Huawei Investment & Holding Co., Ltd.

2020 ANNUAL REPORT

Building a Fully Connected,
Intelligent World

HUAWEI

Who is Huawei?

Founded in 1987, Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. We are committed to bringing digital to every person, home and organization for a fully connected, intelligent world. We have approximately 197,000 employees and we operate in over 170 countries and regions, serving more than three billion people around the world.

Who owns Huawei?

Huawei is a private company wholly owned by its employees. Through the Union of Huawei Investment & Holding Co., Ltd., we implement an Employee Shareholding Scheme involving 121,269 employees. Only Huawei employees are eligible to participate. No government agency or outside organization holds shares in Huawei.

Who controls and manages Huawei?

Huawei has a robust corporate governance system that ensures the company's independent operations and management. Shareholding employees elect 115 representatives to form our Representatives' Commission, and the Commission elects the company's Board of Directors and Supervisory Board. The Commission, along with the Board of Directors and Supervisory Board, decides on, manages, and monitors major company matters.

Specifically, the Commission elects the Chairman of the Board and the remaining 16 board directors. The Board of Directors elects four deputy chairs and three executive directors. Three deputy chairs take turns serving as the company's rotating chairman.

The rotating chairman leads the Board of Directors and its Executive Committee while in office. The Board exercises decision-making authority for corporate strategy and operations management, and is the highest body responsible for corporate strategy, operations management, and customer satisfaction.

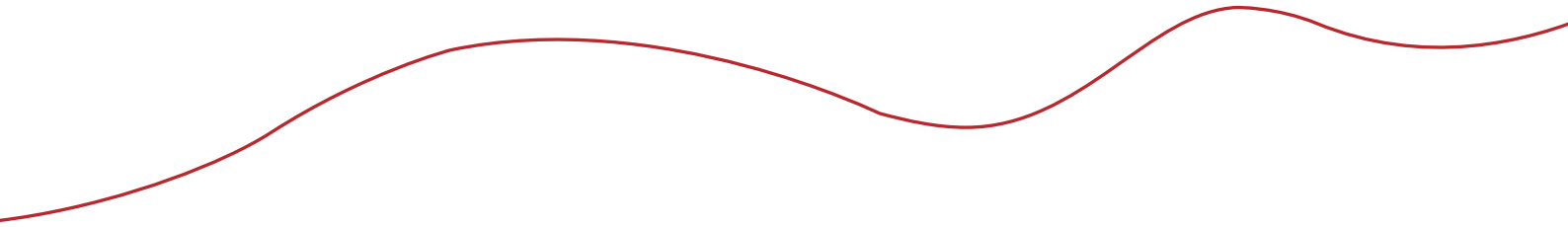
Meanwhile, the Chairman of the Board presides over the Representatives' Commission. As Huawei's highest decision-making body, the Commission makes decisions on major company matters, like profit distribution, capital increases, and the elections of members of the Board of Directors and the Supervisory Board.

Who does Huawei work with?

Externally, we rely on our customers and partners. Customers are at the heart of everything we do, and we create value for them with innovative products. Internally, we rely on our hard-working and dedicated employees. At Huawei, those who contribute more get more.

We work with a broad range of stakeholders including partners, industry organizations, open source communities, standards organizations, universities, and research institutes all over the world to cultivate a broader ecosystem that thrives on shared success. In this way, we can help drive advancements in technology and grow the industry as a whole.

We create local employment opportunities, pay taxes, and comply with all applicable laws and regulations in the countries where we operate. We also help local industries go digital, and openly engage with governments, the media, and other stakeholders.



What do we offer the world?

We create value for our customers. Together with our partners, we provide telecom carriers with network products and solutions that are innovative, simplified, intelligent, secure, and trustworthy. We also open up our ICT capabilities to government and enterprise customers, providing them with products and services that are intelligent, secure, and trustworthy. With our smart devices, we help people enjoy a better digital experience in work, life, travel, and entertainment.

We ensure secure and stable network operations. Cyber security and privacy protection are and will always remain our top priorities. We believe strongly in the power of openness and transparency, and work hard to make ongoing improvements to our software engineering capabilities and business continuity management systems, while enhancing the resilience of our networks.

For more than 30 years, we have worked closely with our carrier customers to build over 1,500 networks in more than 170 countries and regions. Together, we have connected more than three billion people around the world and have maintained a solid track record in security.

We promote industry development. Huawei advocates openness, collaboration, and shared success. Through joint innovation with our customers and partners, we are expanding the value of ICT to foster a healthy and symbiotic industry ecosystem. Huawei is an active member of more than 600 standards organizations, industry alliances, and open source communities, where we work with our peers to develop mainstream standards and drive the industry forward.

We enable sustainable development. Huawei is committed to bridging the digital divide and promoting digital inclusion. We have helped connect places as remote as the highest peaks of the Himalayas and the frigid depths of the Arctic Circle. We are keenly aware of the importance of telecommunications during emergency situations. In response to catastrophic events like earthquakes, floods, conflicts, and public health emergencies, our people on the ground hold fast to restore communications networks in affected areas and ensure the reliable operations of essential telecoms equipment. To further promote sustainability, we prioritize a low-carbon footprint and environmental protection. We are also helping develop the next generation of local ICT talent to boost the digital economy.

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Message from the Rotating Chairman

In 2021, we will continue to find ourselves in a complex and volatile global environment. Resurgence of COVID-19 and geopolitical uncertainty will present ongoing challenges for the global community. Huawei believes deeply in the power of digital technology to provide fresh solutions to the problems we all face. We want to create digital technology that makes lives better, makes businesses more intelligent, and makes society more inclusive. This will ultimately bring us closer to a fully connected, intelligent world.

Needless to say, 2020 was an extraordinary year. According to WHO, more than 100 countries went on lockdown last year, a degree of social distancing the likes of which the world has never seen. This has had a huge impact on both our lives and the economy.

At Huawei, for the past year we've held strong in the face of adversity. We have kept innovating to create value for our customers, to help fight the pandemic, and to support both economic recovery and social progress.

We also took this opportunity to further enhance operations. As a result, our business performance was largely in line with forecast. Despite a challenging business environment, Huawei has remained committed to a globalized and diversified supply chain – one that doesn't rely on any single country or region, but instead leverages global resources to ensure supply continuity.

As a member of the ICT community, we have been doing everything we can to support the ongoing fight against the pandemic. We continue to work closely with our customers to ensure the stable operations of more than 1,500 networks across over 170 countries and regions, and have been actively using ICT technology to assist the pandemic response in local communities. As part of our commitment to multilateral international cooperation, we are working closely with local governments, community organizations, international organizations, and our customers and partners to protect the health and safety of the people we serve.

In Malaysia and Saudi Arabia, we installed telepresence videoconferencing systems so that different organizations responsible for pandemic response could collaborate more seamlessly. This allowed doctors to share clinical experience more efficiently and governments to issue guidance more effectively. In Ecuador and Italy, we helped hospitals deploy AI-assisted CT scan screening systems to expedite the diagnosis of potential COVID-19 patients and reduce the strain on their healthcare systems. In Namibia and Argentina, we helped install infrared thermometers in crowded places to prevent the spread of the virus. In total, Huawei provided technical assistance to nearly 90 countries, doing our best to support our local communities in this time of great need.

While 2020 had its fair share of challenges, it also came with opportunity. The pandemic ended up greatly expediting the digital transformation of organizations around the world. Businesses are moving to the cloud one to three years ahead of schedule, and as new technologies like AI continue to mature, efforts to go digital will expand beyond the office and into production systems, bringing industries into a new phase of intelligent upgrade.

Internet companies spearheaded the first wave of this transformation process. In the second wave, traditional industries – especially finance, manufacturing, education, and healthcare – are optimizing the value of their data by moving their production management systems onto the cloud and streamlining the flow of data throughout their organizations. As these industries transform, new digital technologies like 5G, AI, cloud, and IoT are converging to create new business models, boost user experience, and improve operating efficiency.

No matter what changes come our way, our commitment to serving customers – and to realizing our vision and mission – will remain as strong as ever. We will continue in our endeavor to bring digital to every person, home and organization for a fully connected, intelligent world.

Above all else, creating real value for our customers

Serving our customers and creating value for them is why we exist, and we will stick to this course. That means maintaining our focus on ICT infrastructure and smart devices and drawing clear boundaries between the kinds of business we pursue and those we don't. As always, we will keep creating value for our customers through quality products and services.

We continue to innovate in connectivity and computing, working with our customers and partners to make the most of ICT infrastructure. As part of these efforts, we are building premium 5G networks, leading the development of intelligent IP networks, and building out optical networks that support deterministic latency in order to help our customers stay at the cutting edge of technology. By delivering intelligent connectivity that features ubiquitous gigabit, deterministic experience, and hyper-automation, we continue to optimize connected experience to maximize the value of our customers' networks.

Cloud is another area where we're pushing technology to its limits to bring the benefits of innovation to everyone. We want HUAWEI CLOUD to serve as fertile ground for the intelligent world to flourish. To make this happen, we provide stable, reliable, secure, trustworthy, and sustainable cloud services that enable our customers to develop applications more easily and do more with their data.

In terms of computing, our focus is on providing diversified computing power with Kunpeng and Ascend. This includes:

- Driving innovation in computing architecture
- Coordinating full-stack joint innovation from hardware and basic software to application enablement
- Focusing on open hardware, open source software, and partner enablement to help build out the computing industry and its broader ecosystem

We continue to strengthen collaboration across domains and departments to make the most of tremendous opportunities brought about by the digital transformation of industries. With our Intelligent Twins architecture as a basic blueprint, we work closely with governments, enterprises, carriers, and partners to identify scenarios where we can address real needs and create real value, and then provide them with targeted solutions.

In our consumer business, our focus is on people-centric innovation. As outlined in our Seamless AI Life strategy ("1 + 8 + N"), we are providing consumers with a superior, intelligent experience

across all devices and scenarios, highlighting smart office, fitness & health, smart home, easy travel, and entertainment.

We are also bringing decades of ICT expertise to the automotive industry as a provider of new components for intelligent connected vehicles, delivering intelligent automotive solutions to help car OEMs build better vehicles. Our solutions cover intelligent connectivity, intelligent driving, mPower, intelligent cockpits, and intelligent vehicle cloud services. Together with our industry partners, we're working to build a better world of intelligent travel.

Long-term, focused investment to take innovation to the next level

Every year, Huawei invests over 10% of its sales revenue back into R&D. We continue to increase our investment in basic research and theoretical breakthroughs, and have invested heavily in innovation and invention for decades to help drive the industry forward.

Looking to the future, Huawei will maintain its focus on research, aiming to remove bottlenecks in basic science and drive breakthroughs in cutting-edge technology. Guided by our vision of a fully connected, intelligent world, we will devote our efforts to identifying different industry needs and overcoming shared challenges on a global scale.

We're entering a second phase of innovation ("Innovation 2.0"), where we are performing basic research in domains like mathematics, physics, and chemistry to make theoretical breakthroughs – in effect, going "from zero to one". Throughout this process, we will continue to advocate for broader collaboration between the industry and academia to help light up the future through innovation.

People are the heart and soul of innovation. As always, we will continue to optimize our talent management systems to attract top minds from around the world and help them unleash their full potential. In order to support our corporate strategy and address the varied demands of digital transformation, we will double down on supplementing and improving our software capabilities, strengthening our software teams, nurturing our own software architects, and bringing in external architects.

We will also build an open platform to support strategic collaboration between the industry and academia from the top down. We can do more if we work together, and we will push forward with our transition to a model that is led by innovation, focused on basic research, and centered on people.

Working together for shared success

We will continue to take a forward-looking approach when developing, cultivating, motivating, and supporting our partners. We want to help channel partners become solution providers, not just a means to access markets. We will keep helping developers deliver an innovative and superior experience to users around the globe, and we will go out of our way to support and develop quality suppliers. Together, we can build an open and diverse ecosystem that thrives on shared success.

Huawei believes that global integration and economies of scale make the whole world more efficient. To achieve these gains, we must work together openly and share both risks and value. This is the only pathway to shared progress and prosperity. To this end, we need to promote and protect unified global standards, establish industry and ecosystem alliances, support global open source projects, and drive breakthroughs in key technologies. We need to pool, create, and share resources across the entire industry, and focus on creating value for end customers. And together with industry partners worldwide, we need to build an open, global ecosystem that lays the foundation for more sustainable development in the ICT sector.

Huawei has three guiding principles when it comes to ecosystem and industry development.

One: Grow the industry. At the strategic level, we closely follow macro trends and issues affecting our industry, and meet regularly with industry leaders to discuss challenges and solutions for digital transformation.

Two: Work together. We are leveraging our platform strengths and working with partners who complement our capabilities to cultivate robust end-to-end value chains and thriving ecosystems for a more healthy and resilient industry.

Three: Share value. We want to serve as the glue that holds ecosystems together and the catalyst that drives ecosystem success. We aim to unite as many people and companies as possible to create a healthy ecosystem and advance the digital economy.

Our commitments to customers and society

Digital technology has played an irreplaceable role in keeping our lives on track and our businesses open. At the same time, as digital transformation picks up speed, we see growing challenges relating to cyber security and privacy protection. In a digital, intelligent world powered by technologies like 5G, cloud, and AI, maintaining a secure and stable cyberspace is critical to protecting people's livelihoods. It's clear that cyber security and privacy protection are becoming necessary capabilities for all organizations, crucial for a properly functioning digital world.

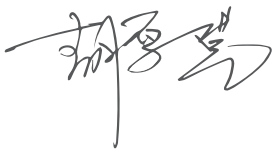
As always, cyber security and privacy protection remain our top priorities. We will confront challenges in these domains through technological innovation and through the ongoing transformation of our management systems. We will continue to build secure, trustworthy, and quality products, solutions, and services in order to help our customers enhance their cyber resilience.

In addition to creating business value for our customers, we recognize the importance of creating shared value for society as a whole. In that sense, we are working to ensure that our business operations align with broader economic, social, and environmental goals.

We are bringing the benefits of digital technology to as many people as possible through a wide range of projects, including Skills on Wheels in Kenya, remote learning in Senegal, mobile apps for people with disabilities, digital systems for protecting endangered wildlife in China, and digital devices to protect rainforests in 18 countries across 5 continents. The list goes on. We will continue to work closely with governments, international organizations, NGOs, customers, and partners to leverage the power of digital technology to drive better, more equitable outcomes in environmental protection, education, and healthcare.

In 2021, we will continue to find ourselves in a complex and volatile global environment. Resurgence of COVID-19 and geopolitical uncertainty will present ongoing challenges for the global community. Huawei believes deeply in the power of digital technology to provide fresh solutions to the problems we all face.

We will keep pushing the boundaries of technology and driving digital transformation forward with our customers and partners. We want to create digital technology that makes lives better, makes businesses more intelligent, and makes society more inclusive. This will ultimately bring us closer to a fully connected, intelligent world.



Hu Houkun
Rotating Chairman

Business Highlights in 2020

Driving Ubiquitous Connectivity

- Through our continuous innovations in future-oriented network technologies such as 5G, optical networks, intelligent IP networks, and Autonomous Driving Network (ADN), and our open collaboration with industry partners, we have created all-scenario intelligent connectivity solutions characterized by ubiquitous gigabit, deterministic experience, and hyper-automation.
- We have worked with carriers worldwide to build 5G networks that deliver the best possible experiences. We have also teamed up with carriers and partners to build a thriving 5GtoB ecosystem, and made breakthroughs with large-scale industry applications.
- We launched our innovative RuralStar Pro solution to provide high-quality mobile broadband services to remote villages, driving rural digitalization. To date, our RuralStar series solutions have provided mobile Internet services to more than 50 million people living in remote areas in over 60 countries and regions.
- In the ubiquitous IoT domain, Huawei has deepened cooperation with more than 600 mainstream home appliance brands based on the HiLink platform to provide consumers with a greater variety of quality options for smart living. The platform has already covered more than 3,000 products and served over 50 million users.

Enabling Pervasive Intelligence

- We launched our one-stop AI development platform ModelArts 3.0 and the industry's first full-lifecycle knowledge computing solution to accelerate AI adoption in industries.
- We open sourced the full Kunpeng stack to the industry, including Kunpeng motherboards, the openEuler operating system, and the openGauss enterprise-level database. We also released the application enablement suite Kunpeng BoostKit and the development suite Kunpeng DevKit. The goal of these efforts is to help our partners and developers accelerate innovation.
- We open sourced the full stack of Ascend, including: the Ascend hardware; CANN, the heterogeneous computing architecture; MindSpore, the AI computing framework that is adaptable to all scenarios; MindX, the Ascend application enablement tool; and MindStudio, a full-pipeline development tool chain. Through these actions, we are helping partners and developers efficiently use AI capabilities.
- In the intelligent automotive solution domain, we are working with our partners to help car OEMs build better vehicles. We will soon launch more than 30 intelligent components based on an open "computing + communications" architecture and digital platforms.

Delivering a Personalized Experience

- Driven by HarmonyOS and the Huawei Mobile Services (HMS) ecosystem, we have further optimized our Seamless AI Life ecosystem across five key scenarios: smart office, fitness & health, smart home, easy travel, and entertainment, providing consumers with a transformative intelligent experience.
- We launched HMS Core 5.0, and fully opened our software and hardware system capabilities, as well as cloud capabilities, to developers worldwide. Currently, HMS is the world's third largest mobile app ecosystem. Over 120,000 apps worldwide have been integrated with HMS Core, and the number of global registered developers already exceeds 2.3 million.
- HarmonyOS 2.0 brought comprehensive improvements to the existing capabilities, and has been opened to devices with 128 KB to 128 MB RAM. Comprehensive system capabilities, a multitude of APIs, and powerful app development tools like the DevEco Studio simulator provide smartphone app developers and app vendors with an extensive innovation platform.

Building a Digital Platform

- HUAWEI CLOUD is the world's fastest growing major cloud service provider, launching over 220 cloud services and 210 solutions. It works with over 19,000 partners and 1.6 million developers, while over 4,000 applications have been launched on the HUAWEI CLOUD Marketplace. We joined the global fight against COVID-19, working with partners and research institutes to provide AI-assisted diagnosis and other services across Asia, Europe, and Latin America.
- Intelligent Twins, our open technological reference architecture, will accelerate the intelligent upgrade of governments and enterprises, with cloud as its foundation and AI at its core. We have worked with partners to apply Intelligent Twins in more than 600 scenarios, covering sectors such as government, public utilities, transportation, manufacturing, energy, finance, and healthcare.
- Our strengths in ICT infrastructure platforms, characterized by device-network-cloud synergy, have led us to step up efforts to create a digital ecosystem where all players create and share value together and to help industries go digital. Over 700 cities and 253 Fortune Global 500 companies worldwide have chosen Huawei as their partner for digital transformation, while over 30,000 partners are working with us to serve the enterprise market.

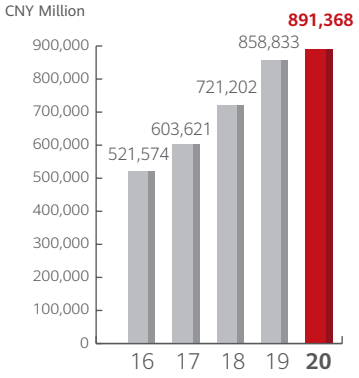
Five-Year Financial Highlights

	2020		2019	2018	2017	2016
	(USD Million)	(CNY Million)	(CNY Million)			
Revenue	**136,717**	**891,368**	858,833	721,202	603,621	521,574
Operating profit	**11,120**	**72,501**	77,835	73,287	56,384	47,515
Operating margin	**8.1%**	**8.1%**	9.1%	10.2%	9.3%	9.1%
Net profit	**9,916**	**64,649**	62,656	59,345	47,455	37,052
Cash flow from operating activities	**5,402**	**35,218**	91,384	74,659	96,336	49,218
Cash and short-term investments	**54,812**	**357,366**	371,040	265,857	199,943	145,653
Working capital	**45,870**	**299,062**	257,638	170,864	118,503	116,231
Total assets	**134,491**	**876,854**	858,661	665,792	505,225	443,634
Total borrowings	**21,751**	**141,811**	112,162	69,941	39,925	44,799
Equity	**50,678**	**330,408**	295,537	233,065	175,616	140,133
Liability ratio	**62.3%**	**62.3%**	65.6%	65.0%	65.2%	68.4%

Note: Converted into United States dollars ("USD") using the closing rate at the end of 2020 of USD1.00 = CNY6.5198.

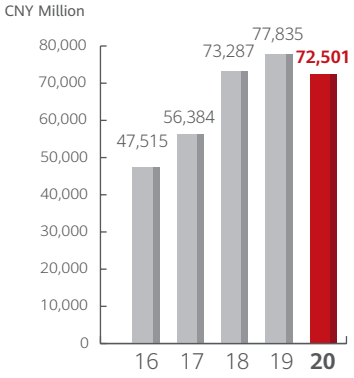
Revenue

CAGR: 14%



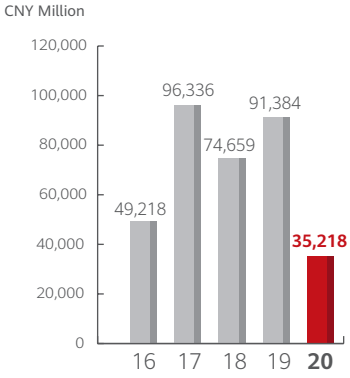
Operating profit

CAGR: 11%



Cash flow from operating activities

CAGR: (8)%



Message from the Chairman

While greater challenges might still lie ahead, Huawei is committed to open collaboration and global operations, and will continue to work with our global partners to cultivate open industry ecosystems. Together, we will drive advancements in technology, promote industry development, and create greater value for our customers and the global community.

Staying the course towards solid growth

2020 was marked by external pressures the likes of which we have never seen before. On top of an already complicated international environment, we faced an untold number of challenges from the COVID-19 pandemic. But we made it through. Working together, we ensured business continuity and timely delivery for our customers, and wrapped up 2020 with business running smoothly.

I'd like to take a moment to thank our customers and consumers for their ongoing trust, as well as our partners for their tremendous support.

When COVID-19 first hit, we took swift action to contain and prevent the spread of the virus. Our first priority was to ensure the safety and well-being of our employees, and then to resume operations in a systematic and responsible way. Despite the pandemic, our employees in over 100 countries and regions have been working closely with our partners to guarantee stable network operations.

I'd like to thank each and every one of our employees for their dedication, and their families for their unfailing support. My special thanks go to our frontline employees and their families. Your hard work has carried the company through this difficult time.

The future may yet prove to be more challenging, but we are confident in our long-term prospects.

For one, digital technology and intelligence are pushing the digital economy into a new phase of development, which will create huge opportunities for the ICT industry.

More importantly, our customers and partners around the world have placed their trust in us. We have maintained our strategic focus to ensure the company's survival, and continue to serve our customers and strengthen collaboration with our partners.

Moving forward, we will continue to increase our investments in R&D – and in the future. We will continue creating value for our customers and promoting sustainable development for society, the economy, and the environment.

Innovating to advance the digital economy

COVID-19 has drastically changed how we all live, work, and create value. Many communities were fortunate to have access to digital technology, which helped keep their lives in some semblance of working order.

Looking at the role of technology in our response to the pandemic, it's clear that the past year marks an even greater convergence of the digital and physical worlds. We will soon find ourselves in a fully connected world where digital technology and intelligence are key drivers for socio-economic development.

Greater integration of digital technology has brought hope to many. The healthcare sector is going digital faster than ever before to fight back against the pandemic. 5G, cloud, AI, and other new technologies have greatly boosted the medical community's ability to speed up testing, provide remote consultation, and support contactless nursing.

With greater connectivity, many everyday activities have gone online too. Work, school, signing contracts, and many new applications are all moving to the cloud, defining the new normal.

Industries are also finding new opportunities to go digital. Technologies like 5G, cloud, and AI are converging rapidly, driving the digital transformation of traditional industries like manufacturing, energy, and transportation. This has helped vastly increase productivity and create new value out of old processes. Many companies are now able to do business in completely new ways. With smarter data analytics, they are making more informed decisions on product development, supply chain, and marketing to speed up their time to market and drive commercial success.

ICT infrastructure, the cornerstone of the digital economy, is becoming more important than ever. In the digital age, access to stable and high-speed network services has become a basic need for every human being.

Huawei focuses on ICT solutions and smart devices, and is committed to providing technology, products, services, and solutions to drive social progress. For more than 30 years, we have dedicated ourselves to pushing the boundaries of information and communications technology and enhancing connectivity worldwide.

And the results show. Over the years, we have connected more than three billion people in more than 170 countries and regions. We are helping millions of companies go digital, driving the digital economy forward in the countries where we operate.

