services	229	239	247

Network Capability

Indicators	2017	2018	2019
Number of 4G base stations (10,000)	187	241	309
Average 4G network downloading rate on urban roads (Mbps)	42.0	42.6	43.3
International transmission bandwidth (G)	23,750	39,000	70,885

Network Quality Guarantee

Indicators	2017	2018	2019
Number of emergency support	4,476	4,899	6,800
Significant political/economic event support	4,253	4,597	6,658
Significant natural disaster support	190	266	124
Significant accident or catastrophe support	23	16	16
Public health incident support	0	1	0
Social safety incident support	10	19	2
Number of emergency support vehicles deployed (vehicle-times)	7,362	8,986	7,931
Number of emergency support equipment installed (set-times)	30,642	36,596	27,755
Number of person-times involved in emergency support (person-times)	201,250	314,427	259,807

Open Cooperation

Indicators	2017	2018	2019
Number of enterprises served by communication capability open platform	>13	>15	>44
Average authentication processes carried out on the mobile authentication platform per day (100 million times)	>5	6.67	12.12
Number of developers on OneNET	56,728	99,963	148,642
Number of enterprises on OneNET	6,500	9,396	11,825
Number of connected devices on OneNET (10,000)	3,154.31	7,987.85	16,092.77
Number of developers of Andlink	13,500	76,300	115,900
Number of enterprises on Andlink	150	500	1,000

Indicators	2017	2018	2019
Number of GTI operator members	132	134	136
Number of GTI industry partners	163	176	237

R&D and Innovation

Indicators	2017	2018	2019
Investment in entrepreneurship and innovation support (RMB10,000)	7,955	8,359	8,830
Number of users of entrepreneurship and innovation platform	15.4	15.6	16.1
Number of projects created from entrepreneurship and innovation events	2,535	2,918	3,183
Number of teams participated in innovation and entrepreneurship events	1,819	1,855	2,817
Number of patent applications (pieces)	2,006	2,222	2,683
Number of newly granted patents (pieces)	753	1,040	1,384

Customer Rights and Interests Protection

Indicators	2017	2018	2019
Overall customer satisfaction in telecom service quality ¹	79.19	80.86	81.99
Number of spam messages report handled (10,000)	128	133	139
Number of scam phone numbers handled	50,700	19,600	10,500
Average number of spam messages handled per month (100 million)	> 2	> 3.9	> 4
Average number of accounts making illegitimate group voice calls handled per month ²	2.1	5.5	59.4
Number of anti-fraud SMS alerts sent (100 million)	36.4	34.7	24.2
Annual number of targeted covert fraud incidents identified and successfully intervened ³ (10,000)	> 370	> 123	> 2,322

Notes:

1. The evaluation of overall customer satisfaction in telecom service quality was organized by the MIIT, who also announced the results. The total score is 100.
2. In 2019, the Company further strengthened the governance of nuisance calls, which resulted in the significantly increased average number of cases handled each month.
3. In 2019, the Company added four identification models for scenarios of covert communication information fraud, which resulted in the significant increase in the annual number of cases handled.