Open ecosystems for shared success

We believe that open collaboration is the only way forward. This is especially true in the ICT industry, where open collaboration and innovation across the entire global value chain are crucial to building greater resilience and promoting sustainable development for both businesses and society as a whole.

We are more certain than ever that open collaboration is the only pathway to shared progress and prosperity. We want to work together to advance the development of the digital world, and help pave the way to a fully connected, intelligent world for every person, home, and organization.

Through open collaboration and innovation, we help promote and protect unified global standards, build industry and ecosystem alliances, and promote open source projects. Together with our global industry partners, we are building an open, global ecosystem that will help the ICT sector develop more sustainably.

In 2020, we worked hard to maintain the trust and support of industry organizations and partners. We have stepped up efforts to foster a stronger value chain, build up supply continuity, and hone our competitive edge. Our aim is to ensure that our products meet customers' requirements for continuous supply and to provide high-quality products, solutions, and services to our customers around the world.

As a global corporate citizen, we want to create a positive impact with our technology, so we work closely with governments, customers, enterprises, and non-profit organizations to give back to local communities. We do what we can to protect the environment, develop a skilled local ICT workforce,

promote inclusion and equity in healthcare, and drive balanced development.

By the end of 2020, more than 60,000 teachers and students from over 200 schools worldwide had benefited from our TECH4ALL digital inclusion initiative. Outside education, we are also exploring how technology can support the conservation efforts of environmental protection organizations around the world. At the moment, we are using ICT technology to help 22 protected areas in 18 countries manage natural resources and protect biodiversity more effectively. Moving forward, we hope more people and organizations will join our TECH4ALL initiative to support the UN's Sustainable Development Goals (SDGs).

Building a greener, more sustainable digital world

A digital economy is, first and foremost, a green economy. Advancements in ICT technology are focusing more and more on using less energy to transmit, process, and store more information. They're making energy systems more efficient and promoting renewable energy in electricity generation. This will benefit the entire energy sector and society as a whole.

Huawei believes that technology plays a critical role in addressing environmental challenges, so we are doing our part to contribute to a greener and more sustainable digital world. Not only do we actively build sustainability into the entire lifecycle of our products, we are also helping industries reduce their own energy consumption and emissions to support a more circular economy. Ultimately, we want to cut carbon emissions, promote renewable energy, and contribute to more regenerative economic systems.

Take PowerStar, for example – our multi-layered solution for reducing the energy consumption of wireless networks. Through a targeted combination of hardware and software, this solution intelligently cuts energy consumption in wireless networks without compromising network performance. This solution has already been verified and delivered in multiple countries, including China, South Africa, and Morocco. With PowerStar, a single site can save 1.5 kWh of electricity a day. In China, this solution is already being used in more than 400,000 sites, saving up to 200 million kWh of electricity a year.

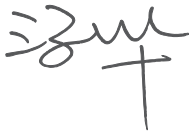
Enhancing corporate governance and ensuring operational compliance

A robust corporate governance system is the cornerstone of sustainable development. We continue to optimize corporate governance, enhance the design of governance-related organizations and roles, and streamline our corporate governance mechanisms. In 2020, our Representatives' Commission held two meetings, during which it reviewed and approved the report from the Board of Directors on the company's financial and operating results, the work report from the Supervisory Board, and proposals for matters such as annual profit distribution, annual capital increases, and the sale of the Honor business.

We conduct business with integrity, adhere to standard business ethics, and observe all applicable laws and regulations in the countries and regions where we operate. This is a guiding principle of our management team. For years, we have worked hard to build a compliance management system that aligns with industry best practices and embeds compliance management into every link of our business activities. These efforts continue to this day.

In 2020, Huawei continued investing resources to enhance our compliance program across multiple business domains, including trade, finance, intellectual property, cyber security, and data and privacy protection. In an ongoing commitment to collaboration and transparency, we have taken the time to walk our business stakeholders through Huawei's compliance initiatives to foster greater mutual understanding and trust.

When the going gets tough, the tough *keep going*. While greater challenges might still lie ahead, we are fully confident that the future will be bright. Huawei is committed to open collaboration and global operations, and will continue to work with our global partners to cultivate open industry ecosystems. Together, we will drive advancements in technology, promote industry development, and create greater value for our customers and the global community.



Liang Hua
Chairman of the Board

Industry Trends

The global digital economy is booming; ICT is more rapidly integrating into our economy and society

The digital economy is outperforming all other sectors in terms of speed of growth, the dynamics of innovation, and the scope of influence. It is the key to creating new structures and mechanisms for economic growth. So far, more than 170 countries and regions have already published digital strategies. Research findings show that a 20% increase in ICT investment can grow a country's GDP by 1%. The global digital economy has grown 2.5 times faster than global GDP, and return on investment in ICT has been 6.7 times that of non-ICT investments on average.

With the emergence of new technologies, particularly 5G, AI, cloud, and IoT, ICT is weaving into the fabric of vehicles, homes, businesses, and cities more rapidly than ever before. The International Telecommunication Union has advocated for using ICT to achieve the United Nations Sustainable Development Goals. ICT has become the main driver of sustainable socioeconomic development.

Sustained ICT investment in all industries is crucial to future economic resilience

In 2020, ICT infrastructure played a crucial role in global efforts to combat the coronavirus and reopen the economy. According to Huawei's Global Connectivity Index (GCI) 2020, digital transformation of industries will help economies develop "high-order" productivity to spur economic recovery and increase future competitiveness. If we compare countries based on their pre-pandemic GDP per capita forecasts and their revised forecasts after the pandemic hit, it's clear that GDP forecast decline is lower in countries with more advanced ICT infrastructure (higher GCI scores). The pandemic has also brought ICT to the forefront as a critical enabler of business continuity. The GCI 2020 report revealed that leading global organizations are well aware of the value of digital infrastructure for economic resilience, and are continuing to invest in IT despite the overall decline in business investment during the pandemic.

Digital transformation of industries has accelerated during the pandemic

The COVID-19 pandemic will change the world permanently. One leading consulting firm foresees six changes following the pandemic: (1) financial predictability and flexibility (greater dynamism in revenue and procurement forecasting, cost controls, investment, and financing); (2) digital-first customer engagement models; (3) working from home and teleworking as the new normal; (4) technology-enabled operating models; (5) new business continuity plans; and (6) data-driven business models.

The pandemic has forced governments and businesses to accelerate their digital transformations and move to the cloud one to three years ahead of schedule. As new technologies like AI continue to mature, efforts to go digital will expand beyond the office and into production systems, bringing industries into a new phase of intelligent upgrade.

Internet companies spearheaded the first wave of this transformation process. In the second wave, traditional industries – especially finance, manufacturing, education, and healthcare – are optimizing the value of their data by moving their production management systems onto the cloud and streamlining the flow of data throughout their organizations. As these industries transform, new digital technologies like 5G, AI, cloud, and IoT are converging to create new business models, boost user experience, and improve operating efficiency.

Intelligent experiences across all scenarios: Home, travel, office, entertainment, and fitness

Smartphones have evolved dramatically over the past decade and are now more critical to our day-to-day lives than any other type of hardware. Consumers are more concerned than ever with the tangible experience of smart devices. Sensing and display technologies augment devices' ability to perceive the physical world and create a seamless experience across all scenarios, from office, travel, and home to fitness & health and entertainment.

In homes, smart appliances will need to adopt unified standards, eliminating the market chaos caused by fragmentation of standards.

Offices have been put in our homes, along with classrooms and recreational facilities, during the pandemic. This has pushed SMEs and traditional businesses to go digital faster and introduce smart office systems sooner than planned.

The new-energy vehicle industry saw a global boom in 2020. Digital transformation is happening at exponential speed in this industry. The transition from internal combustion engine vehicles to electric vehicles is unstoppable. Innovations in autonomous driving, digital cockpits, batteries, and travel services will fast-track the integration of digital technologies.

Public focus on health and fitness increased dramatically during the pandemic, as everyone became more enthusiastic about exercising and keeping fit. The healthcare industry is looking beyond "diagnosis plus treatment" to provide comprehensive services for staying healthy, keeping fit, and nursing.

Media and entertainment services gained huge traction during the pandemic and will become the most important uses of smart devices (measured by total use time). Large-screen products continue to move towards 4K and 8K, providing superior audio and video experiences. Wireless headphones are becoming more compact and smarter, stimulating the demand for high-quality music. Content production streams have matured in the pan-entertainment industry, already producing a steady supply of high-quality content.

Smarter lifestyles in an intelligent world

What will the intelligent world of 2030 look like? We will be able to watch live streams of sports events from the comfort of our home, with holographic projections creating truly immersive experiences. Advances in the Internet of Vehicles will make autonomous driving a reality, allowing for remote control of vehicles in risky mines and eliminating the need for human drivers. In the manufacturing sector, machine vision systems will automatically inspect production processes, and production data will be uploaded in real time through ultrafast networks for centralized analysis and control. The possibilities are endless.

New ICT technologies, including 5G, AI, and cloud, are converging to drive digital and intelligent transformation in all industries. These technologies promise cost savings, efficiency gains, and new value.

Massive intelligent connectivity is the foundation of the intelligent world, and data flows are sources of intelligence. The Global Mobile Suppliers Association (GSA) has stated that by the end of 2020, 412 carriers across more than 60 countries and regions had invested in 5G networks, whether it be through testing, trials, pilots, planning, or the actual deployment of 5G networks. More than 140 carriers had launched commercial 5G services, and over 380 5G devices had hit the market. It is estimated that by 2025, there will be 1.8 billion users of 5G worldwide, accounting for 20% of global connections. IHS Markit also estimated that between 2020 and 2035, the global 5G value chain will directly contribute an average of US$200 billion annually to the world economy, generating US$3.5 trillion in total economic output and supporting 22 million jobs.

Huawei believes that the intelligent world of 2030 will have five features:

- Government: Digital governments with greater focus on people that will provide better public services to their citizens
- Economy: Intelligent robots that will make up a critical part of the future workforce

- Resources: Digital equality driven by new technologies that will enable equal access to education, healthcare, and other public resources
- Culture: A natural social shift from focusing on generating material wealth towards enriching minds as people are freed from heavy labor and repetitive work
- Environment: A greener world powered by digital technologies that will facilitate the monitoring and control of carbon emissions

Clean energy: The path towards carbon neutrality

So far, more than 110 countries have committed to carbon neutrality targets, and are speeding up their transition from fossil energy to renewable energy. The energy sector is seeing new opportunities made possible by a new technological revolution and industry transformation. The interplay of technological, political, social, and economic factors is pushing the energy sector into a new growth phase.

Global greenhouse gas (GHG) emissions reached 55.3 gigatons of CO_2 equivalent in 2018. Fossil CO_2 emissions from energy use and industry reached a record 37.5 gigatons of CO_2 per year, equal to nearly 70% of total GHG emissions. Global GHG emissions also grew by about 0.5% in 2019. Total emissions volumes continue to climb even if that growth is slowing. If the world continues to operate according to its current environmental policies, global temperatures will rise 3°C to 3.2°C by the end of the century.

There is still a long way to go before global GHG emissions are brought under control. Realizing a global vision of carbon neutrality will require the transformation of energy systems, which are a key part of the digital infrastructure. Energy systems need to rapidly transition towards diversified and clean energy sources, low-carbon operations, and digital transformation. This is how the energy sector can address the needs of the digital world.

Digital transformation is reshaping our energy supply and demand model, and expediting the shift towards green energy and low-carbon operations. New digital technologies, such as 5G, AI, cloud, and big data, are working together to digitalize traditional energy networks. Data has become a key resource in the energy Internet. Novel approaches, including using bits to manage watts and using data flows to optimize energy flows, will make energy networks greener, more resilient, open, intelligent, reliable, and efficient. "Computing power plus electric power" is a new model that will drive the intelligent upgrade of the energy sector.

Carbon neutrality will mean the end of the fossil fuel era and the beginning of a clean energy era backed by data-driven, intelligent energy networks. Now the entire world is aligned around one goal and one shared value – carbon neutrality.

Management Discussion and Analysis

Our Vision, Mission, and Strategy

Huawei's mission is to bring digital to every person, home and organization for a fully connected, intelligent world. To this end, we will:

- Drive ubiquitous connectivity and promote equal access to networks to lay the foundation for the intelligent world
- Provide the ultimate computing power to deliver ubiquitous cloud and intelligence
- Build powerful digital platforms to help all industries and organizations become more agile, efficient, and dynamic
- Redefine user experience with AI, offering consumers more personalized and intelligent experiences across all scenarios, including home, travel, office, entertainment, and fitness & health

Building a Fully Connected, Intelligent World

Ubiquitous Connectivity	Pervasive Intelligence	Personalized Experience	Digital Platform
Every person has the right to be connected. Connectivity is the foundation for social progress and economic growth. Connections will soon become a natural and ubiquitous resource, provided by networks that proactively sense changes and user needs. These networks will offer intelligent, seamless, and secure connections to people and things whenever and wherever they want. With the advent of 5G, we begin a new chapter in this story.	In the digital economy, computing power is a new driver of production. Data itself is a core asset, and cloud and AI are the new tools of productivity. Moving forward, AI computing will account for more than 80% of a computing center's capacity, providing the muscle for practical AI applications in all areas of life. To deliver ubiquitous cloud and intelligence, we will need to provide the ultimate computing power.	Using AI, cloud, and big data technologies, businesses can better understand their customers' needs and innovate with greater agility to craft a more personalized experience. Coordination and collaboration across industries will drive innovation at scale. With the continuous evolution of smart devices, a seamless experience across all scenarios will become the foundation of an intelligent life.	A new digital wave is sweeping the globe. Digital and AI technologies are helping all governments and businesses become more agile, efficient, and dynamic. Open, secure, flexible, and easy-to-use digital platforms are facilitating innovation and transformation in all industries. They will be the bedrock and the fertile ground for our digital society to flourish.

Ubiquitous Connectivity

We are entering a fully connected, intelligent world. In this world, connectivity is the foundation of everything, and the right to be connected is vital. Connectivity is the driver of productivity in digital society, where ubiquitous gigabit networks provide massive connectivity, ultra-high bandwidth, and ultra-low latency for homes, data centers, campuses, and cities.

For mobile and home users around the world, Huawei teams up with carriers to provide gigabit 5G networks as well as gigabit fixed networks and Wi-Fi networks for homes.

In the enterprise and government markets, Huawei works with partners to deliver all-scenario intelligent connectivity solutions that provide ultra-broadband, deterministic experiences, and hyper-automation.

Huawei continues innovating to provide cutting-edge gigabit connectivity technologies that work in any scenario and over any medium. These technologies include 5G core (one core and cloud-native architecture), simplified 5G, best-in-class Wi-Fi 6 technologies, intelligent and lossless data center networks, 400G/800G optical transmission, optical cross-connect (OXC), and intelligent optical network terminals (ONTs).

Huawei applies AI to individual network elements, local network orchestration, and universal network management. The company uses cloud services to achieve hyper-automated network O&M management, and builds intelligent connections that offer deterministic experiences to better meet the needs of industrial scenarios.

Huawei provides global customers with a range of intelligent connectivity solutions, including intelligent 5G connections, distributed access networks, premium private lines, and intelligent cloud-network solutions.

Pervasive Intelligence

The world is entering an intelligent age where networks will not just connect things but will also connect intelligences. Computing power is the core enabler of the digital economy. Diversified computing is widely recognized to benefit all, through economic gains like efficiency improvement and cost reductions as well as social gains like sustainability and energy conservation. Huawei is committed to providing the ultimate computing power through ongoing innovation in technological architecture and engineering. As part of this effort, the company will continue opening up its hardware, making its software open-source, and pursuing shared growth with partners.

Data is a core asset in the intelligent world, and data volumes will explode as more and more things and devices become smart. Many industries will need massive intelligent storage to handle this explosion of data. Huawei's converged, intelligent, and open data infrastructure helps break down silos between storage, databases, and big data systems. Huawei's data management engine enables customers to integrate and optimize every step of the data lifecycle, from storage and computing to management and utilization. This helps maximize the value per bit and reduce cost per bit to unlock the full potential of data.

The cloud is reshaping the way people acquire digital capabilities. The cloud is as important for intelligent transformation as electricity was for the electrification revolution of the 20th century. The cloud is critical digital infrastructure that underpins the intelligent world. Huawei is innovating at every level of the cloud technology stack, and delivers public cloud services and hybrid cloud solutions that stand out for their excellent value, availability, and data security. Huawei itself focuses on platform services and capabilities. Through AI enablement, data enablement, and application enablement, Huawei speeds up innovation in industries and simplifies application development. With ecosystem partners, Huawei aims to drive digital transformation and intelligent upgrade in all industries.

Personalized Experience

The physical and digital worlds are converging, and the process is speeding up. Mass production is giving way to mass customization, leading to greater business innovation, collaboration across ecosystems, and a richer user experience.

Using new technologies like AI and cloud, businesses can better understand their customers' needs and innovate with greater agility to craft a more personalized experience. Coordination and collaboration across industries will drive innovation at scale.

In our user-centric intelligent world, usage scenarios and experiences are evolving. The boundaries between products and services continue to break down, with many converging scenarios, including home, travel, office, entertainment, and fitness & health. Soon all content and services will travel with users for a completely seamless, holistic experience. Smart collaboration between software and devices will give users an intelligent experience anytime, anywhere. At the same time, developments in natural interaction and machine learning will take the service quality of smart devices to a whole new level. Smart devices will be able to better identify, understand, and respond to users' needs across different scenarios throughout their day, paving the way for a truly personalized experience.

Huawei will continue working closely with partners in its software, service, and hardware ecosystems to systematically integrate existing technologies and innovate to better serve consumers. The company is committed to its Seamless AI Life strategy that focuses on five scenarios: smart office, fitness & health, smart home, easy travel, and entertainment. Through HarmonyOS, Huawei Mobile Services (HMS), the smart assistant Celia, and HiLink, Huawei continues empowering its ecosystem partners to provide consumers with a superior intelligent experience across all scenarios.

Digital Platform

Many industries are embracing intelligent upgrade now that digital transformation has reached new levels. From video data and industrial data to personal data and consumption data, all data is coming from more sources and in more forms and is becoming more fragmented. Powerful digital platforms are needed to integrate this data.

New technologies in connectivity, cloud, AI, computing, and industry applications are converging to support comprehensive intelligent connections between people, things, and information at multiple levels. These technologies will help industries expand their traditional boundaries, and enable governments and enterprises to expedite intelligent upgrade. Enterprises will have to adapt their business strategies, organization, processes, marketing, services, manufacturing, and R&D to cope with changes. To do so, enterprises need to synergize cloud, networks, edge, and devices to build an open, powerful digital platform with multi-dimensional perception, all-domain collaboration, accurate judgment, and continuous evolution. With cloud as the foundation and AI at its core, this digital platform helps users accumulate industry know-how, rapidly innovate their core business processes, and quickly iterate to respond to new competition and changes in their business environments.

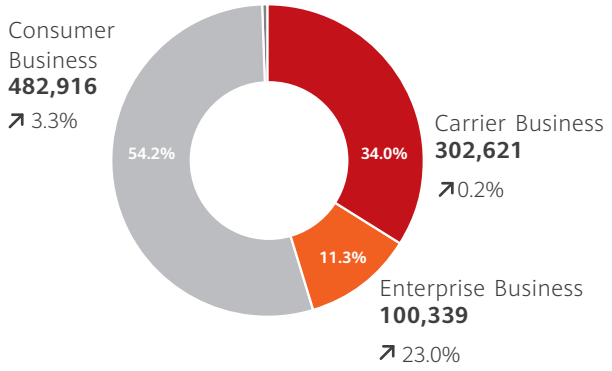
A digital platform is one of the core engines that drives success in digital transformation. New information technologies can make organizations more efficient through intelligent management of their physical assets like buildings, factories, production lines, and utilities. At the same time, advanced digital technologies in connectivity, cloud, AI, and computing can change the way organizations operate and create new business models. This is the process of digital transformation and intelligent upgrade. An organization's IT systems and the corresponding operational methods combine to form a digital platform.

Together with its ecosystem partners, Huawei provides innovative technologies, products, and solutions that help its customers build open, secure, flexible, and easy-to-use digital platforms. With its digital platform, Huawei assists customers in crafting their own intelligent solutions, and enables industries to navigate digital transformation and intelligent upgrade. Huawei's digital platform is injecting new momentum into the digital economy.

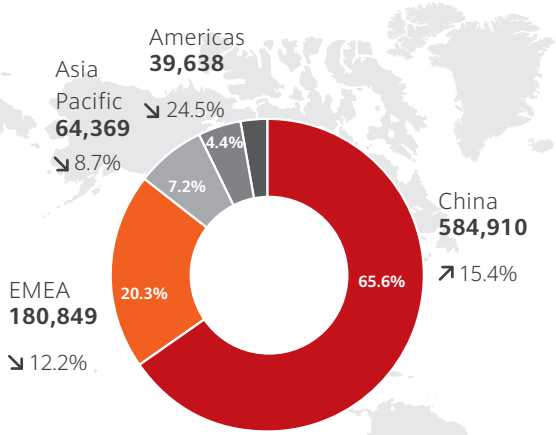
2020 Business Review

In 2020, the world faced immense challenges due to the COVID-19 pandemic. Huawei's global supply chain also faced huge external pressure. Despite this, the company stayed focused on ICT infrastructure and smart devices and continued investing to create value for our customers using our innovative ICT technologies. We were proud to do our part in 2020 to fight the pandemic and drive economic recovery and social progress. In 2020, Huawei's annual revenue reached CNY891,368 million, a 3.8% year-on-year increase.

(CNY Million)	2020	2019	YoY
Carrier Business	**302,621**	301,965	0.2%
Enterprise Business	**100,339**	81,554	23.0%
Consumer Business	**482,916**	467,304	3.3%
Other	**5,492**	8,010	(31.4)%
Total	**891,368**	858,833	3.8%



(CNY Million)	2020	2019	YoY
China	**584,910**	506,733	15.4%
EMEA	**180,849**	206,007	(12.2)%
Asia Pacific	**64,369**	70,533	(8.7)%
Americas	**39,638**	52,478	(24.5)%
Other	**21,602**	23,082	(6.4)%
Total	**891,368**	858,833	3.8%



- In the Chinese market, our carrier business continued to grow thanks to rapid domestic rollout of 5G. Our enterprise business seized new opportunities in digital and intelligent transformation, and our consumer business optimized its Seamless AI Life strategy, which aims to deliver an intelligent experience across all scenarios through a variety of consumer devices like PCs, tablets, smart wearables, and smart screens. Thanks to these factors, Huawei's 2020 revenue from the Chinese market reached CNY584,910 million, up 15.4% YoY.

- In Europe, the Middle East, and Africa (EMEA), our carrier business maintained robust performance thanks to 5G network deployment, and our enterprise business maintained strong growth momentum as industries pursued digital transformation. However, as our consumer business has been denied access to the Google Mobile Services (GMS) ecosystem, our total revenue from this region declined by 12.2% YoY to CNY180,849 million.

- In the Asia-Pacific Region, our carrier business maintained robust performance thanks to 5G network deployment, and our enterprise business continued to grow rapidly as an increasing number of local companies were going digital at a faster rate. However, this growth was offset by the hit to our consumer business, once again due to a lack of GMS ecosystem access, and so our revenue from this region decreased to CNY64,369 million, down 8.7% YoY.

- In the Americas, our revenue declined by 24.5% YoY to CNY39,638 million due to investment fluctuations in some countries' telecoms markets and our lack of access to the GMS ecosystem.

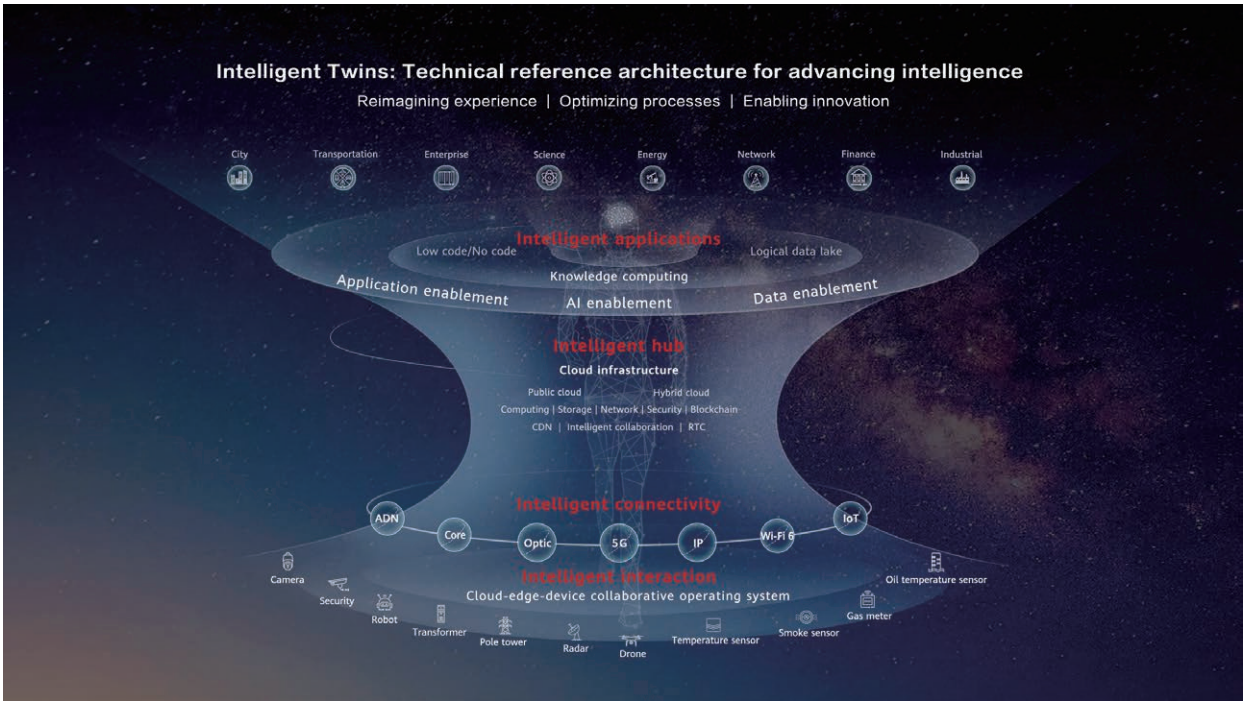
ICT Infrastructure Business

With a focus on information distribution, interaction, transmission, processing, and storage, Huawei provides products and solutions to two types of customers in the ICT infrastructure business: carrier customers and government and enterprise customers.

Next-generation information technologies are entering every aspect of society at an accelerated rate, leading us into a new era where the physical world and digital world are integrated.

In 2020, Huawei announced Intelligent Twins, the industry's first reference architecture to drive the intelligent upgrade of industries. Cloud serves as the foundation for Intelligent Twins, while AI is their core. With synergy across connectivity, AI, cloud, computing, and industry applications, Intelligent Twins enable an integrated, open, and intelligent system that is capable of multi-dimensional perception, all-domain collaboration, accurate judgment, and continuous evolution, accelerating the intelligent upgrade of industries. Intelligent Twins provide a reference architecture consisting of four layers: intelligent interaction, intelligent connectivity, intelligent hub, and intelligent applications.

- **Intelligent applications:** This layer targets industry scenarios by deeply integrating ICT technologies with industry know-how, and includes applications developed by industry independent software vendors (ISVs). These applications will help government and enterprise customers reimagine experience, optimize processes, and enable innovation, ultimately resolving issues and creating value. Intelligent applications require us to foster a thriving software and services ecosystem with our partners. It is estimated that the global software and services market will be worth US$1 trillion five years from now.
- **Intelligent hub:** This layer functions as the "brain" and decision-making system of Intelligent Twins. Built on cloud infrastructure, this hub enables applications and data, and provides inclusive AI to support intelligent applications across all scenarios. Hybrid cloud is the ideal foundation for the intelligent upgrade of governments and enterprises, while AI technology aggregates industry know-how to accelerate innovation in core business processes.
- **Intelligent connectivity:** This layer is the "trunk" of Intelligent Twins, supporting connectivity within the intelligent hub, connectivity between the intelligent hub and devices for intelligent interaction, and connectivity between devices for intelligent interaction. Key technologies that enable intelligent connectivity include 5G, optical network, intelligent IP network, core network, and Autonomous Driving Network (ADN).



Reference architecture of Intelligent Twins

- **Intelligent interaction:** This layer serves as the basis for connecting the physical and digital worlds. It is comprised of various devices, including cameras, smartphones, robots, and machinery, as well as the Intelligent EdgeFabric (IEF) that manages, analyzes, and processes these devices. Intelligent interaction will present tremendous opportunities for the edge computing industry, and the value of the global edge computing market is expected to rise to US$500 billion over the next five years.

  From a market perspective, our ICT infrastructure business primarily covers two markets: the carrier market and the enterprise market. In these markets, we use our innovative products and solutions to build open ecosystems, develop scenario-based Intelligent Twins solutions, and provide services to our carrier, government, and enterprise customers. This allows us to better serve every person, home, and organization.

  From an industry perspective, our ICT infrastructure business focuses on connectivity and cloud & computing. In connectivity, we strive to support Intelligent Twins and leverage 5G, optical networks, and intelligent IP networks to deliver intelligent connectivity that is characterized by ubiquitous gigabit, deterministic experience, and hyper-automation. In cloud & computing, we aim to develop core capabilities for the intelligent hub with "one cloud" (HUAWEI CLOUD), "two wings" (one is computing; the other is data storage & intelligent vision), and "two engines" (general-purpose computing & intelligent computing). Our ultimate goal is to deliver ubiquitous cloud and intelligence and enable all-scenario intelligence.

Carrier Market

2020 was an unprecedented year. COVID-19 has changed the world irreparably, but ICT technology has helped keep us running. Lives and work are going online and becoming digital and intelligent. ICT technology was critical in the fight against the pandemic and it kept families connected and helped businesses stay open.

Huawei strives to become the most innovative and trusted partner for carriers worldwide. To create value for customers, we put them at the heart of everything we do and pursue ongoing innovation. In the carrier market, our consistent investment into R&D and market expansion facilitates and ensures carriers' network stability, business sustainability, and new business growth.

In 2020, Huawei worked with its customers and industry partners to fight the pandemic, build the best possible ICT infrastructure, and drive the digital transformation of all industries. Our key efforts over the past year included the following:

- We delivered simplified, green, and converged end-to-end commercial networks for carriers worldwide.

- We embedded digital and intelligent technologies into every aspect of carriers' operations to make their network rollout and O&M much more efficient, enable the digital operations transformation of carriers, and support the innovations of carriers and partners.

- We worked with industry partners to build a mature ecosystem and develop innovative business models and applications. This helped carriers unleash the full potential of their networks and achieve greater business success by expanding into new markets across vertical industries.

Moving forward, we are eager to work with carriers and industry partners to explore and build future-oriented target networks, which will help carriers stay ahead of the curve and achieve business success.

Click here for more information: What Is GUIDE?

You can also scan the QR code to learn more:

Leadership in Innovation: Building a Solid Network Foundation for Carriers

Maximizing Network Value

Radio Access Network

Huawei has constantly innovated in the radio access network domain, striving to deliver the best possible network experiences. Carriers worldwide are looking to deploy sites in many different scenarios. Therefore, Huawei provides high-performance, green, and simplified integrated site solutions to meet their key requirements regarding site deployment, spectrum acquisition, and user experience consistency. To maximize the value of mobile networks, we have helped carriers build simplified "1+N" networks, where "1" refers to one foundation network for ubiquitous coverage and "N" is the on-demand capabilities that can be added.

5G Radio Access Network

The most simplified 5G sites: Through continuous innovation, we have developed and built the most simplified 5G sites. By combining our innovative BladeAAU Pro and ultra-wideband BladeRRU Pro solutions, we have reduced the number of units in a single sector from a maximum of 8 down to just 3. This significantly reduces the difficulty and cost of site construction while slashing antenna rental costs and site energy consumption.

The new BladeAAU Pro solution perfectly integrates 5G active antenna units (AAUs) and passive antennas for 2G, 3G, and 4G. This solution helps carriers save about 50% on the space required for antennas and improve 5G coverage by increasing the antenna height. The BladeAAU Pro solution has already been commercially deployed by both China Telecom and China Unicom, and has delivered excellent 5G signal coverage, high capacities, and superior 5G experiences to users. In Switzerland, our BladeAAU solution effectively addressed the extremely limited space at Sunrise's sites, and greatly cut the cost of new poles, helping boost Sunrise's 5G rollout.

We also launched the industry's only ultra-wideband solution, BladeRRU Pro, which integrates three low frequency bands into one unit and three medium frequency bands into one unit for the first time ever, improving multi-band investment efficiency.

Software algorithms: Thanks to our advanced software algorithms, we can guarantee the best 5G experiences. Our innovative adaptive high resolution (AHR) algorithm further enhances the performance of our Massive MIMO products, while also significantly improving user experience and expanding the cell capacity of 5G networks in scenarios with high user density and strong interference.

Left: Huawei BladeAAU Pro deployed by China Unicom; right: Huawei BladeAAU Pro deployed by China Telecom

Intelligent energy saving: We intelligently save energy at the network, site, and equipment levels to ensure the optimal total cost of ownership (TCO) for networks. We leverage equipment features and innovative algorithms to provide carriers with multiple energy-saving models, helping them maximize energy efficiency at different levels and greatly reduce network energy consumption.

LTE

Our 4G technology has continued to evolve, and our wideband RRU series helps carriers simplify multi-band deployment and improve O&M efficiency.

Our innovative Smart 8T8R solution first entered commercial use in Russia, where it has since more than doubled users' downlink speeds.

Over 50 carriers around the world have deployed our FDD Massive MIMO solution, maximizing capacity gains.

Microwave

We have developed ultra-broadband and long-reach microwave solutions by integrating cutting-edge wireless, transmission, and IP technologies. These solutions can meet the requirements of urban, suburban, and rural areas for fast wireless network coverage, and provide services for both enterprises and individuals. In addition, our intelligent beam tracking antenna, the first of its kind, ensures stable backhaul of sites.

Intelligent IP Network

Our intelligent IP network solutions offer super capacity and intelligent experiences, support autonomous driving, and guarantee committed SLAs. These solutions effectively support many services including home broadband, mobile broadband, and enterprise migration to the cloud.

We have continued to lead innovation in end-to-end 400GE ultra-high-speed interface technology, allowing routers to smoothly support massive amounts of data and protect customer investments. 400GE interface technology has already been successfully adopted in a number of projects, like China Mobile Jiangsu's IDC project, and is leading the shift of IP networks from the 100GE era to the 400GE era.

Our intelligent IP network technologies such as network slicing, SRv6, and in-situ Flow Information Telemetry (iFIT) have been adopted by the smart port project in Ningbo, Zhejiang, and the intelligent coal mine projects in Shanxi. With committed SLAs, these technologies guarantee low latency and high bandwidth.

Our intelligent fault prediction and self-healing solution proactively detects potential network risks, reduces the network fault rate, and improves user experience and O&M efficiency. After deploying this solution, China Unicom Beijing improved its O&M efficiency by more than 30%. Thanks to SLA visualization, the solution also helped the carrier proactively detect more than 80% of new network risks, which were then automatically mitigated, helping the carrier eliminate all major network accidents.

In 2020, we also launched the Intelligent Cloud-Network solution, providing carriers with differentiated products and services that help governments and enterprises go digital, including rapid migration to the cloud, one-line multi-cloud access, and cloud-network integration. In April 2020, China Telecom Ningxia and Huawei jointly launched slicing-based industry private network products, which provide flexible networking and fast cloud migration services for numerous industries such as healthcare and education. One network delivered the experience available from multiple industry private networks, effectively helping Ningxia build an "Internet + healthcare" demonstration zone and an "Internet + education" demonstration zone.

Cloud Core Network

Huawei's industry-leading core network solutions are stable, reliable, agile, and fully converged. They support disaster recovery and backup across data centers and plug-and-play of edge sites, helping carriers build stable, always-on core networks.

We have helped Chinese carriers deploy the world's largest fully converged core network, which provides stable communications services to subscribers. This network has also been used in a number of new business scenarios, including smart coal mines, smart grids, smart ports, and smart stadiums, helping industry customers go digital faster.

Green Sites and Green Data Centers

Green Sites

Huawei aims to help carriers build green sites. With this in mind, we have launched new solutions to enable carriers to evolve towards green networks.

To help customers build simplified sites, we have adopted a simplified site deployment model, shifting the location of sites from equipment rooms to cabinets and then to poles, and intelligently managing energy efficiency throughout the entire process. Blade sites can be rapidly deployed without cabinets or extra space, saving site rental costs and improving the energy efficiency of the entire site to over 97%.

With our innovative power solution, only simplified equipment rooms are needed. Cabinets, rather than equipment rooms, are needed for deploying new sites, and in site expansion scenarios, there is no need to build equipment rooms.

During site deployment, solar panels are added and diesel generators are removed, providing easy access to solar power and reducing the consumption from the power grid. This simplified design reduces OPEX by more than 50%.

Green Data Centers

Traditional data center construction faces many challenges, such as outdated construction models, lengthy construction periods, high energy consumption, and O&M difficulties. Huawei uses a modular and intelligent design approach to build next-generation data centers that are simple, green, smart, and reliable by focusing on the following four areas:

- **Reshaping architecture:** A modular and prefabricated approach enables simplified delivery, cutting construction periods from 20 months to 6 months and ensuring rapid service launches.
- **Reshaping cooling:** Our digital iCooling technology and indirect evaporative cooling solution, which maximizes the use of natural cooling, reduce the power usage effectiveness (PUE) of data centers by between 8% and 15%.
- **Reshaping O&M:** Digital and intelligent technologies enable fully automated O&M of data centers, cutting O&M costs by around 35%.
- **Reshaping power:** End-to-end power supply and distribution systems are now visualized and manageable. Digital technologies enable predictive maintenance, transforming passive maintenance into proactive prevention and ensuring reliable data center operations.

Service and Software: Enabling Digital Operations Transformation

Huawei leverages its General Digital Engine (GDE) platform and professional services to bring digital and intelligent technologies to every stage of network planning, construction, maintenance, optimization, and operations. Through these efforts, we aim to enable carriers' digital transformation, support carrier and partner innovation, and accelerate the agile innovation of digital services.

We have reshaped the traditional network construction model to develop an agile, high-quality model that ensures optimal TCO by fully digitalizing the end-to-end construction process. This has been achieved through measures such as site surveys supported by panoramic cameras, AR-powered installation, production-line-level commissioning and integration, and intelligent acceptance. In terms of data center infrastructure, Huawei and carriers have jointly implemented a new model of Engineering, Procurement, Construction (EPC), under which we provide digital, intelligent, and prefabricated modular solutions, enabling ultra-fast service launches and optimal PUE.

Our intelligent operations services solution AUTIN provides a unified O&M data model and intelligent framework. AUTIN integrates digital and intelligent technologies into all scenarios and the end-to-end O&M process to create a new O&M model that supports human-machine collaboration. This model also supports prediction, evolution, and closed-loop management. We have also made our platform capabilities available to carriers and partners to facilitate O&M application development, lower related technological barriers, accelerate the upskilling of digital talent, and support transformation towards intelligent O&M. To date, AUTIN has been adopted in more than 100 projects around the world.

The HUAWEI SmartCare® CEM solution continues to play a critical role in the experience management of our carrier customers. Huawei was a key contributor to the development and release of the *Experience Metrics for 5G Use Cases* standard at TM Forum. We also worked with China Mobile on 5GtoB experience management, and the results of this partnership have been successfully applied at Valin Xiangtan Iron & Steel and the Port of Ningbo-Zhoushan, greatly enhancing service assurance. umlaut (formerly P3) conducted network performance tests which covered 10 countries and found that multiple carriers who used Huawei solutions consistently ranked top in their region.

Our Agile Digital Operations (ADO) solution leverages digital and intelligent technologies to integrate the data and service flows of home broadband market operations. This solution empowers both the digital and intelligent operations of carriers' home broadband services, and helps better monetize business opportunities. The ADO solution has already been adopted by 20 carriers worldwide.

We launched the world's first ever 5G SA network based Convergent Billing System (CBS) in 2020. This system has been deployed by a total of 12 carriers across the Middle East, West Europe, and Asia Pacific, helping them quickly monetize new 5G services. Huawei provides an end-to-end 5G messaging solution that offers a messaging platform, ecosystem building, and service operations. We helped one carrier attract more than 300 enterprises to join its 5G messaging platform in just three months. For emerging markets, we also launched an end-to-end FinTech solution that covers wallet, digital payment, and micro-finance services. Our joint service innovation projects with customers in Kenya and other countries have helped rapidly expand customer revenue.

Our talent certification system for carriers has expanded its scope beyond connectivity to include cloud & computing and industrial applications, supporting the upskilling of carriers' digital talent. To date, Huawei has provided training to more than 1.5 million digital professionals from more than 260 carriers around the world.

In 2020, Huawei leveraged digital technologies and platforms to continue boosting delivery and O&M efficiency while ensuring employee health and safety. We maintained uninterrupted delivery and network O&M, and helped carriers resolve network issues and fulfill their corporate social responsibilities despite the pandemic.

With our Integrated Service Delivery Platform (ISDP), we have leveraged digital technologies and contactless online delivery solutions to enable online collaboration with customers and partners and maintain uninterrupted delivery. We successfully delivered over 2 million sites in 2020.

We have established a more proactive network assurance mechanism that focuses on risk prevention and fast response and offers assurance services. This mechanism has enabled us to continue providing remote support services in order to ensure uninterrupted network operations, uninterrupted responses from our technical assistance centers (TACs), uninterrupted spare parts support, uninterrupted support from maintenance staff, and uninterrupted communication with customers. As a result, we have ensured the stable and healthy network operations for over 1,500 customer networks across more than 170 countries and regions.

Ongoing Innovation: Helping Carriers Succeed in Multiple Domains

5G Business Practices

Global 5G deployment has proceeded faster than expected. By the end of 2020, more than 140 commercial 5G networks had been deployed in 59 countries and regions and the number of 5G subscribers worldwide had exceeded 220 million. This means the 5G user base is growing three times faster than the 4G user base did. Around 1 million households have been connected via 5G Fixed Wireless Access (FWA). 5G is seeing wider adoption in industries and empowering their digital transformations. 5G is set to create unprecedented commercial value for carriers.

Huawei works with carriers to build networks that deliver the best possible experiences. According to multiple third-party test reports on 5G network experience in large cities released in 2020, the best 5G networks in Seoul, Amsterdam, Madrid, Zurich, Hong Kong, and Riyadh were all built by Huawei.

Individual consumers: 5G devices for consumers have been developing rapidly, with more than 270 5G smartphone models available on the global market by the end of 2020. The diverse device ecosystem and the low latency and high bandwidth inherent in 5G networks have resulted in numerous 5G service innovations.

In China, Huawei has helped the three major carriers build 5G networks. With good network coverage and user experience, carriers have accelerated the

Huawei working with China Mobile Hunan to help Valin Xiangtan Iron & Steel, a factory in China's Hunan Province, use 5G to remotely control its cranes

development of Video Ring Back Tone (VRBT) services. VRBT already has over 120 million subscribers and the service is continuing to grow. In addition, Huawei supports carriers in upgrading the traditional short message service (SMS) with new 5G messaging services. Users can now connect their messaging service to the platforms of OTT players to enjoy one-stop life and office services.

In South Korea, Huawei helped one carrier develop multiple AR/VR applications, allowing it to deliver a superior new experience to end users.

Home users: Huawei has helped more than 40 carriers launch 5G FWA services for home users, connecting over 800,000 households. These services deliver fiber-level network speeds, and have become a key method for carriers to quickly expand their share in the home broadband market.

Zain, a carrier in the Middle East, has increased the number of 5G FWA users in two subsidiaries, with the user base in each subsidiary exceeding 100,000. 5G has created a robust cycle of business growth. In Northern Europe, a Norwegian carrier used FWA to upgrade services for users who previously had low-speed broadband services. This greatly improved user satisfaction and reduced the carrier's OPEX by US$140 million each year. In addition, its average revenue per user (ARPU) increased by about 23%.

Enterprise users: The 5GtoB ecosystem has been rapidly expanding. More than 20 vendors have launched over 70 industrial 5G modules, and more than 140 industry device models are now available for commercial use. The increasingly mature device ecosystem has driven the wide adoption of 5G in industries. To date, Huawei has participated in more than 3,000 innovation projects worldwide. Working with carriers and our partners, we have signed over 1,000 5GtoB project contracts, spanning more than 20 industries.

Huawei has been working with carriers worldwide to actively explore industrial applications of 5G, such as in coal mining, steel production, ports, and manufacturing, to create value for industry users and help carriers tap into the huge enterprise market. In certain scenarios, 5G can help enterprises ensure safer production and improve work environments for their employees while also improving productivity. Some of our success stories include the following:

- Xinyuan Coal Mine, Shanxi Huayang Group: 5G-powered robots replaced human workers and patrolled 534 meters underground to ensure safer underground operations.

Huawei helping Thailand's Siriraj Hospital apply 5G unmanned vehicles

- Valin Xiangtan Iron & Steel, Hunan Province: Remotely controlled cranes powered by 5G and unmanned cranes freed workers from high-noise and high-temperature environments and boosted productivity by 25%.

- Siriraj Hospital, the largest public hospital in Thailand: 5G enabled smart healthcare services. The hospital utilized 5G to explore and incubate leading applications such as medicine delivery through unmanned vehicles, 5G-powered ambulances, and 5G-powered emergency rooms, improving the overall quality of healthcare services.

In precision manufacturing industries, such as home appliances and vehicles, 5G has been applied to scenarios such as machine vision, AR-assisted repairs, and the proactive O&M of production equipment to enhance factory automation and intelligence and enable flexible and efficient manufacturing.

Premium Private Line Services

Huawei's ultra-fast Premium OTN Private Line solution adopts innovative technologies like optical cross-connect (OXC) and Liquid OTN to create a secure, reliable, and green optical foundation with low latency. This solution helps carriers monetize network performance, including bandwidth, latency, and reliability, and serves as a useful tool that helps carriers expand the government and enterprise market. Some of our success stories include the following:

- Following the COVID-19 outbreak, China Unicom Beijing used Huawei's Premium OTN Private Line solution to establish private line connections between China's Ministry of Industry and Information Technology (MIIT), the National Health Commission, and their corresponding provincial and municipal branches within just 24 hours. This created a network for managing public health

emergencies, providing secure and reliable services for rapidly releasing pandemic-related information to the public, sharing medical expertise, and providing remote consultations.

- In Brazil, Huawei and Oi launched the country's first Premium OTN Private Line service, which provided private line connections with ultra-low latency and ultra-high reliability to the finance and other industries. This laid a solid network foundation that helped Brazilian enterprises fight the pandemic and accelerate their digital transformation.

By the end of 2020, Huawei had helped carriers to build over 60 premium private line networks in China and enable 1ms latency in multiple areas, such as the Guangdong-Hong Kong-Macao area and Beijing-Tianjin-Hebei area. These networks helped carriers provide ultra-high-quality services for customers in finance, government, healthcare, and many other industries.

Premium Giga Home Broadband

Through continuous innovation in the home broadband domain, Huawei has developed more competitive end-to-end solutions to upgrade home broadband to Home+, transforming the home into a center of education, entertainment, work, and production. Our home broadband solutions deliver true gigabit speeds and help carriers succeed in giga home broadband. Our solutions include the following:

- Gigabit to the home: Huawei's innovative AirPON solution leverages wireless sites and optical fiber resources to make site acquisition much easier and support quick home network coverage. This solution has been commercially deployed by more than 30 carriers worldwide.

- Fiber to the room (FTTR): Our new FTTR solution delivers real-world test speeds of up to 1.2 Gbit/s, providing true gigabit services for high-end users. It also improves the ARPU by more than 30%. This solution has been part of 10 carriers' commercial service plans in many Chinese provinces including Guangdong, Jilin, and Shaanxi.

- Differentiated services: Multiple carriers in and outside China launched new broadband service plans targeting education, live streaming, gaming, and other unique needs from different users to increase the bandwidth for specific services and applications. These services ensure an optimal experience for customers and increase carrier ARPU by more than 30%.

While COVID-19 ravaged the world in 2020, Batelco, the leading carrier in Bahrain, worked with Huawei to promote the Wi-Fi whole-house coverage solution on social media, which enabled users to study and work from home. We also provided PremiumWi-Fi devices to non-profit education institution INJAZ, helping Bahraini students continue learning despite school closures.

Ubiquitous Connectivity

RuralStar Pro Solution

In 2020, Huawei launched the RuralStar Pro solution, which helps bring high-quality mobile broadband services to remote villages. The solution's innovative integrated access and backhaul design reduces power consumption per site to 100 watt, greatly reducing end-to-end costs. RuralStar Pro has successfully entered commercial deployment, greatly driving rural digitalization and contributing to targeted poverty alleviation measures.

To date, our RuralStar series solutions have provided mobile Internet services to more than 50 million people living in remote areas in over 60 countries and regions.

Bringing Digital to Rural Areas

Huawei has teamed up with China Telecom to support the Qingyuan Municipal Government of Guangdong Province, China in establishing a showcase project in Lianzhang Village that aimed to bring digital to rural areas. Through the project, we provided an integrated device-network-cloud solution, laying a digital foundation for rural areas. This foundation supports rural governance, public services, and industry vitalization. In addition, all parties are striving to find an effective path to revamp China's divided urban-rural structure.

5G, optical fiber, and Wi-Fi networks that deliver gigabit speeds are already a reality in Lianzhang Village, making it the first village in China to roll out a 5G network. With 5G, villagers have access to remote diagnoses and health training, and no longer need to travel outside the village in order to treat minor diseases. 5G has also improved prevention and control of infectious diseases within the village. In addition, 5G is narrowing education gaps between urban and rural areas by providing efficient, convenient access to remote classrooms for students that allow for real-time interaction with teachers and their peers.

To promote rural tourism and local industry development in the village, 360° VR live streaming and a traceability and direct supply system for agricultural

products have been introduced. Digital services have been widely adopted throughout the village and well received by the villagers.

Another key example is a digital education project launched in Peng'an County, Sichuan Province. In this project, Huawei built optical campus networks, providing high-speed broadband connections to more than 80 rural schools in the county. The networks delivered 10 Gbit/s at sites, over 1 Gbit/s to each school, and more than 100 Mbit/s to each classroom. This project gave more than 70,000 teachers and students living in urban and rural areas equal access to high-quality education resources.

Enterprise Market

The intelligent world is now within reach. Faced with new possibilities, our Enterprise BG has stepped up its efforts to develop innovative scenario-based solutions and create a digital ecosystem where all players create and share value together. We also strive to help industries explore how to tap into the power of the digital world to survive and thrive. Thanks to these efforts, we achieved robust growth throughout 2020.

We have developed more than 100 scenario-based solutions that cover over 10 industries including smart cities, finance, energy, transportation, and manufacturing. Our products and solutions, such as HUAWEI CLOUD, intelligent IP networks, Intelligent OptiX Network, computing, data centers, data storage, and 5GtoB, have become increasingly competitive within the market, and we have combined a number of our cutting-edge products in order to meet customers' differentiated needs. To accelerate the intelligent upgrade of governments and enterprises, we announced a new open technological architecture, Intelligent Twins, which leverages cloud as its foundation and AI at its core, and consists of four layers: intelligent interaction, intelligent connectivity, intelligent hub, and intelligent applications.

Huawei brings together seven types of partners: sales partner, solution partner, service and operation partner, investment and financing partner, talent alliance, industry organization, and industry partner. We announced a partner development strategy that consists of four initiatives: profitability, simplicity, enablement, and ecosystem. Through this strategy, we strive to help partners achieve their goals, and build a diverse ecosystem that is open, collaborative, and

At HUAWEI CONNECT 2020, Huawei proposed the establishment of a digital ecosystem where all players create and share value together while creating new value for industries.

thrives on shared success. We remain committed to connecting the "expressways" that will facilitate the digital transformation of all industries, and to working with our customers and partners to create new value.

We are enhancing synergy between cloud, AI, and connectivity to provide public cloud services and hybrid cloud solutions that deliver several layers of added value, especially in terms of stability, reliability, security, trustworthiness, and sustainability. HUAWEI CLOUD has launched more than 220 cloud services and 210 solutions, and earned over 80 industry-recognized security certifications. HUAWEI CLOUD works with more than 19,000 partners and has brought together 1.6 million developers. To date, over 4,000 applications have been launched on the HUAWEI CLOUD Marketplace.

By the end of 2020, over 700 cities and 253 Fortune Global 500 companies worldwide had chosen Huawei as their partner for digital transformation. In 2020, revenue from our enterprise business was CNY100,339 million, a year-on-year increase of 23.0%.

Click here for more information: Hi, Intelligent World

You can also scan the QR code to learn more:

A Wealth of Experience in Helping Governments and Enterprises Go Digital

Driven by business needs and always starting with top-level design, Huawei focuses on constantly creating customer value, and works with governments and leading enterprises worldwide to continuously explore and implement the best practices for industry digitalization and help customers go digital.

By the end of 2020, Huawei had worked with partners to explore and apply Intelligent Twins in more than 600 scenarios, covering sectors such as government, public utilities, transportation, manufacturing, energy, finance, healthcare, and scientific research.

Smart Cities

Huawei's smart city solutions currently serve over 700 cities across more than 40 countries and regions.

Staying true to the principle of putting people first, we leverage synergy across connectivity, AI, cloud, computing, and industry applications, and work with our partners to implement City Intelligent Twins with a "1 + 1 + N + X" architecture. "1" refers to one city digital foundation while "1 + N + X" refers to the city intelligent application system.

In September 2020, Shenzhen and Huawei announced Shenzhen Intelligent Twins. This project aims to build an integrated deep learning system to facilitate intelligent citywide coordination and enable a smart city that is capable of all-domain perception, network-wide collaboration, all-service integration, and all-scenario intelligence. These advancements will provide citizens and companies with proactive, precise, intelligent, and efficient public services.

Between September and December 2020, Huawei announced partnerships to build City Intelligent Twins with multiple cities across China, including Chengdu, Fuzhou, Nanchang, Changchun, Harbin, and Shanghai, setting a new precedent for the all-scenario intelligence of cities. City Intelligent Twins will accelerate all-scenario intelligence, improve the governance capabilities of cities, and give citizens and companies access to convenient and intelligent public services.

At Smart City Expo World Congress 2020, Huawei helped Shanghai and Shenzhen win prestigious awards. As a smart city powered by technology, Shanghai was recognized with the City Award; Shenzhen won the Enabling Technologies Award for technology-enabled refined city governance.

Huawei's Intelligent Traffic Management Solution takes full advantage of advanced technologies including AI, big data, cloud, and connectivity to create safe, orderly, and smooth urban traffic systems. In Shenzhen, Huawei has helped Shenzhen traffic police reduce the mortality rate per 10,000 vehicles for 16 consecutive years, which had dropped to 0.62 in 2020, making Shenzhen one of the world's safest cities in this regard.

Huawei's smart customs solution focuses on scenarios such as cross-border trade facilitation and port security. It is currently adopted in nearly 20 countries and regions, helping improve customs clearance efficiency, people's experience when passing through customs, and local business environments.

Finance

Huawei helps financial institutions upgrade their infrastructure, engage in agile innovation, intelligently manage data, provide inclusive services, and upgrade financial services targeting specific industries, helping financial customers go digital faster and become more intelligent.

By the end of 2020, we had served over 2,000 financial institutions from more than 60 countries and regions, including 47 of the world's top 100 banks. We have established comprehensive strategic partnerships with

more than 20 large banks, insurers, and securities companies around the world, and become a trusted strategic partner for the digital transformation of financial institutions.

In China, some of our success stories in 2020 included the following:

- We signed strategic partnership agreements and established joint innovation labs with a number of leading financial institutions, including Shanghai Pudong Development Bank (SPD Bank), China Merchants Bank, Shenzhen Stock Exchange, and the Credit Card Center of China CITIC Bank.

- SPD Bank and Huawei jointly released the *Bank of Things White Paper*, which proposed a brand-new financial service model and design system for "intelligent things", ushering in a new era of "bank of things" services.

- We teamed up with China Merchants Bank to build a joint innovation lab that is focused on next-generation data warehouses, aiming to develop an enterprise data warehouse platform that will remain technologically leading for the next decade.

We have also worked with our industry partners to develop Kunpeng-based solutions targeting specific scenarios, which have helped the Industrial and Commercial Bank of China, Agricultural Bank of China, China Construction Bank, and China Everbright Bank develop new computing power and reach new heights in terms of infrastructure and agile innovation.

Outside China, Huawei stood out from DBS Bank's 64 technology partners and was awarded the Most Valued Technology Partner of the Year 2020 for helping the bank engage in agile innovation, enhance its reliability, and improve its operating efficiency and services. We also provided reliable, scalable, and high-performance storage solutions for Brazilian bank Itaú Unibanco, Sympany Insurance Group in Switzerland, and Piraeus Bank in Greece, supporting the stable operations of their core transactions and their business expansion.

We provided Ghana's GCB Bank with our Mobile Money solution, helping it to offer mobile payment and other inclusive financial services. The solution helped the bank expand its revenue from mobile services by 10-fold. Through joint innovations with partners, we also provided NCBA, the most used commercial bank in East Africa, with a new core digital service system. This system provides inclusive financial services to users in Kenya and other East African countries, enabling NCBA to empower the real economy and promote sustainable social development.

Transportation

Huawei strives to facilitate safe, reliable, and accessible transportation for both people and goods. We have developed a set of comprehensive solutions for the transportation sector that pave the way for the digital transformation of six industry verticals, namely smart aviation, smart urban rail, smart highways, smart logistics, smart railways, and smart ports. Our solutions cover all major forms of transportation and logistics, elevating the safety, security, efficiency, and experience of the transportation industry to a whole new level.

In **aviation**, we are serving more than 100 airports across over 40 countries and regions.

The Civil Aviation Administration of China (CAAC) has set a goal of building safe, green, smart, and culturally rich airports and enabling safe, efficient, smart, and collaborative air traffic control. Guided by this goal, we leveraged our technological expertise and worked with our partners to develop a Smart Airport Solution. This solution offers passengers a smooth travel experience that allows them to complete procedures without realizing it. The solution also supports a unified display of airport operation status on a single screen, enabling an intelligent, efficient, and collaborative operation and control system.

As the major contributor to the CAAC's specifications for smart airport infrastructure, Huawei has helped standardize smart airport infrastructure for civil aviation, and launched solutions to help airports fight COVID-19.

Huawei has helped a large number of airports around the world, as well as the CAAC Northwest Regional Administration, in their journey towards a digital transformation. Beijing Daxing International Airport, Guangdong Airport Authority, China West Airport Group, Sichuan Airport Group, Yunnan Airport Group, Chongqing Airport Group, and Zhejiang Airport Group all went digital using Huawei's aviation solution.

The smart airport initiative, jointly advanced by Shenzhen Airport and Huawei, has delivered excellent results. Shenzhen Airport became the first airport in the world to publish its success story on the New Experience Travel and Technologies (NEXTT) platform of the International Air Transport Association (IATA). Its practices were selected by the CAAC as a demonstration project for safe, green, smart, and culturally rich airports in 2020. Shenzhen Airport also won the 2020 Airport Service Quality award from Airports Council International (ACI) World, being named one of the world's best airports with an annual turnover of more than 40 million passengers.

In **rail transport**, Huawei's smart urban rail solution serves more than 200 urban rail lines in over 70 cities worldwide. We have developed scenario-based solutions for the construction, O&M, and management of urban rail lines, including solutions for smart construction, smart passenger transport, smart O&M, and smart stations, as well as an urban rail Intelligent Operation Center (IOC).

Shenzhen Metro Line 6 and Line 10, which were opened for passenger traffic in August 2020, became the first lines in China to take advantage of full 5G coverage. They adopted Huawei's Urban Rail Cloud Solution, marking the first time within the global rail transport industry when cloud and big data technologies were applied to fully support a wide range of metro service systems.

We also helped Shenzhen Metro to launch China's first Central Digital Management Center (CDMC) for metro construction. The CDMC manages the safety of over 400 construction sites on a single screen. This center led to a 30% increase in the number of hazards identified, and slashed routine inspection workloads by around 35%.

Huawei Station, Shenzhen Metro Line 10. Line 10 was one of the first metro lines in China with full 5G coverage and adopted Huawei's Urban Rail Cloud Solution.

On the Guangzhou-Shenzhen railway, our integrated intelligent sensing technology was applied to the perimeter intrusion alarm systems of railways for the first time ever, helping to ensure driving safety around the clock.

For **highways**, Huawei has helped build "one expressway network" across China. Our road toll solution handles online, real-time operations for all expressways around China and centrally manages more than 50,000 electronic toll collection (ETC) gantries and 300,000 container applications. It supports online and rapid service upgrades, ensuring the continuous and healthy operations of expressways.

Our Transportation Intelligent Twins are able to visualize, measure, control, and serve the road network, greatly improving traffic efficiency and operating capabilities.

In **ports**, Huawei participated in the construction of multiple smart ports. At the Port of Ningbo, our 5G technology is used to support intelligent applications such as remote control, intelligent identification, and precise positioning of large- and medium-sized port equipment, greatly reducing operating costs.

At the Port of Tianjin, our unmanned driving technology has been combined with business scenarios to improve the turnover of containers and help the port become more technology-intensive. Intelligent scheduling has made port planning more scientific and improved the handling capacity by 10–20%. Huawei aims to help the Port of Tianjin become a world-class, modern, and green smart port that is fully powered by 5G.

Energy

Huawei actively works to tackle global climate change, embraces the transformation of the global energy industry, and constantly strives to develop digital solutions that can help the world become carbon neutral.

By integrating new ICT technologies such as connectivity, IoT, AI, blockchain, cloud, big data, and edge computing, we have developed scenario-based solutions, including intelligent power plants, smart grids, intelligent oil & gas, intelligent pipelines, smart gas stations, and intelligent mining. We are working tirelessly with our partners to create a new driving force for the digital transformation of the energy sector and a new digital engine for our energy customers. These efforts will help the energy sector transform towards green, low-carbon, safe, and efficient business models.

To date, Huawei has established extensive partnerships with more than 190 electric power companies worldwide, and currently provides digital services to 17 of the world's top 20 oil and gas companies and 17 of the world's top 20 mining companies.

In **electric power**, IDC and Huawei, based on deep insights into industry digitalization and Huawei's success stories, released a white paper targeting the electric power industry titled *Building the Future-Ready Power Enterprise: Road to a Successful Digital Transformation*.

Huawei signed a strategic partnership agreement on new digital infrastructure with the State Grid Corporation of China in order to help implement the energy Internet strategy. We have also jointly innovated with the State Grid Corporation of China and China Southern Power Grid to launch a Power Distribution IoT Solution that helps power grids effectively manage the O&M of millions of power distribution terminals.

We also promoted the innovative use of 5G and optical networks for power grids, and launched a next-generation optical network universal transport solution, which has been deployed on a large scale by the State Grid Corporation of China, China Southern Power Grid, Saudi Electricity Company, and the Electricity Generating Authority of Thailand (EGAT). In collaboration with China Southern Power Grid, we released the *5GDN@Smart Grid White Paper: Requirements, Technologies, and Practices* and a white paper on Liquid OTN, a next-generation transport technology for smart grids.

In addition, we launched an IoT management platform, cloud, Data as a Service (DaaS), and other solutions to help our customers, including the China Energy Investment Corporation, China Huaneng Group, and the Power Construction Corporation of China, build data lakes and cloud platforms.

In **oil and gas**, Huawei works with customers and industry partners to explore the extensive application of intelligent connectivity and intelligent computing in the oil and gas industry.

To support the operations of oil and gas fields, we have built a resilient and agile IoT platform that manages the oil and gas fields of many customers in China, the Middle East, and Latin America. Innovative use cases include 5G connected workers and 5G vehicle surveillance.

Taking advantage of the ModelArts and knowledge graph tools of HUAWEI CLOUD, we are working with customers to build a general-purpose AI computing platform for the oil and gas industry. This platform is enabling the application of AI models in multiple scenarios, such as oil-gas reservoir identification during well logging, well condition diagnoses, and predictions for production capacity decline and water content of individual wells.

In **mining**, Huawei and its partners have jointly released intelligent mining solutions. Supported by an overall architecture that features a unified network, cloud, and platform, N applications, and 5 centers, these solutions integrate cutting-edge digital technologies into core mining scenarios to enhance the safety and productivity of mining. China's Shanxi Province and Huawei jointly opened an Intelligent Mining Innovation Lab, and we have established strategic partnerships with Shanxi Coking Coal Group and Shanxi Huayang Group, among other customers.

Manufacturing

Working with its partners worldwide, Huawei leverages technologies including connectivity, AI, and cloud to help manufacturing companies achieve digital and intelligent business operations, including R&D, production, and supply, and create new value.

Take the automotive sector for example. We have provided consulting services and cloud, AI, and other solutions to more than 10 automakers, helping them advance digital transformation from the top down. Our hybrid cloud and knowledge computing, along with other solutions, have helped the China FAW Group Corporation cut costs and boost productivity. Our scenario-based solutions such as digital office cubicles, AI-powered quality inspections, and intelligent logistics will catalyze the digital transformation of car manufacturing.

Education

Huawei strives to apply connectivity, AI, cloud, and other key technologies to education in order to cultivate innovative talent in higher education and vocational education, accelerate innovation during teaching and scientific research, and bridge the digital divide. We also actively work to drive equity in basic education.

In **higher education**, we have helped more than 2,600 universities and research institutes in over 70 countries and regions to explore the unknown. Huawei's digital education platform has helped multiple universities

in Nanjing, Shanghai, and Xi'an build innovative smart campuses. In addition, our cloud services, high-performance computing (HPC) products, and campus digital infrastructure have supported universities and research institutes in China, the UAE, Spain, South Africa, and many other countries, improving their quality of education, research efficiency, and ability to innovate.

In **basic education**, we actively promote digital transformation worldwide. We have facilitated the development of demonstration zones for smart education in China, and helped schools in many countries, including Germany, Thailand, and Saudi Arabia, build or upgrade campus networks. These efforts have enriched teaching methods, made it easier to share high-quality education resources, and expanded the adoption of digital technologies in local education. In addition, we have provided education cloud platform services for elementary and secondary schools, based on HUAWEI CLOUD, which have benefited more than 50 million students who have been unable to attend school due to COVID-19.

Healthcare

Huawei teams up with industry partners to accelerate the digital transformation of customers in the global healthcare industry.

Based on the HUAWEI CLOUD platform, we have helped China build a national health information platform. We have also helped more than 1,500 hospitals in countries including China, Turkey, Indonesia, and Germany increase their use of digital technology, provide smart healthcare services, and deliver better experiences for patients.

In the fight against COVID-19, Huawei's AI-assisted diagnosis solution has helped medical institutions in China, Italy, Ecuador, the Philippines, and many other countries perform tests, rapidly and accurately detect the symptoms of patients infected with COVID-19, and effectively assess treatment results. This solution has improved diagnostic efficiency by five times when compared with manual operations, and helped to prevent the spread of COVID-19 worldwide.

Huawei's telemedicine videoconferencing solution helping Thailand fight COVID-19 (March 2020)

Internet

Huawei has provided Internet connectivity, data center infrastructure, and HUAWEI CLOUD solutions to more than 2,100 Internet companies worldwide, helping them address the challenges brought by the surge of network traffic and demands for computing power during the COVID-19 pandemic, accelerate business innovation, and improve the experience of end users. Huawei's efforts have also driven the optical and intelligent development of the Internet industry.

In **Internet access**, we provide a full portfolio of products and solutions covering access, MAN, and backbone networks to help ISPs build more reliable and stable optical networks with lower latency. These networks provide citizens and companies alike with access to high-quality, optical fiber-based Internet services, enabling people to work from home, enriching their online lives, and driving the digital economy forward.

In **Internet data centers**, our intelligent data center solution helped 1-Net Singapore build intelligent and green data centers. This solution reduced the energy consumption by more than 10% compared with the legacy solution, contributing to a digital, low-carbon economy.

In **Internet content services**, we provide cloud infrastructure and innovative technologies to help customers in industries such as e-commerce, audio and video, and gaming quickly innovate and achieve business success. In China, HUAWEI CLOUD currently serves 35 of the top 50 Internet companies.

Intelligent Campuses

Our intelligent campus solution was developed by integrating new ICT technologies. This solution has been adopted by more than 500 customers across numerous sectors such as government, energy, manufacturing, real estate, and logistics, helping their campuses achieve all-scenario intelligence. Two examples include:

- The West Bund, a waterfront in Xuhui District, Shanghai, partnered with Huawei to build a digital, attractive, world-renowned waterfront. Through its digital transformation efforts, the West Bund will

create an efficient, people- and business-friendly environment, driving the digital economy forward in Xuhui District.

- Huawei helped the Xi'an Olympic Sports Center build a smart stadium, improving security during sports events as well as the experience of both athletes and the audience. By fully tapping into the value of data, the stadium also became more efficient and increased revenue while contributing to China's national fitness program and sports industry.

We actively participate in standardization, and serve as the leader of the work group for setting China's national standards on intelligent campuses. We released the *White Paper on the Standardization of Intelligent Campuses in China*. We also organized efforts to develop the *Technical Standards on Intelligent Campuses* and helped initiate the project for setting China's first national standard on intelligent campuses.

We have built a partner program, attracted 102 partners to our intelligent connectivity ecosystem for intelligent campuses, and worked with 17 top architecture design institutes in China to research the application of ICT technologies in the architecture and campus domains.

In addition, we have continuously gained insights into industry trends. We released the *Future Intelligent Campus White Paper*, where we proposed definitions and blueprints for the intelligent campus of the future.

Data Centers

Huawei develops innovative solutions by integrating industry-leading technologies such as cloud, intelligent computing, data storage, and network switching, aiming to build leading data centers that power the digital transformation and intelligent upgrade of industries.

Huawei signing a partnership agreement with Serbia's Office for Information Technologies and eGovernment (December 2020)

Based on our intelligent and lossless data center network, the first of its kind in the industry, and our OceanStor Dorado all-flash storage system, we have developed the RoCE-SAN-based, next-generation all-IP storage infrastructure. With latency as low as 50 microseconds, this infrastructure allows companies to more efficiently tap into the value of data. In combination with Huawei's Atlas servers, we have developed HPC/AI computing power infrastructure, which is capable of delivering the computing power customers need to drive their business development.

Huawei's data center infrastructure has been adopted by more than 12,000 customers worldwide in industries including government, finance, energy, and transportation, helping customers upgrade to intelligent business systems.

A Thriving Enterprise Ecosystem and Global Service Capabilities

Expansion of Seven Types of Ecosystem Partners

In the enterprise business, we consistently implement fair, just, transparent, and simple policies that benefit our partners, and continually collaborate and share value with them.

By the end of 2020, over 30,000 partners were working with us worldwide to serve the enterprise market, including over 22,000 sales partners, 1,600 solution partners, 5,400 service and operation partners, and 1,600 talent alliances. In addition, more than 19,000 partners had joined the HUAWEI CLOUD Partner Network (HCPN) and over 4,000 applications had been launched on the HUAWEI CLOUD Marketplace. In total, we have brought together 1.6 million developers, creating a thriving partner ecosystem.

We will continue investing globally in order to develop, cultivate, motivate, and support our partners. In accordance with the four initiatives of our partner development strategy (i.e., profitability, simplicity, enablement, and ecosystem), we will increase investment in partner incentives, delve deeper into partner development and engagement, and build a diverse ecosystem that is open, collaborative, and thrives on shared success.

Ongoing Investment into a Flourishing Talent Ecosystem

Huawei shares with partners the technologies, experience, and talent cultivation standards it has gained from years of operations in the ICT industry. We have worked with a huge number of educational authorities, universities, other educational institutions, partners, and other ecosystem players from around the

world to set talent standards, build talent alliances, and demonstrate the value of talent. Together, we are building an open and favorable ICT talent ecosystem that thrives on shared success.

We have continuously optimized our certification system, which currently offers two types of certification: ICT Infrastructure and Cloud Service & Platform. By the end of 2020, more than 400,000 engineers had received a Huawei Certification, with over 13,000 of them receiving the Huawei Certified ICT Expert (HCIE) certification. These engineers are a valuable resource pool to support industry digitalization worldwide.

In February 2020, we launched the Huawei ICT Academy Program 2.0, through which we will provide incentives worth US$50 million to Huawei ICT Academies, helping them deliver online courses, provide online training, perform online experiments, and award online certifications. Through this program, we aim to work with universities worldwide and develop 2 million ICT professionals over the next five years. Ultimately, we aim to build a flourishing talent ecosystem and drive the ICT industry forward.

In the face of the COVID-19 pandemic, we launched the Learn ON Program, offering more than 300 courses and MOOC resources for free, providing 57 online open lectures, organizing more than 700 classes, and organizing 175 Train the Trainer (TTT) sessions. This helped ensure continuous online learning during the closure of schools and universities. The 5th Huawei ICT Competition attracted more than 150,000 students from over 2,000 universities across 83 countries and regions, promoting digital skills and fulfilling corporate social responsibilities.

Providing Consistent, High-quality Services to Customers

During 2020, the pandemic brought unprecedented challenges to global ICT expansion and O&M. Huawei responded quickly by actively innovating its service models and collaborating with over 5,400 service and operation partners to provide emergency services to customers across the globe. These services include proactive support, network planning, design, commissioning, optimization, and O&M, as well as collaborative implementation services for partners. These services aim to prevent service interruptions, network outages, customer experience deterioration, and network construction delays.

In 2020, we provided consistent, high-quality services to more than 50,000 customers worldwide, improving their O&M efficiency and system availability. We completed more than 130,000 projects, including over 600 key projects, and supported the secure and stable operation of more than 500 key customer networks.

We have continuously increased our investments in services to facilitate industry digitalization, and developed three service platforms: ServiceTurbo Cloud tool, the Intelligent Maintenance and Operation Center (IMOC) for unified O&M, and the Integrated Operations Control Center (IOCC) for operations support. These platforms enhance service automation and intelligence, providing industry customers with services throughout the solution lifecycle, including consulting, design, deployment, and O&M support.

In addition, we have shared our years of hands-on experience in digital transformation with more than 300 customers, provided consulting and top-level planning services for their digital architecture, and helped these customers implement the architecture in order to go digital faster.

Connectivity

We are entering the intelligent world at full speed, and the digital transformation of industries is reaching a new stage of intelligent upgrade. Connectivity is permeating all scenarios of our lives, homes, and industries. Instead of just providing best-effort services, connectivity is evolving to deliver differentiated and deterministic services. Bandwidth is growing from hundreds of megabits per second to gigabits per second over any medium, and manual network O&M is being replaced by hyper-automated models.

In response to these trends, Huawei has developed the concept of intelligent connectivity. As the trunk of Intelligent Twins, intelligent connectivity is characterized by ubiquitous gigabit, deterministic experience, and hyper-automation.

Promoting Unified Global Standards, Increasing Investment in Basic Technologies, and Building All-scenario Intelligent Connectivity Solutions

Standardization, openness, and interoperability are the foundation of sustainable development in the connectivity industry. Huawei is committed to working with all industry stakeholders to push for unified global standards based on the work of standards organizations.

Huawei's Autonomous Driving Network (ADN) provides intelligent, open, and agile connectivity. We are leading innovation in future-oriented network technologies

such as 5G, optical networks, and intelligent IP networks. We also maintain open collaboration with industry partners to create all-scenario intelligent connectivity solutions.

Wireless Networks

- **Huawei collaborates with industry partners to drive robust and coordinated development across the wireless industry.**
  - We work with industry partners to maintain unified global standards systems. We support the ITU's evaluation of technologies submitted by 3GPP (including NB-IoT) and endorse these technologies as unified global standards for 5G. We also facilitate standards research, including 3GPP Release 16 and subsequent releases as well as microwave spectrum optimization.
  - In a joint statement released by 23 enterprises and industry organizations, Huawei supports the 6 GHz band for mobile broadband. We have been working with partners to further research the use of the 6 GHz band for international mobile telecommunications (IMT) in the run-up to the 2023 World Radiocommunication Conference (WRC-23). By doing this, we aim to accelerate the development of an end-to-end industry value chain that is based on the 6 GHz band.
  - By proactively promoting 5GtoB development and collaborating with partners, we are creating new value in the 5G industry. We have launched innovative solutions, including Super Uplink and Distributed Massive MIMO, to meet the unique needs of industries. We are building a 5GtoB ecosystem with partners to support the integration of 5G modules into industry devices and enable the large-scale replication of industry applications, including those for healthcare, retail, tourism, live-streaming, and coal mines. We have participated in researching industry standards such as those for 5G healthcare and 5G-R to steer the 5GtoB industry towards faster development.
  - We are leading the development of the NB-IoT industry and accelerating the large-scale commercialization of NB-IoT. So far, we have supported more than 180 million NB-IoT connections worldwide, and driven the continuous growth of NB-IoT applications with tens of millions of connections in China, and as well as the growth of NB-IoT applications with millions of connections outside China.
- **Huawei provides a full series of 5G solutions for "1+N" 5G target networks** to help customers build "1" high-bandwidth foundation network for ubiquitous coverage and add "N" capabilities on demand.
- **Huawei provides solutions with industry-leading competitiveness in all aspects.** We continue to help carriers build high-quality wireless networks. These networks have proven instrumental to many carriers' best-in-class performance in LTE/5G network assessments and their branding and business success. Huawei itself ranked first in all criteria categories of GlobalData assessments on 5G RAN and LTE RAN, and was once again named the leader.
- **Under Huawei's vision for the 5.5G industry,** 5.5G will expand the three standard scenarios of 5G to include three new scenarios: uplink centric broadband communication (UCBC), real-time broadband communication (RTBC), and harmonized communication and sensing (HCS). 5.5G has the potential to go beyond massive connectivity to enable massive intelligent connectivity.

A Huawei simplified 5G site that provides gigabit access for the highest peaks of the Himalayas

- **Huawei is committed to promoting digital inclusion.** We have taken concrete actions to make mobile broadband more inclusive. We are expanding the availability of VoLTE and driving the shift from IoT to NB-IoT. We are helping carriers shut down their 2G and 3G networks, free up their spectrum resources, and turn their attention to

LTE and 5G development. We founded the LTE/5G FWA Technology Forum to create a collaboration platform and support the robust development of fixed wireless access (FWA). We continue to fulfill our responsibilities to reduce energy consumption and protect the environment. We provide a layered energy conservation solution (equipment + sites + networks) to boost energy efficiency at all layers of a mobile network. We have commercialized the PowerStar solution in more than 400,000 sites across China to help customers save 200 million kWh of electricity each year.

Transport and Access Networks

Huawei has worked with upstream and downstream partners to promote optical networks in various industries, and accelerate the shift from fiber to the home (FTTH) to fiber to everything. Fiber networks are ideal for building green, energy-efficient, and ultrafast networks because of their high bandwidth, low latency, reduced power consumption, resistance to interference, and size.

With a focus on four primary scenarios – all-optical transport, all-optical access, all-optical data centers, and all-optical campuses – Huawei provides all industries with all-optical services and solutions that offer deterministic experiences.

- Optical transport
  - Huawei has worked with global carriers to deploy more than 80 premium OTN private networks.
  - We have released the Premium Private Line 2.0 solution that enables carriers to provide quality services for governments as well as finance and OTT enterprises.
  - We have launched the industry's first tunable ultra-high-speed optical module with up to 88 Tbit/s per-fiber capacity.
  - We have released the industry's first Liquid OTN solution, which reduces latency by 30% and provides 100 times more bandwidth than the older-generation hard pipe technology. The Liquid OTN solution also delivers enhanced security and flexibility to support power grids, transportation, and other industries.
  - We have shipped more than 1,000 units of products powered by OXC globally.
- Optical access
  - Huawei has released its intelligent distributed access network solution that integrates intelligent modules into all network elements on the cloud, edge, and devices. The solution can accurately identify and ensure excellent user experience for online learning, HD video, teleworking, and OTT video applications. With this solution, the accuracy rate of poor-QoE identification is over 95%, and downloads are 82% faster on average.
  - Huawei's leading AirPON solution allows carriers to use their existing wireless sites, thus making network construction more efficient, reducing CAPEX by 27%, cutting network construction costs by 30%, and shortening the time to market (TTM) by 70%.
- Optical terminals
  - Huawei's OptiXstar portfolio now includes OptiXstar T863E, the industry's first industrial-grade intelligent optical terminal that opens the door for Huawei's all-optical campus solutions to support industries; OptiXstar S892E, the industry's first 40G POL optical terminal; and OptiXstar B850, the industry's first 10G PON gateway-type optical network unit for government and enterprise users that supports one-hop access to the cloud.
  - We have launched the FTTR all-optical gigabit room solution.
  - Embedded intelligent capabilities in our products deliver stable and ultrafast Wi-Fi 6 networks for many scenarios including online education, online entertainment, and smart home.
  - We have launched OptiXstar P813E, the industry's first 10G optical network unit (ONU) for all-optical campuses to drive the adoption of optical connections in enterprise campuses.
  - We have also released the Campus OptiX solution, which simplifies campus network architecture, reduces equipment footprint, and decreases network energy consumption to enable green, energy-efficient campus networks. As of December 2020, our Campus OptiX solution had helped more than 1,800 key industry customers across more than 50

countries and regions deploy high-quality campus networks efficiently. Current customers include Fudan University, the Universities of Canada in Egypt, Emaar Properties in the UAE, and Taj Hotels in India.

Data Communications

The technologies used in data communications networks are distinctly different from one generation to the next. This industry has seen this as the technology evolved from IPv4 of the Internet IP era, to the multi-protocol label switching (MPLS) of the all-IP era, and now IPv6+ of the intelligent IP era.

In cooperation with industry partners and standards organizations, Huawei has proactively pushed the IPv6+ industry forward and contributed more than 70 standards documents. We have upgraded every part of our intelligent IP network solutions, and evolved our AirEngine, CloudEngine, NetEngine, and HiSecEngine data communications products to promote ADN and deliver more scenario-based solutions.

- Campus networks
  - As a major contributor to Wi-Fi 6 standards, Huawei has worked with Wi-Fi industry alliances to develop network construction standards for offices, retail stores, education, healthcare, and manufacturing industries.
  - We have launched the CloudCampus 2.0 solution, which brings IoT and cloud into campus networks. This solution is based on our AirEngine Wi-Fi 6, CloudEngine S series campus switches, and NetEngine AR, all of which are building blocks for fully-wireless intelligent campus networks. Our CloudCampus solution was named a "Customers' Choice" by Gartner Peer Insights for wired and wireless LAN infrastructure. We also received the "Best Enterprise Wi-Fi Network Award" at the Wireless Broadband Alliance (WBA) Wi-Fi Industry Awards 2020. This award recognizes the digital transformation benefits that our AirEngine Wi-Fi 6 solution provides for factories. The CloudCampus solution is well received among customers from various industries worldwide. It has enabled SAIC Motor's Ningde Factory to achieve fine-grained production management, transparent manufacturing processes, and intelligent decision-making and control. The solution has also helped Quicktron boost the efficiency of its logistics by 40% through unmanned warehousing. Other customers of the solutions include the University Town of Shenzhen, Argentine professional sports club River Plate, and Slovak energy company Energotel.
- Data center networks
  - We have collaborated with industry organizations, customers, and partners to establish common standards and unified test specifications for converged lossless Ethernet. In partnership with IDC, we released the *Leveraging the Autonomous Driving Datacenter Network Index* report. In addition, we have found ways to significantly increase the efficiency of SDN service networks in data centers, fiber channel storage networks, and high-performance computing networks.
  - Our all-new CloudEngine 16800 400GE data center switch has earned customer recognition and trust for its large capacity, intelligent capabilities, reliability, and green attributes. This switch won the 2020 Global Data Center Switch Technology Leadership Award by Frost & Sullivan, and was named a "Customers' Choice" by Gartner Peer Insights for data center and cloud networking.
  - CloudFabric 2.0 represents a big step forward from SDN to ADN, and is the industry's first solution to achieve L3 autonomous driving networks. Our CloudFabric solution has supported the data centers of more than 12,000 companies across more than 140 countries and regions, including the People's Insurance Company of China, Ankabut in the UAE, and 2M-IT in Finland.
- Intelligent cloud networks
  - Huawei has teamed up with industry partners, standards organizations, carriers, and industry customers to drive the IPv6+ industry forward. Huawei and its partners released the *Intelligent Cloud-Network Solution White Paper* and the *Cloud-Network Architecture Index White Paper*. We employ systematic methods for network construction and user experience assurance to boost network construction efficiency and the competitiveness of the connectivity business during industry digital transformations.

- We have continuously upgraded our intelligent cloud-network solutions. Our innovative data communication products – such as the NetEngine 5000E cluster router and the NetEngine 8000 series intelligent metro routers – enable easy access to multiple clouds, differentiated experiences, and cloud-network converged service capabilities driven by cloud-network-security integration. These products have gone a long way towards helping carriers tap into new enterprise markets. Our intelligent cloud-network solution has served multiple industries, including e-government, smart healthcare, smart education, smart coal mining, smart ports, and smart manufacturing.

- Cyber security
  - Together with our security partners, Huawei founded the Huawei Security Business Alliance to bring together the industry's strengths and drive collaboration and clear division of work.
  - We have released the HiSec 2.0 solution and the Huawei QIANKUN security cloud service, and created an innovative architecture that combines edge intelligence, local intelligence, and cloud intelligence to handle new threats efficiently and ensure security in the digital world.

Cloud Core Networks

In cloud core networks, Huawei has continuously contributed to standards organizations and led the way in the industry. We are the largest contributor to 3GPP SA2, CT R16, and CT R17 standards, responsible for more than 20% of all contributions. We paved the way for the 5G Deterministic Networking Alliance to become a market representation partner of 3GPP, and also successfully initiated a 5G smart grid project in 3GPP R18, further facilitating the integration of 5G into vertical industries. Together with industry partners, we have greatly advanced the development of 5G industry applications, such as 5G in smart coal mines, smart grids, and smart manufacturing. We were granted multiple awards in China's 3rd Blossom Cup 5G Application Contest.

Our cloud core networks stand out for their convergence, stability, agility, and intelligent capabilities. Our differentiated and fully convergent 5G Core (5GC) and Single Voice Core (SVC) solutions make it easier for carriers to evolve to 5G, build large-scale 5G networks, and explore new opportunities in 5GtoB.

- Huawei has developed the industry's only fully convergent core network that supports 2G, 3G, 4G, 5G NSA, and 5G SA. We are supporting large-scale commercial 5G SA networks of Chinese carriers. Our Single Voice Core is a simplified voice network that supports the cloudification of circuit switched (CS) networks, and drives a boom in voice over LTE (VoLTE) and smooth evolution towards voice over NR (VoNR). This network lays the foundation for new service experiences of 5G voice.

- We have built highly stable core networks by way of cloud-native architecture, stateless design, intelligent flow control, and network-level N-way redundancy for hot standby and disaster recovery across data centers. We are supporting China Mobile's disaster recovery switchover in large regions serving tens of millions of users, and have assisted carriers in building ultra-large networks.

- We have launched a series of one-stop 5G multi-access edge computing (MEC) and public network integrated non-public network (PNI-NPN) solutions, helping carriers quickly expand their presence in 5GtoB and also supporting multi-city network sharing, on-premises campus networks, and many other deployment scenarios. The 5G MEC solution supports plug-and-play to allow for agile service provisioning within two hours.

- We have launched an autonomous driving network solution for cloud core networks based on iMaster MAE-CN, and streamlined the continuous delivery and continuous testing (CDCT) process with an orchestratable workflow engine to release versions more agilely. Our intelligent engine and knowledge graphs can quickly demarcate cross-layer faults on telecom cloud and enhance the competitiveness of intelligent telecom cloud solutions.

Cloud & Computing

As cloud computing technologies mature and become more widespread, computing power and AI will be as easily accessible as water and electricity. AI combines massive data and computing power with industry know-how to catalyze new experiences for consumers, new applications for individual industries, and a reshuffle of entire industries. New connectivity technologies mean that high-speed, low-latency networks now provide universal coverage and connect almost everything. Furthermore, innovative combinations of connectivity, AI, cloud, and computing with industry applications are making it possible to inject intelligence into all scenarios.

Ubiquitous Cloud and Intelligence for All Scenarios

Huawei's cloud and computing strategy is "one cloud" (HUAWEI CLOUD), "two wings" (one is computing; the other is data storage & intelligent vision), and "two engines" (general-purpose computing & intelligent computing). In 2020, we announced a new goal: Provide ubiquitous cloud and intelligence for all scenarios.

Intelligence for all scenarios means that new ICT technologies, particularly cloud, AI, and computing, will be deeply integrated with industry know-how to make intelligent applications that bring intelligence to cities, enterprises, and industries. They will improve the management of cities, raise standards of living, boost enterprise productivity, and make industries more innovative. Intelligence for all scenarios means that municipal authorities will have access to detailed, comprehensive predictive analytics, and the ability to coordinate public services, enabling fully systematic urban management. Enterprises will have a more open environment for innovation, enabling them to go intelligent, optimize their business processes, and introduce new business models, ultimately boosting core competitiveness and innovation. At the individual level, intelligence for all scenarios means easier access to smarter and scenario-based services, and improved quality of life. We are making ongoing efforts to make this happen.

- Cloud services: Leveraging Huawei's more than 30 years of experience developing ICT technologies and serving government and enterprise customers, HUAWEI CLOUD is committed to innovation and more inclusive technology. HUAWEI CLOUD was the first in the industry to propose the idea of Cloud Native 2.0 which will help enterprises move from "ON Cloud" to "IN Cloud". This transition will allow enterprises to connect new and legacy capabilities so that they co-exist and function together. HUAWEI CLOUD provides stable, reliable, secure, trustworthy, and sustainable cloud services. Our goal is to create fertile soil for the intelligent world to flourish by enabling applications and data.

- Computing: We are committed to providing diversified computing power with Kunpeng and Ascend, with a focus on architectural innovation. We remain committed to our computing ecosystem strategy of open hardware, open-source software, and partner enablement, and continue to develop the computing industry and the ecosystem around it.

- Data storage and intelligent vision: Huawei provides customers with converged, intelligent, and open infrastructure for every step of the data lifecycle, from storage and computing to management and utilization. We help companies unlock the full potential of data by maximizing the value per bit and reducing cost per bit.

Cloud and Intelligence Empower the Intelligent Hub and Intelligent Twins

The digital economy is becoming the main force driving economic growth. A wave of companies are going through digital and intelligent transformations. Going intelligent will remain a priority for enterprises over the next five to ten years, but to make it happen, the underlying technical architecture needs to support end-to-end processes. Huawei has provided the Intelligent Twins reference architecture for governments and enterprises seeking an intelligent upgrade. Intelligent Twins combine connectivity, AI, cloud, and computing technologies with industry applications; they are perceptive, conscious, actionable, and evolvable.

The Intelligent Twins reference architecture consists of four layers: intelligent interaction, intelligent connectivity, intelligent hub, and intelligent applications. At the center of the intelligent hub is HUAWEI CLOUD which is made up of one cloud infrastructure and three platforms for application enablement, data enablement, and AI enablement. The AI enablement platform is called ModelArts. It simplifies and automates the entire AI development lifecycle and its management. By integrating industry know-how and expert experience into AI development

suites and industry workflows, ModelArts offers templates to speed up the development of intelligent applications for our partners and developers.

HUAWEI CLOUD: Create Fertile Soil for the Intelligent World to Flourish by Enabling Applications and Data

In 2020, HUAWEI CLOUD continued innovating and advancing technology for all. As we helped industries go intelligent, we saw improvements in our cloud service capabilities and market share and became the world's fastest growing major cloud service provider.

Increased capabilities

HUAWEI CLOUD has launched more than 220 cloud services and 210 solutions, and earned over 80 industry-recognized security certifications worldwide. HUAWEI CLOUD works with more than 19,000 partners and has brought together 1.6 million developers, and over 4,000 applications have been launched on the HUAWEI CLOUD Marketplace.

HUAWEI CLOUD's customers span many sectors, such as Internet, government, manufacturing, and finance. The China Cloud Services Market Q4 2020 report released in March 2021 by Canalys ranked HUAWEI CLOUD second in China with a market share of 17.4%.

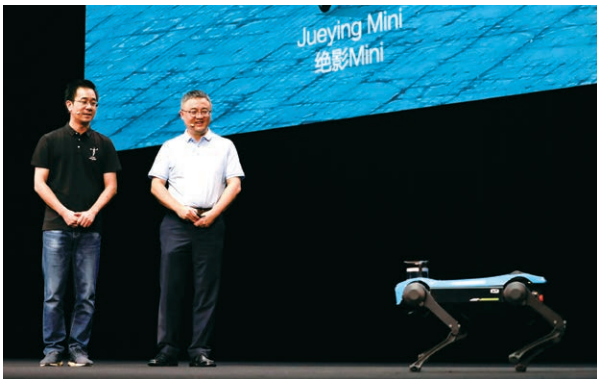
HUAWEI CLOUD operates 45 availability zones with partners in 23 regions around the world. More than 4,000 customers in 150 countries and regions are using HUAWEI CLOUD Stack for their digital transformations and intelligent upgrades.

Fueling intelligent upgrades of industries through technological innovation

HUAWEI CLOUD has built a technical architecture that consists of one cloud infrastructure powered by the QingTian architecture; three enablement services (i.e., application enablement, data enablement, and AI enablement); and four connectivity services based on industry scenarios. This architecture can deliver the benefits of the latest advances in technologies to all industries.

The three enablement services for industry digitalization operate in a coordinated way to help governments and enterprises connect the physical and digital worlds by enabling applications and data.

- Application enablement: HUAWEI CLOUD ROMA offers capabilities that span the entire application lifecycle, from application development, hosting and governance, to multi-dimensional O&M, convergence and integration, and asset management. In addition to modernizing the development of government and enterprise applications, ROMA also helps connect industry ecosystems.
- Data enablement: HUAWEI CLOUD DAYU helps government and enterprise customers capitalize on their data by managing them across four dimensions: business scenario, management system, data methodology, and the technical platform FusionInsight Lakehouse. FusionInsight Lakehouse allows customers to build logical lakes, real-time lakes, or offline data lakes using a single architecture, so that an enterprise or a municipal authority can put all of its data into a single lake. HUAWEI CLOUD GaussDB can handle transactions and online analysis in real time; it provides reliable and efficient storage, processing, and analysis for the massive data generated by government and enterprise applications.
- AI enablement: Our one-stop AI development platform ModelArts combines backbone models, federated learning, intelligent model evaluation/diagnosis, and high-performance AI computing, greatly reducing model training costs. In 2020, we released the industry's first full-lifecycle knowledge computing solution, enabling enterprises to build their own knowledge computing platforms and integrate AI with industry know-how.



A robot dog, with AI capabilities powered by HUAWEI CLOUD ModelArts, that can conduct intelligent inspections in factories

- **Redefining hybrid cloud**

  HUAWEI CLOUD provides hybrid cloud capabilities for government and enterprise customers through the hybrid deployment of public cloud, HUAWEI CLOUD Stack, and HUAWEI CLOUD Edge, enabling their intelligent upgrades. HUAWEI CLOUD Stack is a cloud infrastructure used in customers' local data centers. It enables customers to carry out local O&M or to use online O&M services. Built on HUAWEI CLOUD, the hybrid cloud solution combines the strengths of both public cloud that allows for fast innovations and private cloud that is manageable and controllable. As a result, it suits the organizational structure and service processes of governments and enterprises, while from the user's perspective, it functions as one cloud.

- **Leading Cloud Native 2.0**

  HUAWEI CLOUD was the first to propose the idea of Cloud Native 2.0. Enterprises are moving from "ON Cloud" to "IN Cloud", that is, from simply deploying applications on the cloud to deploying cloud native functions into their services and developing services based on a cloud architecture. Cloud Native 2.0 connects new and legacy capabilities so that they co-exist and function together, allowing for high resource utilization, agile applications, as well as intelligent, secure, and trustworthy services. In 2020, HUAWEI CLOUD released a Cloud Native White Paper, the Cloud Native 2.0 Landscape, and action plans. Along with the Cloud Native Computing Foundation (CNCF) and the China Academy of Information and Communications Technology (CAICT), Huawei also launched a global cloud native organization called Cloud Native Elite Club, which will help to enrich the cloud native industry.

- **HUAWEI CLOUD: Aspiring to be the best application platform**

  - We provide developers with simplified end-to-end development tools that support multiple development modes like full code, low code, and no code.
  - We enable the integration of technologies and services through our three enablement platforms: ROMA for application enablement, DAYU for data enablement, and ModelArts for AI enablement.
  - HUAWEI CLOUD Marketplace and AppGallery offer a powerful channel for application distribution and strong commercial support, so that developers can access a wide range of innovative cloud-based technologies, cloud resources, and massive capacity.

In 2020, HUAWEI CLOUD joined the global fight against the COVID-19 pandemic. HUAWEI CLOUD services were provided in various regions across Asia, Europe, and Latin America, allowing us to work with partners and research institutes to weather these challenging times together.

Diversified Computing: Open Innovation for Shared Success

Huawei has opened up the full stack of Kunpeng and Ascend capabilities to enable simplified application development and unlock the ultimate performance. This will allow Huawei to share success with our industry partners in the new computing era.

- **Full-stack Kunpeng: Open access to Huawei capabilities spurs industry innovation**

  Huawei has open sourced the full Kunpeng stack to enable our partners to pursue their own unique innovations and develop their own products that are better adapted to industry scenarios. While general-purpose motherboards were already open source, we have now made all basic and extended boards available to the community. Also made open source were the openEuler operating system, openGauss enterprise-level database, and openLooKeng data virtualization engine, so that our partners can use them to create their own commercial releases. This is our contribution to a thriving basic software ecosystem. We also released the application enablement suite Kunpeng BoostKit and the development suite Kunpeng DevKit to help our partners and developers launch innovative industry applications quickly.

  Huawei is committed to a Partner-First approach. Many of our partners have launched servers and PCs based on Kunpeng motherboards. Thousands of solutions developed by our partners have been certified as Kunpeng-compatible, and they have already been deployed in the finance, electric power, government, and telecom industries. Many partners have launched commercial releases of openEuler and openGauss. We have established a number of Kunpeng Ecosystem Innovation Centers in China, and more than 250,000 Kunpeng developers have joined us for innovation that runs the full stack from hardware and software to applications.

The openEuler open source community is a sustainable operating system ecosystem of all, by all, for all. Since its launch, the community has attracted numerous contributors, companies, research institutes, and universities, and dozens of special interest groups (SIGs) have been established.

The openEuler community presents the Excellent Contributor and Most Active SIG awards to developers for their outstanding contributions to the community. Community members are working together to build openEuler into a vibrant open-source operating system community, so that everyone in the industry can share in the value of diversified computing power.

■ Full-stack Ascend: Open innovation fuels the intelligent upgrade of industries

Huawei has open sourced the full stack of Ascend, including: the Ascend hardware; CANN, the heterogeneous computing architecture; MindSpore, the AI computing framework that is adaptable to all scenarios; MindX, the Ascend application enablement tool; and MindStudio, a full-pipeline development tool chain. We are offering partners and developers easy access to these AI capabilities to help them develop innovative, scenario-based AI applications. This is how Huawei contributes to the intelligent upgrade of industries.

Huawei has worked with industry partners to grow a computing ecosystem around Ascend. We have published the *White Paper on Ascend Computing Industry Development* and the Ascend Partner Program. We have also launched AI solutions with our partners, and we will continue working with more than 180,000 Ascend developers to produce new operators, models, and applications. All of them will be made open to the entire computing industry.

MindSpore is the industry's first deep learning framework with fully automatic parallelism. Our goal, alongside our industry partners, is to make MindSpore one of the world's most popular deep learning frameworks that is highly adaptable to all scenarios, so that we can build a thriving ecosystem together. Since MindSpore was made open source, it has received a positive response from developers all around the world.

With MindX, developers can develop applications with low code or no code. Huawei wants to help industry partners innovate and develop their own intelligent applications more quickly. We distilled developers' experience and industry know-how from common industry scenarios, and released a video analytics SDK and a smart manufacturing SDK to the Ascend community.

Using Ascend software and hardware, our partners have launched smart manufacturing solutions, cloud solutions for transportation, and intelligent systems to support medical imaging diagnosis. These solutions are already in use in industries ranging from finance and telecoms to Internet, energy, transportation, manufacturing, education, and healthcare.

In Huawei's own Dongguan South Factory, a smart manufacturing solution was developed based on the newly released SDK for use on our production lines. It detects and identifies foreign objects, checks screw assembly and glue application, and reads labels using Optical Character Recognition (OCR) technology. Its accuracy is close to 100%.

In the healthcare sector, we worked with partners to develop an intelligent COVID-19 diagnosis solution which has been used in European medical institutions. With our solution, reading a CT scan takes only 10–15 seconds, down from 10–15 minutes, and accuracy is 99%. This solution is helping to deliver better medical services for patients by speeding up diagnosis and evaluation of patient progress.

Innovative Data Infrastructure Unlocks the Value of Data

■ OceanStor converged data storage: High-performance, reliable, secure, and green

In 2020, Huawei announced its next-generation storage solution OneStorage, providing converged storage resource pools for multiple services, highly automated intelligent data management, and open data storage services that connect multiple clouds. This solution helps customers build data infrastructure that allows data to flow freely from the edge to the cloud. Many challenges can be addressed with this solution, including siloed data center storage, the difficulty of extracting data value, and the data incompatibility of cloud

native storage services and traditional storage. The solution will help industry partners take another step towards all-scenario intelligence and multi-cloud convergence.

We have continued to optimize our OceanStor all-flash storage and data protection solution, so that flash storage can be effectively applied in all data center scenarios, including core transactions, virtualization, and data protection. Powered by the innovative NVMe over Fabrics (NoF) plus end-to-end acceleration, this next-generation high-performance storage solution makes an all-IP-based data center network possible. The highly automated data management solution allows our customers to build storage resource pools, improves resource efficiency from 40% to 70%, and raises O&M efficiency by a factor of three to five. Intelligent O&M of data center storage is another benefit, meaning that customers can build high-performance, energy-saving, secure, and reliable all-flash data centers.

For high-value unstructured data scenarios that require high-performance computing (HPC), we launched the OceanStor Pacific series. Featuring an all-flash design and new high-performance hardware, the series delivers high bandwidth and throughput. In addition, the hybrid parallel NAS file systems that support uncompromised, multi-protocol interworking can accelerate the evolution from traditional HPC to high-performance data analytics.

Huawei OceanStor data storage has been used in many areas, including oil and gas exploration, digital preservation of cultural heritage, and intelligent credit card systems for banks. It provides the data infrastructure on which industries can undergo digital transformation faster.

- **Intelligent collaboration solutions: Facilitating communication, decision making, and innovation for industries**

  HUAWEI IdeaHub: Designed for office and team collaboration, the solution can be used for both digital office and digital production. As a business communication and decision-making center, HUAWEI IdeaHub facilitates communication between employees and organizations and solves common office communication issues. It can also be integrated into enterprise IT systems so that management can make better business decisions collaboratively and remotely.

A Booming Ecosystem with HUAWEI CLOUD, Kunpeng, and Ascend

Huawei is committed to its strategy of open hardware, open-source software, and partner enablement. We are building an ecosystem of all, by all, for all, with HUAWEI CLOUD, Kunpeng, and Ascend. We wish to create fertile soil and a solid foundation on which the digital world can flourish. In 2020, we invested US$200 million in the Huawei Developer Program 2.0 to boost the ecosystem, benefiting universities, developers, partners, and startups.

- Cultivating talent with universities: Huawei teamed up with China's Ministry of Education to build an Intelligent Center, which is a joint business-academia initiative. Dozens of universities have joined the program. To make sure that the instructors had the necessary skills, we rolled out advanced training classes in comprehensive computer skills.

- Empowering developers: Through development suites, developer communities, training courses, and technical salons, Huawei helps developers quickly and easily develop applications and improve their skills. As of December 2020, there were 1.6 million HUAWEI CLOUD developers and over 430,000 Kunpeng and Ascend developers.

- Enabling partners: HUAWEI CLOUD has brought together over 19,000 partners and certified thousands of partner solutions using Kunpeng and Ascend. In the software domain, we continued to update open-source versions of openEuler, openGauss, and openLooKeng, helping partners to launch their commercial releases. In terms of hardware, we made Kunpeng motherboards open architecture so that our partners can develop their own servers and PCs based on Kunpeng motherboards.

- Supporting startups: We have established relationships with hundreds of startups and provided free cloud resources or technical support to enterprises.

Launch of the Intelligent Center

Device Business

In 2020, our Consumer BG continued to focus everything on consumers. With a fully connected, intelligent world fast approaching, we remained committed to delivering a superior, intelligent experience to consumers across all devices and scenarios, and to constantly innovating to create value for consumers.

This year, we launched a range of smart devices that were well received by consumers around the world, including the HUAWEI Mate Xs foldable phone, our flagship smartphones the HUAWEI P40 Series and HUAWEI Mate 40 Series, the HUAWEI MateBook X ultra-slim notebook, the HUAWEI Vision X65 smart screen, the HUAWEI WATCH GT 2 Pro ECG, and our intelligent dynamic noise-canceling true wireless stereo (TWS) earphones, the HUAWEI FreeBuds Pro. This diversity exemplifies Huawei's enhanced engagement across the length and breadth of the device ecosystem and throughout all scenarios, while the user experience offered by these devices has continued to improve.

In 2020, revenue from our consumer business was CNY482,916 million, representing a year-on-year increase of 3.3%. By December 31, 2020, the number of connected Huawei devices worldwide exceeded 1 billion, and the number of Huawei smartphone users exceeded 730 million.

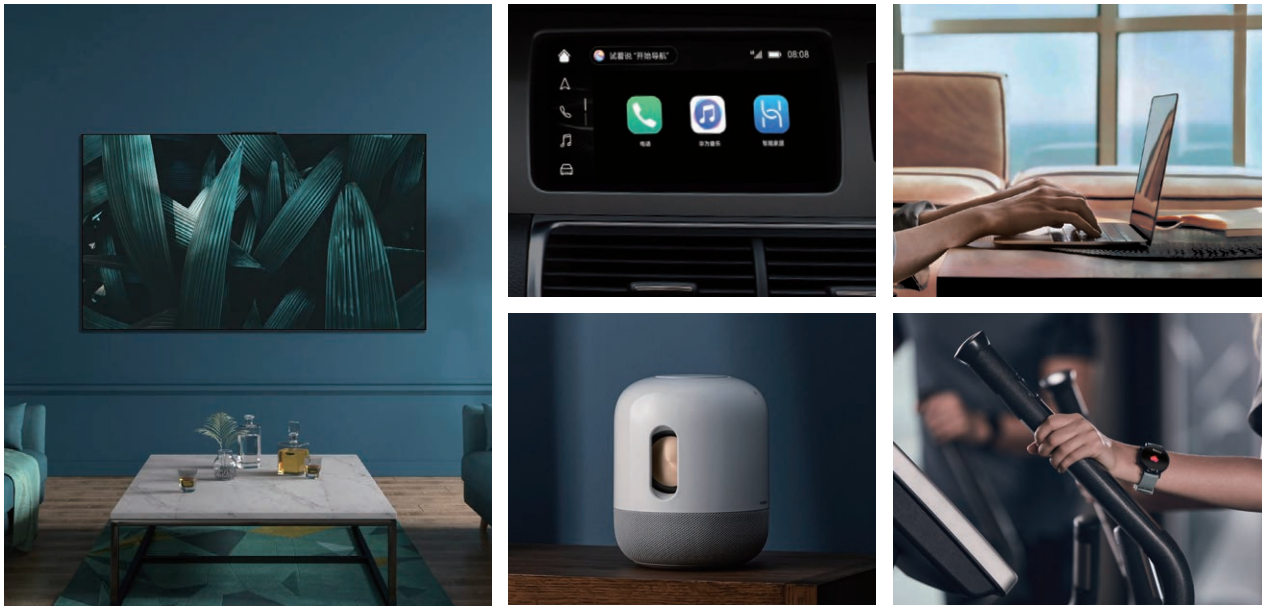
Seamless Intelligent Experiences in Five Scenarios

In 2020, the Consumer BG continued working hard to implement its "1 + 8 + N" Seamless AI Life strategy, where: "1" represents mobile phone users; "8" represents tablets, PCs, VR devices, wearables, smart screens, smart audio, smart speakers, and head units; and "N" represents ubiquitous IoT devices.

Driven by HarmonyOS and the Huawei Mobile Services (HMS) ecosystem, this strategy enables different types of devices to seamlessly share their capabilities and information, providing consumers with an intelligent experience across five key scenarios: smart office, fitness & health, smart home, easy travel, and entertainment.

Smart office: Huawei is committed to meeting office requirements with intelligent productivity tools, in order to deliver an intelligent experience to consumers. This experience supports natural human-machine interactions and smooth information sharing, and enables seamless shifts between different types of devices across all scenarios.

Take Huawei's latest ultra-slim notebook, the HUAWEI MateBook X, as an example. By utilizing distributed technology, Huawei has cleared the obstacles between the underlying architecture of Windows and smartphone operating systems, allowing the software and hardware of the HUAWEI MateBook X to seamlessly connect with those of smartphones. Huawei Share and Multiple-screen Collaboration enable the PC and smartphones to work together, significantly improving work efficiency and productivity.



Huawei's Consumer BG provides consumers with an intelligent experience across five key scenarios: smart office, fitness & health, smart home, easy travel, and entertainment, allowing them to seamlessly share information across all devices and scenarios.

Multi-screen Collaboration offers users an intuitive, intelligent, and collaborative experience in which they can simultaneously control the PC and a paired smartphone on a single screen. They can operate mobile phone apps and make phone calls from the PC, easily transfer files between the devices, and even edit files saved on the smartphone from the PC. This greatly enhances work efficiency and creates a smarter mobile office, while demonstrating the value of smart office and ecosystem collaboration.

HUAWEI Mobile Cloud supports remote collaboration and offers users a cloud experience across all scenarios, including mobile office. HUAWEI Mobile Cloud enables users to store and acquire information on different devices anytime and anywhere, and manage data more conveniently while ensuring data security and protecting user privacy.

Fitness & health: Huawei aims to deliver a new experience for proactive health management in the digital era. We are working with upstream and downstream app developers, medical device manufacturers, and professional medical institutions to build a hardware ecosystem, app ecosystem, and HUAWEI Research ecosystem in the fitness and health domain. We are also combining smart devices with health management services to provide consumers with 24/7 professional health services. In the near future, everyone will have access to a personal health manager and be able to proactively manage their own health.

Huawei has partnered with medical institutions, such as the Peking University People's Hospital, to explore solutions like disease screening and chronic disease management outside of hospital settings. Such partnerships are built on the HUAWEI Research platform and Huawei wearables like the HUAWEI WATCH GT 2 Pro ECG. This watch was certified as a Class II medical device by China's National Medical Products Administration. These solutions have greatly enhanced the efficiency of disease screening outside hospitals and led to far more effective means of monitoring and managing chronic diseases. More importantly, these solutions are presenting the future healthcare industry with many possibilities in the digital era. Over 1.8 million users have downloaded and registered on the Heart Study app on AppGallery, and the app has helped identify more than 4,200 suspected cases of atrial fibrillation.

To provide consumers with more accurate and professional health management services, Huawei established a brand-new HUAWEI Health Lab at its Xi'an Research Center in 2020. This lab will work closely with more than 10 of Huawei's global research centers to build a comprehensive fitness and health research and innovation platform. Moving forward, we will continually increase investment in the fitness and health domain and transform the HUAWEI Health Lab into an innovative workshop that is focused on healthy lifestyles. Through these actions, we hope to enable Huawei wearables to act as personal trainers, allowing consumers to proactively manage their health and live healthier lives.

Smart home: Huawei's HiLink smart home protocol breaks down barriers between smart devices from different brands and manufacturers, allowing them to seamlessly "talk" with each other and share information. By the end of 2020, the Huawei HiLink ecosystem had worked with more than 600 mainstream home appliance brands. In addition, the platform already covered more than 3,000 products and served over 50 million users. The HUAWEI AI Life app now has over 54 million active users, who submit more than 1.08 billion requests every day.

We have also developed an all-in-one whole-house intelligence solution together with real estate developers including China Overseas Property, China Merchants Property, COFCO Property, Greenland, Vanke, and Country Garden, as well as home decoration companies like Easyhome and OPPEIN. This brand-new home infrastructure solution aims to create a completely smart home for consumers.

Smart screens act as a key portal and the control center for a smart home. In 2020, Huawei launched multiple smart screens including the HUAWEI Vision X series, V series, and S series. With strong multi-device collaboration and AI features like OneHop Projection, intelligent screen control, and MeeTime calls, our smart screens are now serving as intelligent hubs in the living rooms of many households. In the future, Huawei's smart screen products will offer an even greater variety of functions and experiences through system upgrades, ensuring consumers are always up-to-date with the latest trends.

Easy travel: HUAWEI HiCar uses distributed technology to take interconnection between mobile phones and head units to a new level. This is achieved by establishing an ultra-fast connection channel between the devices and rapidly integrating the hardware resources, system capabilities, and service ecosystems of mobile phones and cars. In addition, Huawei's distributed platform capabilities closely link travel scenarios with other scenarios (e.g., office and home) to deliver an optimal experience through cross-device collaboration and create an intelligent cockpit service system that is applicable to all scenarios.

With HUAWEI HiCar, automakers can take advantage of the computing power of peripherals, such as mobile phones, and mobile Internet ecosystem services at low costs. This allows them to upgrade the intelligent cockpit experience in one simple step. By December 31, 2020, HUAWEI HiCar was supported by more than 20 mainstream automakers (including Volvo, FAW, Dongfeng Motor, GAC, and BYD), over 30 app developers (e.g., Baidu, Sogou, and Phoenix FM), and more than 30 head unit system integrators (including Desay SV, Flyaudio, and Road Rover).

Huawei has also teamed up with industry vendors to provide users with HMS for Car, giving them another option when it comes to in-vehicle services. HMS for Car allows users to directly use services that are pre-installed in automakers' vehicle systems, such as AppGallery, HUAWEI Music, and HUAWEI Assistant, allowing them to enjoy convenient, easy travel.

Entertainment: Huawei uses distributed technology to deliver a wireless entertainment experience across all scenarios that supports low-latency audio-to-video synchronization and multi-device collaboration, including dual device connectivity for headphones, seamless audio switching between devices, distributed stereo, OneHop Audio Sharing, and HUAWEI CAST+ screen mirroring. All of this is possible with Huawei devices like wireless headphones, smart speakers, smart glasses, smart screens, smartphones, PCs, and tablets.

Huawei's first TWS earphones to feature intelligent dynamic noise cancellation, the HUAWEI FreeBuds Pro, can serve as an example. These earphones support intelligent and convenient human-machine interactions and can connect with multiple devices and seamlessly switch between them, delivering consumers an unparalleled audio experience.

In addition to outstanding hardware capabilities, Huawei provides consumers with premium content and immersive entertainment experiences. HUAWEI Video, HUAWEI Music, HUAWEI Reader, and HUAWEI GameCenter offer consumers tens of millions of songs and hundreds of millions of audio tracks, videos, books, and games.

HUAWEI Music has partnered with Sony Select to launch a high-resolution music streaming service for the HUAWEI Sound smart speaker series. HUAWEI Video is now available in more than 20 countries and regions worldwide. We are also working with well-known Hollywood production companies such as Paramount and Sony to provide rich video content for both regional and global users.

Innovating Core Technologies and Fostering a Thriving App Ecosystem

Throughout 2020, the Consumer BG remained committed to creating value for consumers through non-stop innovation. We focused on innovating underlying core capabilities and developing ecosystem capabilities. These efforts led to important breakthroughs in a number of areas including device performance, imaging, operating systems, and the app ecosystem. Thanks to improved competitiveness and user experience, our products have been well received by mainstream media outlets and consumers the world over.

Chipsets: In 2020, Huawei unveiled its flagship SoC, the Kirin 9000. This chipset utilizes the cutting-edge 5 nm manufacturing process and integrates up to 15.3 billion transistors, making it the most fully functional 5G SA solution available in the smallest footprint possible. The brand-new Cortex-A77 CPU delivers superior performance and ultra-fast 5G connectivity. To maximize photographic capabilities, the Kirin 9000

An action shot and a photo of poplar trees taken with the ultra-wide camera of the HUAWEI Mate 40 Pro

adopts a revolutionary ISP+NPU architecture that enables high dynamic range (HDR) video synthesis with real-time exposure, resulting in sharp images and videos at all times, even in lowlight environments or backlit conditions.

Image systems: The combination of Huawei's outstanding hardware and advanced algorithms has led to the development of cameras that are capable of taking incredible stills. Take the HUAWEI Mate 40 Pro for example. It is equipped with a 50 MP Super Sensing Wide Leica Camera, which includes a 1/1.28-inch Ultra Vision Sensor, Huawei's largest CMOS sensor to date. This is also the first sensor, anywhere in the world, to incorporate a RYYB color filter array, 4-in-1 pixel binning, and Full Pixel Octa PD AutoFocus capabilities. These advancements boost light intake by 40% and further improve the speed and precision of focusing, even in action and low-light scenarios.

The HUAWEI Mate 40 Pro also comes with a 20 MP ultra-wide camera that features a 1/1.53-inch sensor and supports a wider field of view. Ultra-wide shots capture rich detail, even when light levels are low. Improved distortion correction targets faces, bodies, and limbs, making the ultra-wide angle lens a viable option in more scenarios than ever before. This highly versatile camera ensures that every person in the frame is captured perfectly without any distortion. In addition, the ultra-wide angle lens can be used to make close-up shots more artistic. When being used to take photos in narrow spaces or group photos, the lens can capture a wider field of view and expansive landscapes.

Operating systems: In 2019, Huawei announced HarmonyOS, an epoch-making distributed operating system that is applicable across all scenarios. HarmonyOS and its underlying distributed technology have been designed for a world where everything is connected. HarmonyOS helps create "super devices" by pooling the software and hardware resources of previously physically-independent devices, to transform the ambition of a Seamless AI Life into a full-blown reality. HarmonyOS helps to ensure that users always have an intelligent experience, which seamlessly shifts across devices when scenarios change.

In 2020, Huawei upgraded HarmonyOS to Version 2.0, which brought comprehensive improvements to the existing distributed capabilities, including software bus, data management, and security. Huawei also introduced an adaptive UX framework that allows developers to quickly reach tens of millions of new devices and users. The HarmonyOS 2.0 Developer Beta for smartphone app developers was launched in December 2020.

Huawei extensively supports developers in the HarmonyOS ecosystem, providing expert-level support, valuable training courses and easy-to-access materials, open-minded developer communities, and much more. Over 100,000 developers have received training from Huawei and are actively contributing to a thriving HarmonyOS ecosystem.

The EMUI 11 operating system, which powers the HUAWEI Mate 40 Series and Huawei's other flagship smartphones, takes advantage of the core distributed technology of HarmonyOS, enabling interactions beyond smartphones. Multi-screen Collaboration supports multitasking, and allows multiple smartphone apps to be controlled simultaneously through a connected PC. A smartphone can be turned into an electronic whiteboard with just a single tap, and screen mirroring is possible between a smartphone and another device.

In accordance with its open-source plan, HarmonyOS has been opened to devices with 128 KB to 128 MB RAM, such as smart screens, watches, and head units, since September 10, 2020. In April 2021, HarmonyOS will be opened to devices with 128 MB to 4 GB RAM. In October 2021, it will be opened to all devices with over 4 GB RAM. All related code will be donated to the OpenAtom Foundation of China.

In terms of HarmonyOS app development, comprehensive HarmonyOS 2.0 system capabilities, a multitude of APIs, and powerful app development tools like the DevEco Studio simulator have been made publicly available to smartphone app developers. This is facilitating efficient development of apps for a fully connected world. These apps will provide our consumers with complete access to the full range of benefits offered by a Seamless AI Life across all scenarios, including smart office, fitness & health, smart home, easy travel, and entertainment. More than 120 mainstream apps, including JD.com, Baidu, Youku, and iFLYTEK, have started innovating based on HarmonyOS in order to bring consumers a completely new, intelligent experience.

In the IoT hardware domain, HarmonyOS's revolutionary distributed technology will help hardware vendors turn products into services, transforming their business. Software innovations will be channeled to bring about differentiated and flexible hardware usage. Hardware resources from all connected devices within the HarmonyOS ecosystem will be pooled together, enabling partners to extract more value by selling services on an ongoing basis, rather than being limited to one-time purchases.

Multi-device interconnectivity has now become seamless, even at the very bottom layer, where connections are unaffected by differences in software or hardware. For instance, users can simply tap their phone against a home appliance to establish an instant connection, and the appliance's information will be visualized on the phone screen. Connected appliances will also be able to "remind" their users about their status, making their users' lives much more convenient. More than 20 hardware vendors including Midea, Joyoung, and Robam have already joined the HarmonyOS hardware ecosystem, and launched a number of home appliances powered by HarmonyOS.

HMS ecosystem: The Consumer BG continuously builds competitiveness, with a focus on the ecosystem and experiences. We have fully opened our HMS Core to developers around the world, giving them quick and convenient access to the HMS ecosystem for app innovation and ecosystem resource sharing.

In June 2020, Huawei officially launched HMS Core 5.0, opening up more than 50 kits and nearly 13,000 APIs to global developers. This meant that Huawei's software and hardware system capabilities, as well as cloud capabilities, were all available to developers for use.

By December 31, 2020, over 120,000 apps worldwide had been integrated with HMS Core, and the number of global registered developers exceeded 2.3 million, including 300,000 developers outside China. The number of apps launched on AppGallery in 2020 outside China was more than 10 times that of 2019. Currently, HMS is the world's third largest mobile app ecosystem.

In addition, the launch of all five basic service engines (i.e., Payment, Ads, Browsing, Search, and Map) gives the HMS ecosystem a solid foundation. An increasing number of high-quality and secure apps have been launched on AppGallery, and Petal Search and Petal Maps, designed for the mobile and intelligent era, have been launched outside China. Through such actions, Huawei continuously works to bring superior mobile experiences to consumers.

Ecosystem partners worldwide are supporting HMS apps, including HUAWEI Browser, HUAWEI Ads, HUAWEI Wallet, HUAWEI Video, HUAWEI Music, and HUAWEI Reader, helping them expand their global adoption and driving the development of a richer and seamless AI lifestyle for consumers. Huawei's Seamless AI Life ecosystem continues to thrive and strives to lead the pack.

Global Flagship Stores: The "City Square" Enhancing Brand Image

In 2020, the Consumer BG continued to explore and develop brand-new, premium retail and service models to improve Huawei's brand image and optimize its "last-mile" retail and service system. By the end of 2020, we had nearly 60,000 retail stores, display zones, and display counters worldwide, including over 5,000 experience stores.

Huawei's Global Flagship Stores are part of the company's ongoing efforts to build a global, high-end retail system for direct sales. After our first Global Flagship Store was opened in the heart of Shenzhen's vibrant MixC World on September 28, 2019, additional Global Flagship Stores were opened in Barcelona, Paris, London, Shanghai, Chengdu, and Shenzhen in 2020.

These Global Flagship Stores have become the "City Square" of their respective cities, serving as social landmarks and the "living rooms" of cities. At the stores, customers can relax, meet up with friends, and participate in the free courses delivered by the HUAWEI Community every day, which cover areas like photography, videography, and fitness & health. Customers can also hear from professionals in various sectors, including art and tourism.

In terms of customer service, we are committed to building and improving basic service capabilities by focusing on three service platforms: offline services, online services, and self-service. During 2020, we provided services to over 57 million consumers, and also used AI technologies to pursue transformation towards intelligent customer services, allowing us to accept over 25 million consumer inquiries through robots.

Left: Huawei's Global Flagship Store on East Nanjing Road, Shanghai, which is located in the Nanjing Building in the city's commercial hub. This store covers an area of nearly 5,000 square meters. Careful design has allowed Huawei to preserve the original form of the Nanjing Building, while breathing new life into this historic and cultural landmark.
Upper right: A corner of the HUAWEI Seamless AI Life Zone on the second floor.
Lower right: HUAWEI Community invited Wang Xiaoshuai, a famous director in China, to share stories from the movie industry.

Huawei's Customer Service Center in Sanlitun, Beijing, was Huawei's first service center to introduce face-to-face repairs. We repair products right in front of consumers to help reassure them of security.

By the end of 2020, the Consumer BG had approximately 3,200 offline service centers in 105 countries and regions, providing convenient and fast repair services to consumers around the world. In 2020, global customer satisfaction regarding Huawei's services increased by 8 percentage points compared with 2019. We also took action based on more than 1,000 consumer suggestions and requests related to the optimization of products and services, aiming to constantly improve consumer experiences.

To provide consumers with more considerate services, we have actively researched and built brand service flagship stores. These stores take advantage of Huawei's strengths in aesthetics and design and adopt innovative service models to create tech-savvy and culture-rich spaces that deliver all-scenario services to consumers.

An Active, Responsible Corporate Citizen That Enriches Lives with Technology

Huawei considers providing global consumers with equal access to technology to be its corporate mission and responsibility. We always fully consider the needs and experiences of each and every user and maintain a focus on accessibility throughout the design of operating systems. We have been making drastic design changes to operating systems in terms of high-frequency use scenarios of disabled users and deliver functions like smart camera, smart object recognition, AI subtitling, and barrier-free payments. These improvements are helping every user to benefit from technology. Our smartphones currently offer 15 accessibility options, benefiting roughly 10 million users worldwide every month.

For example, when a visually impaired user takes a photo, their Huawei phone will tell them where their face currently is within the frame, and guide them to make adjustments in order to get the best shot. During day-to-day life, the HiVision and HiVoice functions enable visually impaired individuals to clearly "see" the world around them. When they are on the go, the compass and screen reading functions can tell them which direction their phone is facing. When making payments, users can use their fingerprint or double-tap the power button to quickly open a payment page from the lock screen without opening the app and searching for the QR code.

Huawei has also made efforts to support deaf users. The latest AI subtitling function offered by EMUI 11 can convert audio and video on smartphones into text and supports face-to-face translations, translating conversations collected through the microphone into text. This makes it much easier for deaf individuals to communicate with those around them.

We also launched the StorySign app in partnership with the European Union of the Deaf, the British Deaf Association, and other organizations. This app uses AI technology to help hearing-impaired children experience the world of literature. When StorySign scans a child's favorite book, an animated character will appear and vividly translate the text into sign language, helping the child fully experience the joy of books.

In terms of environmental protection, we are committed to designing more eco-friendly products to minimize the impact our products have on the environment. We carefully manage the energy efficiency of our smartphones in terms of hardware, software, and applications. Energy consumption tests for typical applications show that the energy efficiency of Huawei smartphones increased by around 50% between 2015 and 2019. Other examples of our achievements in environmental protection include:

- Trade-in program: Nearly 500,000 used Huawei devices have found new owners since 2015.
- HUAWEI P40 Series flagship phones: Plastic packaging has been changed to fiber to the greatest extent possible, and the proportion of plastic in the packaging of this series of phones was reduced by 17% compared to their predecessors. This allowed us to use 1,750 kg less plastic per million phones.
- HUAWEI Mate 40 Series flagship phones: The packaging utilization rate increased by 68% compared with the HUAWEI Mate 7 Series, while the packaging weight of every phone was reduced by 55 grams. This means that paper usage was reduced by about 55 tons for every million units, equivalent to 935 trees.

Our affordable repair service means customers are far more likely to have their devices repaired, reducing the rate of replacements and maximizing resource utilization. We continue to implement our flat-rate battery replacement program worldwide, which covers more than 110 different models, and is supported in over 1,300 service centers and online marketplaces. Every month, this program provides over 200,000 customers with our convenient, cost-effective battery replacement service. We have also established a system for replacing screens that are out of warranty in many countries, drastically increasing the amount of recycled resources and reducing resource consumption.

Huawei also actively participates in social contribution programs on environmental protection. In 2020, we partnered with the China Green Foundation to launch a poplar tree campaign, through which we plan to donate 50,000 poplar trees to Jinta County in Gansu Province. The poplar trees will be planted to create windbreaks and help with sand fixation. Poplar trees are known as "desert warriors" that can protect oases as they are highly resistant to cold, heat, alkali soil, flooding, and drought. They are widely regarded as a symbol of vitality and resilience. 2020 was an unprecedented year for humanity. Through this program, Huawei hopes to carry on the tenacity of poplar trees, and give everyone the strength to rise above the storm and move forward.

The poplar trees donated by Huawei are expected to protect an area of around 6 square kilometers, equivalent to around 840 standard soccer pitches. A poplar tree will absorb 215.68 kg of CO_2 on average during its lifetime, so this program will lead to about 10,780 tons of CO_2 being absorbed, equivalent to the annual CO_2 emissions of 4,000 cars with 1.6-liter engines. (Note: Some data was provided by the local forestry department of Jinta County.)

As a leading global provider of smart devices, Huawei is keenly aware of how important privacy protection is to consumers, and the company is committed to building a brand that is trusted by global consumers in terms of privacy. We aim to protect user privacy with innovative technology, and we pursue this goal throughout every aspect of product design, R&D, production, and after-sales.

Our leading technologies have produced outstanding results in privacy protection, gaining us the recognition of numerous leading global organizations. One example is the HUAWEI Mate 40 Series, which provides consumers with comprehensive privacy and security protection at the kernel and OS levels. These phones are available with the Trusted Execution Environment (TEE) operating system, which has obtained the globally prestigious Common Criteria (CC) EAL5+ certification, the highest certification level for a consumer device OS globally. The TEE OS ensures that the management, encryption, authentication, and storage of all sensitive user data, such as fingerprint and facial data, are conducted within the TEE system, for all-encompassing protection. In addition, HUAWEI Mate 40 Series phones are the first in the world to offer a hardware wallet for China's digital currency, supporting secure storage and transactions for the currency.

We have always stressed that everything we do in the Consumer BG begins and ends with consumers. With this in mind, we will continue adhering to the Seamless AI Life strategy in 2021. We will continuously innovate core technologies and foster a thriving app ecosystem, working to constantly improve consumer experience. Our ultimate goal is clear: Continue delivering a superior, intelligent experience to consumers across all devices and scenarios.

Huawei launched a poplar tree campaign with the Green China Foundation to support Jinta County in Gansu Province.

Intelligent Automotive Solution Business

Core technologies like AI, new energy, 5G, and cloud services are being integrated into the traditional automotive industry at an increasing speed and electric vehicles are becoming more intelligent. They are set to change our lives more quickly and profoundly than we could ever have imagined.

Industry Development Trends

- **There is an industry-wide consensus that vehicles will be intelligent and electric.**

  Almost all car OEMs and industry partners agree that intelligent electric vehicles are the way forward. Most car OEMs have committed to this future vision and begun taking concrete action, like making clear transformation plans and increasing investment into these fields.

- **Technology and user experience are two key drivers behind the rapid growth of the global new energy vehicle market.**

  In 2020, sales of new energy vehicles (NEVs) continued to shine despite the slump in global car sales caused by the pandemic. NEV sales in China reached 1,367,000 units, a 10.9% year-on-year increase, while NEV sales in Europe rose by 45% year-on-year to 1,250,000 units.

  This rapid growth can be attributed to the heavy investments NEV companies have made into R&D and their closer analyses of user requirements. This has set the tone for medium- and long-term development trends.

- **Data and software are transforming traditional vehicles into intelligent and software-defined vehicles.**

  Data and software can support faster iteration of vehicle functions, which allow vehicles to deliver an experience that exceeds consumers' expectations. New, continuously iterated functions and services are also providing stable revenue streams for car OEMs, driving a shift in the industry from product-centered operations to user-centered operations.

- **The meaning of "building better vehicles" has changed significantly for car OEMs in an era of intelligent electric vehicles.**

  When it comes to vehicles, consumers are no longer primarily focused on mechanical attributes and instead are shifting their attention to intelligent and electric attributes. To make great intelligent electric vehicles, car OEMs need to use digital platforms to achieve faster vehicle development and improve efficiency at lower cost. They also need to enable fast software iteration, ensure vehicle safety and security, and address other challenges that consumers might face.

Main Achievements in 2020

- **Standards development**

  Huawei actively participated in the formulation of standards for intelligent connected vehicles both at home and abroad to ensure the safety of autonomous driving vehicles. Huawei also promoted technological innovation in in-vehicle operating systems, vehicle-mounted sensors, and vehicle-mounted communications systems. By working with industry partners to push for legislation on intelligent connected vehicles, we are laying a solid foundation for industry development.

- **Ecosystem development**

  Huawei carried out joint innovations on intelligent driving, intelligent cockpits, intelligent connectivity, and the "computing + communications architecture" (CCA), with upstream and downstream partners along the relevant value chains. These efforts have accelerated the transition to intelligent electric vehicles. We actively promoted the development of talent specializing in intelligent driving, launched talent cultivation programs at multiple universities, and established partnerships with more than 20 universities. We actively participated in building multiple intelligent connectivity demonstration zones, including those in Changsha, Wuhan, Shenzhen, and Shanghai. We have also worked with more than 100 ecosystem partners, such as car OEMs, software and hardware component providers, developers, and industry organizations, to accelerate innovation in intelligent connected vehicles and drive the intelligent connected vehicle industry forward.

- **Platform capability development**

  Huawei embraces the changes vehicles are undergoing as they become electric, interconnected,

intelligent, and shared. We have developed a brand-new CCA for next-generation intelligent connected vehicles. This architecture includes three computing platforms – the Mobile Data Center (MDC), the Cockpit Data Center (CDC), and the Vehicle Data Center (VDC) – as well as three operating systems – autonomous driving operating system (AOS), HarmonyOS for intelligent cockpit (HOS), and an intelligent vehicle control operating system (VOS). Huawei will soon launch more than 30 intelligent components based on this open CCA and digital platforms. We have made breakthroughs in Lidar, augmented reality head-up displays (AR-HUDs), and X-in-1 ePowertrain, among others, making Huawei a leader in these fields. Huawei is committed to openness, collaboration, and shared success, and will continue to work with partners to help car OEMs accelerate the development of software-defined vehicles.

- **Safety and security certification**

  Huawei will continue to pursue a zero-defect quality system to ensure safety and security for its customers and users. All of Huawei's Intelligent Automotive Solution components have passed automotive-grade certifications and safety and security certifications.

  - In cloud services, Huawei's Intelligent Vehicle Cloud Services has completed a Level 3 information security assessment in accordance with the Trusted Information Security Assessment Exchange (TISAX) catalogue, representing the highest level of data protection certification in the European automotive industry.
  - In operating systems, Huawei's AOS and VOS have obtained ASIL-D certification for software safety products according to ISO 26262:2018.
  - In intelligent driving, the MDC platform has obtained ASPICE Level 2 certification, and its configuration management tool MMC has passed the related safety certification. The MDC 610 design and ADS design have passed ASIL-D – the highest certification for safety assessment.
  - In the power domain, Huawei's mPower has obtained ASIL-D functional safety system certification for the automotive industry.

Huawei has provided a safe and secure development environment for car OEMs and ecosystem partners, bringing secure travel experience to consumers. This can shape the industry landscape and promote stable development of intelligent vehicles.

We are positioning ourselves as a new component provider for intelligent connected vehicles, and our aim is to help car OEMs build better vehicles. Huawei strives to bring digital to every vehicle in the future and work with industry partners to build a better world of intelligent travel.

Research and Innovation

In the Innovation 2.0 era, theoretical breakthroughs and new inventions based on basic technologies will help address global challenges, supporting our vision and assumptions for the future. As we enter this new era, Huawei will further ramp up investment into innovation, taking innovation to the next level and constantly delivering value to the industry and society at large. We will continue working to build a fully connected, intelligent world, which will benefit more people, homes, and organizations.

Building Innovation 2.0

Huawei's vision is a fully connected, intelligent world. To achieve this, we work to inspire passion for basic research around the world. Our combined passion drives development across the global innovation value chain.

Innovation 2.0 is, at its core, about making breakthroughs in fundamental theories and new inventions based on basic technologies that will help address global challenges in order to support our vision and assumptions for the future. This will create a steady stream of new inventions to drive progress in the digital world. In 2020, following the principle of openness for innovation, Huawei further expanded its efforts in basic research and actively pursued broader collaboration between the industry and academia. The accomplishments from such efforts and pursuit will be used to light up the future.

- In a post-Shannon world, future development and prosperity in the ICT industry will require new breakthroughs in mathematics, physics, chemistry, and other basic research areas. This is particularly true in mathematics, which is not just the foundation of science, but also a crucial support for ongoing technological advances. In 2020, Huawei published a list of 10 mathematical challenges facing the ICT industry. We hope that it will help guide and encourage new breakthroughs in theoretical research. Together we can solve global challenges like improving performance while reducing resource consumption; explainability in deep neural networks; and modernization of super-large networks.

- Huawei is working to build an open ecosystem for research collaboration between the industry and academia. We believe business should shape academic research, and we have prompted extensive collaboration with universities and research institutions. These efforts support highly uncertain innovation projects and new ways to improve efficiency.

- Huawei attracts leading talent from around the world with our open basic research mechanism. We have postdoctoral research stations in all of our 10 major research centers in China. These stations bring together high-potential talent to develop a pool of innovative researchers and allow them to communicate with each other through this initiative. As a result, our postdoc researchers have covered more than 300 topics based on their work at Huawei. This initiative has also helped Huawei establish a fully-fledged research network. Our research projects are strategically designed and coordinated to enable the industry and academic sides to work together more effectively. In joint pursuit of excellence, we will continue transitioning towards a model that is innovation-led, basic-research-focused, and talent-centered.

Basic Research and Theoretical Breakthroughs

Huawei has increased its investment in basic research and theoretical breakthroughs to support the continued development of a digital, intelligent world.

- **Wireless Networks**

  - We continue to explore and define new research directions and new services. We have expanded our collaborations with academic researchers; researched new air interface technologies, new network architectures, integration of communications and sensing, and key enabling technologies; and developed the fundamental theories of these technologies.

  - We continue to explore basic architectures and basic components for wireless networks, preparing for the future expansion of low-band and high-band networks with much higher spectral and power efficiency.

- **Carrier and Enterprise Networks**
  - In this area, our research is focused on network protocols for connecting everything and every network, including deterministic services, intrinsic network security, and flexible addressing. We have also invited many academic and industry partners to join our research.
  - An end-to-end deterministic networking experiment on a trial network has successfully demonstrated that with this new system in place, jitter can be less than 15 microseconds over a distance of 2,000 kilometers.
- **Video CODEC**
  - In this area, we are working actively and closely with vendors and industry partners from around the world to complete the latest international video CODEC standards – VVC/H.266 and MPEG-5EVC – and develop the CUVA HDR standard.
  - We are the world's largest contributor to video standards, and have created industry-leading video standardization solutions for applications such as 4K, 8K, high dynamic range (HDR), and 360-degree panoramic videos. This has helped ensure a better video experience for consumers and an open and flourishing video industry.

Innovation and Invention

Huawei has spent decades investing heavily in innovation and invention. We continued to see how this strategy successfully drives industry progress in 2020:

- **Optical Networks**
  - With new progress in high-speed optoelectronic materials and components, we have supported evolution towards higher bit rate per wavelength over long-haul. We continue to deepen our research into the ultra-high-speed signal processing technology and have demonstrated that 1 Tbit/s per wavelength is feasible.
  - We have made breakthroughs in key transmission technologies for achieving 800 Gbit/s over short distances in data centers. We have also introduced an all-optical architecture and novel technologies to data centers, ending the backplane dimension constraint on system capacity. This maximizes the computing performance of data center networks.
- **Smartphone Media**
  - Thanks to breakthroughs in our camera technology, we have further improved our smartphones' image definition, quality of HDR and strongly backlit images, color accuracy, night view noise reduction, and portrait mode effects, bringing users a brand new experience.
  - We have also overcome some tough challenges regarding spatial computing and spatial video, both of which are critical. Free-viewpoint video and indoor high-precision positioning services are hugely appealing to consumers.
  - Advances in our active noise canceling (ANC) and Bluetooth HD audio CODEC technologies have delivered a comfortable and nearly lossless ultra-HD audio experience to our device users.
- **Basic Software**
  - Huawei is committed to sustained supply as well as innovation and breakthroughs in this area to increase competitiveness.
  - Euler kernel has become the first project to obtain both the ASIL-D and CC EAL 5+ certifications.
  - Our openEuler, openGauss, and MindSpore have been recognized as being among China's top 10 open source projects and technical innovation platforms in light of their contributions to the expansion of China's software industry.
  - RTOS, GaussDB, EulerOS, and HuaweiJDK are among the company's most shipped software products.
  - Our GaussDB, a distributed, cloud-based database, delivers financial-institution-class levels of reliability, and has been integrated into class-A banking systems, where it is capable of handling critical bank functions.
  - RTOS, with its microkernel-based architecture, performed 30% better, with 30% less noise, than Linux on 5G networks.

- We have obtained over 20 third-party certifications for our basic software.
- By building trustworthiness in our basic software, we have achieved the requirements stipulated in our *Software Process Trustworthiness Capability Framework V1.0*, and have built a software management system that prioritizes trustworthiness.

Materials and Techniques

- We are a leading innovator in the device sector. For example, we were the first to bring the Falcon Wing hinge design to foldable phones. Based on an inward-folding design, the phone's amorphous alloy hinge allows it to fold out to reveal an eight-inch screen. Looking to the future, we will continue to innovate new precision mechanisms and flexible displays, crafting pocket-sized phones with big screens.
- Huawei was the first company to pack a set of foldable, long-focus cameras into its phones. With this technique, phones can be less than 1 cm in thickness, while offering a 10x optical zoom. This is the highest smartphone zoom available to date.

Engineering

- By introducing low-profile and compact arrays, we have restructured and simplified the antenna array architecture, reducing its weight by 30%.
- We have made breakthroughs in electromagnetic supersurface and material techniques, guaranteeing low channel loss.
- We have applied antenna decoupling techniques during base station design, allowing for new physical structures that make site acquisition and deployment easier.

Trustworthiness

- To address both the opportunities and challenges presented by digital sovereignty, better protect customer privacy, and improve product security and resilience, Huawei continues its research into theories, technologies, and engineering practices in trustworthiness. We have been an active player in driving advances in the theory and standardization of trustworthiness.
- Huawei is a major contributor to trustworthiness-related task forces in the International Organization for Standardization (ISO), Telecommunication Standardization Sector of the International Telecommunication Union (ITU-T), 3rd Generation Partnership Project (3GPP), European Telecommunications Standards Institute (ETSI), Internet Engineering Task Force (IETF), and other standards organizations. We actively participate in standardization for AI trustworthiness and are fully dedicated to enhancing the trustworthiness of open source software.
- We are reshaping the architecture of trustworthy computing in the AI era with a multi-language trustworthy framework, compatible across various platforms, which offers data processing volume thousands of times higher than that of previous versions.

Huawei has one of the largest patent portfolios in the world

By the end of 2020, Huawei held a total of 100,000+ active patents, across 40,000+ families.

Every year, Huawei invests over 10% of its sales revenue into R&D.

53.4% of our total workforce

Huawei's R&D investment over the past decade has exceeded CNY720,000 million.

15.9% of the company's total revenue

Improving the Management System

Our global management system enables the company-wide promotion of our corporate culture and the effective management of our business. Ultimately, we aim to:

- Stay customer-centric, continue basing innovation on customer needs and technological leadership, and build an ecosystem for shared success
- Ensure operational compliance and business continuity, and control risks
- Guarantee the trustworthiness of both processes and results, and provide trustworthy, quality products
- Pursue corporate social responsibility (CSR) initiatives and promote sustainable development

Quality and Customer Satisfaction

Huawei aims to make its name synonymous with high quality in the ICT industry. To achieve this, we define our standard for "broad quality" as ISO 9000-based total quality management. We have implemented a strategy-driven, all-hands, and full-process quality management system across our entire value chain in alignment with our customers' needs. We are also rolling out a broader quality management system across the company, continuously implementing new system requirements, and building a data-driven quality awareness and measurement platform. This will ensure our quality management system is constantly improving along the value creation stream while staying customer-centric.

- With a focus on value and experience, we drive efforts to extend quality management to **every link along our value chain**:
  - Previously, our "broad quality" concept was only applied to our products and services. Today, it has been adopted by multiple business domains within the company and has become an integral part of every link along our industry value chain.
  - With quality as our foundation, we continue to stress operational compliance and place cyber security and privacy protection at the top of the company's agenda.
  - To deliver Real-time, On-demand, All-online, DIY, and Social (ROADS) user experiences, we are striving to build the best digital operations platform. This platform will make operations simpler, more prompt, and more accurate, and raise the overall quality of our routine work and results.
  - Huawei actively works to capture the Voice of the Customer (VOC) through a wide array of channels to identify and consolidate key improvement points and continuously improve customer satisfaction.
  - We constantly push customer requirements and expectations up the industry value chain to align quality strategies and encourage further collaboration for mutual development. We also call on suppliers to build their own Business Continuity Management (BCM) systems and lead our value chain in the pursuit of high quality.
- We are working to increase quality awareness and capabilities of **all employees** so the company can win with quality:
  - We have continued to develop leadership in quality management, pursue a quality-first culture and atmosphere, and inspire a sense of responsibility and honor towards quality among all employees.
  - This will be achieved through the Huawei Quality Awards, internal and external audits and assessments, Top N, Six Sigma, lean manufacturing initiatives, the theory of inventive problem solving (TRIZ), Taguchi methods, failure mode and effects analysis (FMEA), Quality Control Circle (QCC) projects, and broad acceptance of improvement suggestions.

- We attempt to manage quality and embed quality requirements into **all of our processes**.
  - Through our complete process architecture, including operational, enablement, and supporting processes, we have embedded requirements for compliance; trustworthiness; quality; internal controls; cyber security and privacy protection; information security; business continuity; Environment, Health, and Safety (EHS); CSR; and sustainable development into multiple domains.
  - These domains include sales, marketing, R&D, delivery and services, supply chain, procurement, and manufacturing. We have also streamlined these processes from end to end, and worked to constantly hone our competitiveness and prevent major quality risks.

All aspects of Huawei's broad quality and relevant management systems have been certified by leading industry organizations, winning extensive recognition from customers.

- **The company has been evaluated and certified by multiple independent third parties, receiving the following certifications:**
  - ISO 9001 (quality management)
  - TL 9000 (quality management for the ICT industry)
  - IATF 16949 (quality management for the automotive industry)
  - ISO 14001 (environmental management)
  - ISO 14064-1 (quantification and reporting of greenhouse gas emissions and removals)
  - OHSAS 18001/ISO 45001 (occupational health and safety management)
  - IECQ QC 080000 (hazardous substance process management)
  - ISO 50001 (energy management)
  - ISO 22301 (BCM)
  - ISO/IEC 20000-1 (IT service management)
  - ISO/IEC 27001 (information security management)
  - ISO 28000 (security management for the supply chain)
  - ISO/IEC 27017 (cloud security management)
  - ISO/IEC 27018 (protection of personally identifiable information in public clouds)
  - ISO/IEC 27701 (privacy information management)
  - ISO/IEC 29151 (protection of personally identifiable information)
  - CSA STAR (cloud security management)
  - PCI DSS and PCI 3DS (payment card industry data security)
  - SOC 1, 2, and 3 (system and organization controls)
  - ISO 27799 (health information security)
  - TISAX (information security and trusted information exchange in the automotive industry)
  - NIST CSF (cyber security framework)
- **Huawei has passed comprehensive audits, regular reviews, and stringent assessments, all of which were conducted by many of the world's top carriers, as well as by major enterprise and industry customers.**
  - Audited domains include financial robustness, quality management, risk management, delivery and services, supply chain management, knowledge management, project management, trustworthiness and software engineering, cyber security and privacy protection, information security, EHS, CSR, sustainable development, and BCM.
  - We aspire to become a strategic partner for our customers that can assist them in future-oriented transformations.

Implementation of Huawei's smart manufacturing architecture (3 streams + 1 cloud) and technologies such as IoT, big data, and AI for a 95,000-square-meter industrial 5G network that delivers automated, digital, and smart manufacturing to production lines, workshops, the whole factory, and the larger campus area at Huawei's South Factory in its Songshan Lake campus in Dongguan, China

Improving the BCM System

In today's highly globalized and highly specialized world, Huawei relies heavily on many third parties to help us in procurement, manufacturing, logistics, and global technical services. This makes business continuity management (BCM) critical.

Through years of sustained investment, Huawei has established a BCM system for domains such as procurement, manufacturing, logistics, and global technical services. This system covers our end-to-end processes, from suppliers to Huawei and on to our customers. As part of this system, we have developed and established effective measures to manage risks that arise during our daily work. Specifically, we have built up management organizations, processes, and IT platforms, prepared business continuity plans and incident management plans, and organized BCM training and drills for employees.

Key Initiatives for BCM in R&D and Procurement

- **Supply chain diversification:** When designing a product, we strive to source raw materials, boards, and products from more than one supplier, prioritizing the supply diversity in raw materials. We prefer suppliers that have multiple manufacturing sites in order to safeguard sustained product availability.
- **Scenario-specific stock-up:** During mass production, we prepare safety stock of raw materials, semi-finished products, and finished products. This allows us to better address uncertainties from various sources, including customer demand, supply availability, and natural disasters like the COVID-19 pandemic.
- **Supply and demand visibility:** Huawei works closely with suppliers to ensure that demand forecasts, purchase orders, and supplier inventory are all visible through IT systems. This ensures that we get timely demand information and have adequate supply.

Key Initiatives for BCM in Manufacturing, Supply, and Spare Parts

- Manufacturing and supply resource backups: Huawei considers in-house manufacturing and outsourcing capabilities of equal importance. We have established strategic partnerships with multiple electronics manufacturing service (EMS) suppliers. Board manufacturing and supply capabilities are shared between Huawei and EMS suppliers, and between multiple EMS suppliers, to ensure there is always a backup. We have also established supply centers in Shenzhen, Europe, Latin America, and Dubai to also serve as integrated equipment backups for each other.

- Spare part reserves to support full-lifecycle operations: Huawei reserves spare parts according to market demand and historical usage before a product reaches its end of life (EOL). After EOL is reached, we reserve enough spare parts for the full lifecycle of the product. This prevents any impact on the operational continuity of live customer networks.

Over the past decade, we weathered many crises from natural, political, economic, and trade-related conflicts to even violent conflict in some regions. In 2020, despite the devastation caused by COVID-19, Huawei continued to ensure supply continuity and achieve timely delivery of products and services to our customers. This shows that Huawei's BCM system – as part of our overall management system – is functioning properly. Huawei is a global company that works in the network infrastructure, IT infrastructure, cloud services, and smart device domains. We have worked with over 10,000 suppliers and partners, and established sound, long-term partnerships with them.

On May 15 and August 17, 2020*, the US Department of Commerce amended their foreign-produced direct product rule and released the final ruling on Huawei Technologies Co., Ltd. and a number of its non-US affiliates. This means the export, re-export, or in-country transfer of any item subject to the EAR (including hardware, software, and technologies) to Huawei or its listed affiliates requires a license from the Department of Commerce.

This ruling has affected our business development to some extent. As a staunch advocate of globalization, we will continue to pursue supply chain diversity without depending on any one country or region, and then build our supply continuity upon the global supply chain. Remaining on the Entity List does not restrict or prohibit Huawei from providing products and services to our customers in accordance with compliance requirements. Based on the principles of collaboration for shared success and mutual development, Huawei is confident in our ability to work with partners to forge a secure, reliable, competitive, and healthy industry value chain. Huawei products will continue to meet customer requirements for sustained supply and delivery, and we will continue to deliver quality products, solutions, and services to our customers worldwide.

Regulatory Compliance

Huawei conducts its business with integrity and conforms to business ethics standards and all applicable laws and regulations. This is a key operational principle held by our highest levels of management. We have worked for years to build a compliance management system that aligns with industry best practices and embeds compliance management into every link of our business activities and processes. These efforts continue to this day. Huawei emphasizes a culture of integrity and invests heavily into it. As such, every employee at Huawei is required to strictly adhere to its *Employee Business Conduct Guidelines* (BCGs).

- Our Chief Compliance Officer (CCO) centrally manages the company's operational compliance. The CCO reports to the Board of Directors (BOD). Every business department and subsidiary of our company has also appointed a compliance officer and set up their own compliance teams, taking responsibility for the management of their own operational compliance.

- We identify and assess risk with reference to applicable laws and regulations and business scenarios. On top of this, we have mature control measures that have been incorporated into all of our business activities and processes. This ensures effective compliance management during operations. Huawei also continuously optimizes its management system through root cause analysis and targeted corrective action.

- We attach great importance to and continuously raise the compliance awareness and capabilities of our employees. Through publicity, training, examinations, and disciplinary action, among others, we push employees to fully understand both the company's and their own responsibilities and obligations to ensure compliance and incorporate that understanding into their behavior.

- With an open mind, we proactively work with customers, partners, regulators, and other stakeholders on compliance, and communicate our compliance principles and practices to them to constantly enhance mutual understanding and trust.

* Local dates in Washington D.C.

Compliance Management in Each Domain

Huawei has long been dedicated to ensuring better compliance across multiple domains, including but not limited to trade compliance, financial compliance, anti-bribery compliance, intellectual property (IP) and trade secret protection, and cyber security and privacy protection. Compliance requirements have been embedded into our policies, systems, and business processes.

Trade Compliance

Huawei has long been dedicated to complying with all applicable laws and regulations of the countries and regions in which it operates. These include all applicable export control and sanction laws and regulations of the UN, China, the US, and EU. We have expended immense effort for more than 10 years to establish a mature and sustainable internal system for trade compliance in line with industry best practices and to constantly improve this system.

We have also brought in industry best practices and established an integrated trade compliance management organization within the company. This organization manages trade compliance across both group functions and field offices. We have also established specialist teams in our global offices that monitor changes to local laws, integrate trade compliance into the company's rules and processes, and manage and oversee trade compliance in each link of our business operations, ranging from procurement, R&D, and sales, to supply and services.

Huawei continuously works to push employees to further their own trade compliance awareness, and they must sign the BCGs each year, which includes commitments to observing applicable export control laws and regulations. Huawei provides training sessions on trade compliance to managers and employees across the company, and the format of this training varies from session to session. These efforts, combined with targeted training for specific business scenarios, allow employees to fully understand the company's and their own responsibilities and obligations regarding export control.

Ever since Huawei Technologies Co., Ltd. and some of its affiliates were added to the Entity List by the US Department of Commerce, the company has reiterated the importance of compliance with export control and has worked to ensure control measures are in place. We have also promptly communicated with our customers, suppliers, and other partners, enhancing mutual understanding and trust.

Financial Compliance

Huawei earnestly fulfills its legal obligations and social responsibilities, and attaches great importance to the management of financial compliance risks. With appropriate organizations in place, we continuously invest resources into financial compliance and have established a management and control system that remains in line with industry best practices. We manage financial compliance according to factors such as regions, customers, and settlement paths, incorporate key control points into our procurement, sales, and treasury processes, and constantly work at improving our IT systems, ensuring end-to-end management of financial compliance. For years, Huawei has focused on building a culture that is conducive to financial compliance, raising employee awareness in this regard, and instilling a respect for regulatory compliance in our employees.

Anti-Bribery Compliance

Huawei has a zero tolerance policy towards corruption and bribery. We will continue to strengthen our anti-bribery compliance system at the group and subsidiary levels in four ways: a culture of compliance, governance and oversight, compliance risk assessment and prevention-discovery-response techniques, and continuous operations. In addition, we have designated key roles for the group and business departments, that are responsible for controlling bribery risks and providing support for operations of the anti-bribery compliance system.

IP and Trade Secret Protection

Respecting and protecting IP: Huawei is dedicated to its long-term investments into R&D and continuously enriching its IP portfolio. Huawei is one of the world's largest patent holders, and the company believes that respecting and protecting IP is the foundation of innovation. As a follower, practitioner, and contributor of IP rules, as well as an innovator, Huawei invests heavily in protecting its own IP and respects the IP of others. Huawei has reached cross-license agreements with major ICT companies around the world, and works tirelessly to improve the environment for protecting innovation and IP in the industry and across countries and regions.

Respecting and protecting the trade secrets of others: Huawei is committed to protecting its own IP and trade secrets, while respecting those of others. We explicitly prohibit our employees from improperly acquiring, disclosing, using, or disposing of trade secrets of others.

Specifically, the key measures Huawei has taken to protect the trade secrets of others include:

- Issuing the *Regulations on Respecting and Protecting Third Party Trade Secrets*, which set out clear rules that employees must follow to respect and protect trade secrets of others during business activities and ensure that employees carry out business activities legally and in accordance with our contracts
- Embedding trade secret protection requirements into business processes such as R&D, sales, procurement, and HR, conducting regular reviews, and continuously improving management mechanisms by taking away lessons and case studies from day-to-day operations
- Organizing publicity, training, and exams on trade secret protection for all employees, so that they are all fully aware of the obligations and responsibilities they have in terms of trade secret protection compliance
- Conducting supervision, including checks and audits, to examine efforts aimed at protecting trade secrets of others and thus ensure effective implementation of policies, rules, and processes
- Establishing an accountability system based on official corporate policies such as the *Accountability Protocol for Infringements of Other Parties' Trade Secrets and the Accountability Rating Criteria for Information Security Violations* to hold violators accountable

Regional Compliance Management

Huawei has appointed compliance officers to each country or region where we operate, who manage and oversee the operational compliance of these subsidiaries. In particular, Huawei has taken the following steps to ensure regional compliance:

- The company has incorporated compliance into the key performance indicators (KPIs) of its business departments, and established an award and disciplinary mechanism to channel more resources to ensure compliance in countries and regions where we operate.
- Under the guidance of the group's unified compliance requirements, all subsidiaries have created their own compliance management policies and systems adapted to local laws and regulations so that appropriate compliance management is assured in the countries and regions where we operate.
- Through comprehensive risk identification and evaluation, subsidiaries set annual compliance management objectives, develop and implement control measures, and perform regular reviews to ensure these measures are executed as intended.
- Subsidiaries have evaluated the effectiveness of their compliance management mechanism through self-checks, specialist inspections by compliance organizations, and independent audits, and have invested ongoing efforts to improve compliance management based on the results of these evaluations.

Management Transformation

The overall goal of transformations at Huawei is to "grow the harvest and increase soil fertility". In the face of new internal and external pressures, including the pandemic, Huawei has leveraged digital technologies to safeguard its business continuity and developed new operations systems and digital platforms to continue supporting business operations.

- **Ensuring business continuity with digitalization:**
  - Through a unified foundational data platform, Huawei has built more than 550 logical data entities, established over 11 billion instance-level graphical model nodes and relations, and modularized over 100 public data services.
  - Huawei ensures orderly supply operations and controls supply risks through responsive supply based on orders and risk management for 24 business continuity scenarios. Among these scenarios, breakdown of bills of materials (BOMs) and determination of country of origin are rated as premium services and can effectively address requirements from multiple domains, including R&D, supply chain, and consumer products.
  - Referencing dynamic changes to various factors of supply restrictions and stricter compliance rules within the company, Huawei has developed multi-version integrated planning and full-set delivery capabilities, performed online management and review for component and board version switches, and created a system that issues early warnings for risks in any production links that might lag behind.

- Huawei has developed a de minimis calculation tool for its orders as well as a tool for intercompany transactions that can re-configure to changes to de minimis rules within 30 minutes. The tools are then able to provide automated, real-time calculations for new orders placed after a change, and initialize data of historical orders within eight hours. This ensures all orders are compliant regardless of potential rule changes.

- Huawei has improved its ability to assess resilience of its global supply network and leverage simulations to recommend adjustment solutions, significantly improving supply network resilience.

- Where resource availability was previously only updated every few days, Huawei has created better transportation resource simulations that can now update resource availability within hours, enabling faster recommendations of optimal resource solutions.

- **New pressures in 2020, including the pandemic, prompted Huawei to develop new operations systems and digital platforms to support continuous business operations.**

  - **Carrier business:** This unit introduced new formats to its business activities, including online conferences, virtual exhibitions, and online transactions and collaborations with customers, ensuring transactions and delivery are uninterrupted and keeping its ties with customers as strong as ever. This unit has also gradually helped frontline employees move towards online methods of collaboration and coordination, enabling more of the unit's operations (e.g., data sharing) to be managed directly online. Today, this unit's digital operations platform has been deployed in many of our offices around the world, with usage skyrocketing.

  - **Enterprise business:** In 2020, the digitalization of this unit was focused on the company's survival through the creation of a series of digital tools, ranging from multi-currency transactions and zero-touch transactions (i.e., a smoother transaction stream without human intervention) to online collaborations with partners' virtual teams at the prefectural and municipal level, achieving contactless transactions and driving up efficiency during the pandemic.

  - **Consumer business:** This unit has established a one-stop online sales platform, delivering the same experiences with offline services. The sales capabilities of all retail shops were improved through the launch of a sales assistant app, and the overall efficiency of all of its partners increased remarkably following the deployment of a one-stop partner services platform for over 21,000 key partners.

  - **Field offices:** Amid the pandemic, Huawei has used digital technologies to achieve remote command and contactless oversight of field offices, helping them achieve business targets and increase effectiveness and efficiency. With online conferences and virtual product demonstrations, field offices maintained close contact with customers and delivered better customer experiences. Total customer engagements increased in 2020, while the number of high-level and strategic summits for 2020 remained on par with 2019. The company has also digitalized its own transaction procedures and connected its IT systems with customer systems. This allows for contactless transactions and delivery, and furthers our digital connectivity with customers. The company has leveraged digital technologies to efficiently manage field operations teams in spite of the impact of the pandemic on global mobility.

- **In 2020, Huawei continued to roll out the Transformation Program for Software Engineering Capability Enhancement, improving company-wide software engineering capabilities and forging trustworthy and quality products.**

  - **Building trustworthiness into management systems:** This transformation program resulted in multiple refinements to the company's Integrated Product Development (IPD) process and management system in 2020, marking the formation of a complete structure for developing trustworthy and quality products. Trustworthy engineering capabilities have also been introduced to the company's IT systems and toolchains. Improvements of each single capability have already been widely used in IT products. The extensive application of trustworthy coding, build, release, and deployment techniques in the IT toolchains has created a more efficient and trustworthy R&D work environment.

- **Employee upskilling**: The company has implemented a certification and enablement training program for all of its software development professionals. In 2020, more than 20,000 employees received certification.

- **Culture and awareness:** Huawei has worked to create a trustworthiness and software culture and mechanism, in which every engineer pursues quality code and writes clean code. The company has also implemented initiatives to create a trustworthy culture and atmosphere specifically in its research centers in China. These initiatives are refining structures of ground-level organizations dedicated to fostering common capabilities in building trustworthiness, encouraging managers to fulfill their commitment to trustworthiness, continuously reinforcing competence, and solidifying code quality by using white box testing results as input for apprising all software professionals.

- **Trustworthy products:**

  - **Trustworthy processes:** In 2020, the company issued the *Software Process Trustworthiness Capability Framework and Assessment Criteria V1.0.* According to this document, Huawei is developing 114 sub-capabilities across 44 capabilities under nine capability categories that will enable trustworthy processes across 85 businesses and product types over the next two to three years.

  - **Trustworthy results:** The key to trustworthy results lies in designing a trustworthy product architecture and developing mitigation measures based on complete threat analyses. Each business domain within Huawei has adopted a white-box attack model for threat analysis and architecture modeling. This will produce a safe and resilient architecture that leads to trustworthy results. We also invested ongoing efforts into certification by third parties, and 32 products received a total of 41 certifications during 2020. It is worth noting that MA5800 and OSN 9800 received CC EAL 3+ certification; 5G RAN, 5G Core, and LTE received NESAS/SCAS certification; and NCE and MAE received CC EAL 4+ certification.

- **Huawei's *AI Business Intention and Governance Principles* steer our business development:** AI facilitates technological transformation, boosts efficiency and productivity, enhances quality of life, and benefits communities. However, it also presents challenges to the ethics and governance of technology. To ensure that our AI technologies are responsible products designed to benefit all, we have long conducted forward-looking research into this sector. Our AI business intention and six AI governance principles are used to instruct related business domains in their research, planning, deployment, and adoption of AI. The company has a dedicated task force to ensure AI technologies are being designed, developed, deployed, and used properly, and guarantee responsible and sustained innovation and development of AI.

Organizational Vitality

By promoting corporate vision in all possible ways, Huawei has instilled a strong sense of mission into all of its employees, inspiring them to devote themselves to value creation, identify with the company's aspirations, and move forward with confidence. By selecting exemplary employees to lead their teams forward and instilling a greater sense of honor among employees, Huawei aims to inspire an internal drive for continuous dedication. In addition, the company has simplified its management structure by placing more trust in individuals and differentiating its management mechanisms based on employee groups and businesses. Combining these efforts has helped create an organizational climate that values trust, collaboration, and dedication, and boosted the vitality of the organization as a whole.

Initiatives for boosting organizational vitality focused on some key areas:

- **Refining organizational management by:**

  - Redoubling efforts to consolidate a business and platform management mechanism primarily through the Consumer Business Managing Board, ICT Infrastructure Managing Board, and Platform Coordination Committee

  - Rolling out the Contract Reviews and Conclusions at Rep Offices transformation project at a measured pace, involving more field offices in this pilot, building stronger customer-facing teams, and implementing policies that encourage outstanding employees to expand deep into the field and serve their customers

- Exploring a combined operations model, which revolves around scenarios as well as cross-product-line and cross-department collaborations to develop new organizational capabilities and reshape business value

- Building agile and flexible organizational structures while implementing management transformation initiatives, including combining similar functions at HQ into single departments and the Talent Reservoir; improving organizational capabilities, streamlining HQ and functional departments, and increasing organizational efficiency through the delegation of management authority, broad digitalization, and the transformation of back offices into service centers

- **Implementing better leadership management by:**

  - Continuing to stress responsibility fulfillment results, and working to implement a long-term strategy to identify and select managers with successful track records

  - Actively searching for outstanding high-potential talent from key projects, giving such talent more opportunities, and boldly deploying them to key positions to encourage more outstanding talent to emerge

  - Promoting restructurings of administrative teams on a rolling basis, establishing a term of office system, working to increase manager acceptance of promotions and demotions, facilitating reasonable mobility for managers, and continuously inspiring passion among all current managers

- **Building stronger talent pipelines for the company by:**

  - Investing ongoing efforts to attract top-notch talent and top minds suited to our business strategies on board by presenting them with the company's global vision and world-class research topics

  - Steadily increasing orderly mobility of employees and delivering training and practice programs to update skillsets

  - Improving employee abilities with field operations in mind, strengthening the competency and qualification management system, formulating principles for developing expert teams and running profession committees, encouraging profession committees to fulfill all their due responsibilities and experts to unleash their value, and better guiding employees to improve their professional abilities

  - Gradually optimizing the professional staff management system while maintaining the stability of our professional talent pool

  - Attaching greater importance to the development of local talent teams

- **Creating a better environment for employees by:**

  - Putting our core values into practice by staying customer-centric, persevering, and growing by self-reflection, and pushing employees to stay dedicated and improve their operating capabilities

  - Continuing to create an open and inclusive work climate that encourages trial and error and respects professionalism, so that we can inspire creativity among junior employees

- **Caring for individuals by:**

  - Making the safety of our employees as the company's top priority

  - Continuing to improve the working and living conditions of our dedicated employees, especially those in hardship areas

  - Providing premium healthcare resources and sufficient supplies of protective equipment and materials to better fight with the pandemic

  - Offering extended leave to employees as necessary to ensure a safe and healthy balance is struck between work and life for all during these unusual and challenging times

Cyber Security and Privacy Protection

Challenges and opportunities facing cyber security and privacy protection

2020 was a transformational year. The COVID-19 pandemic changed the way we live and how organizations operate. Many activities have gone online, and telecommuting, video conferencing, distance education, and telemedicine have become the new normal. In this context, digital technology has played an irreplaceable role in keeping our lives on track and our businesses open. At the same time, as digital transformation picks up speed, we see growing challenges relating to cyber security and privacy protection. We have witnessed a record number and scale of security vulnerabilities and cyber attacks around the world, with persistent occurrences of ransomware and data breaches. For example, the World Health Organization reported five times more cyber attacks in 2020 than in 2019.

In a digital, intelligent world empowered by 5G, cloud, and AI, a secure and stable cyberspace is critical to securing people's livelihoods and protecting the vital public and economic functions of any society. It is clear that cyber security and privacy protection are becoming the inherent requirements and basic core capabilities in a digital world. We shall, therefore, urgently continue to further improve cyber resilience. This process presents both challenges and opportunities.

As a leading global provider of ICT infrastructure and smart devices, Huawei is committed to bringing digital to every person, home and organization for a fully connected, intelligent world. Over the past three decades, we have built more than 1,500 networks together with our carrier customers and helped millions of enterprises to undergo digital transformation, serving over three billion people in more than 170 countries and regions around the world. We have maintained a solid track record in security throughout. That said, as digital transformation accelerates across the world, we realize that business success is impossible without security, trustworthiness, and privacy protection in the digital, intelligent world.

As always, cyber security and privacy protection remain our top priorities. We will confront challenges in these domains through technological innovation and through the ongoing transformation of our management systems. We will continue to build secure, trustworthy, and quality products, solutions, and services in order to help our customers enhance their cyber resilience.

Developing secure and trustworthy products, solutions, and services to help customers enhance cyber resilience

Huawei has continuously optimized its end-to-end assurance system, making sure that each domain is constantly refined to stay up-to-date with advancements in cyber security and privacy protection. In 2020, we implemented the following measures relating to process transformation, solutions, technological innovation, independent verification, supply chain, and personnel management:

- **Enhancing software engineering capabilities and cyber resilience to build secure, trustworthy, and quality products and solutions**

  Our management system and R&D processes now feature enhanced capabilities that incorporate several milestones of the software engineering transformation program. At the same time, trustworthy engineering capabilities are embedded into IT systems and tools, providing a more efficient product R&D environment that ensures process trustworthiness.

  For software trustworthiness, we released the *Software Process Trustworthiness Capability Framework and Assessment Criteria V1.0*. According to this document, Huawei is developing 114 sub-capabilities across 44 capabilities under nine capability categories and establishing a complete set of systematic, sustainable, and responsive trustworthy coding production mechanisms.

  For hardware trustworthiness, we implemented trustworthy design specifications and security by design on newly developed boards; we also obtained CC EAL4+ certification for key trustworthy hardware components.

  In terms of product design, we carried out threat modeling analysis, implemented a secure and resilient architecture, and delivered common security products and components, such as single-

domain security management and network element (NE) intrusion detection, to help improve the security situational awareness capabilities of products and solutions, achieving result trustworthiness in architecture.

Moreover, we continue to provide training and certification to consistently improve employees' cyber security capabilities and awareness. In 2020, more than 20,000 employees were certified, and every employee has embraced the trustworthy software culture.

- **Technological innovation to help customers cope with security risks**

We continue to research and explore cutting-edge technologies, such as cryptography, AI trustworthiness, confidential computing, differential privacy, digital identity, and trust mechanism based on the security technology stack at the system, network, application, and data layers, centering on business scenarios such as 5G, AI, cloud computing, smart devices, autonomous driving, and digital Intelligent Twins. We strive to accelerate the application and implementation of these innovative technologies and improve the native security capabilities of products, enhancing resilience and helping customers manage existing and emerging risks.

Take 5G base stations as an example. We provide functions such as rogue base station detection, subscription permanent identifier (SUPI) encryption, anti-DDoS over the air interface, and built-in firewalls, which enhance privacy protection for end users, reduce the attack surface, and strengthen defense, thereby enhancing cyber resilience. At HUAWEI CONNECT 2020, we released AI security protection technologies based on the trusted execution environment (TEE), which improve the security of high-value data assets in AI solutions. By the end of 2020, Huawei had been granted 2,963 patents relating to cyber security and privacy protection around the world.

- **Cyber security risk management and capacity building of the supply chain**

Huawei's comprehensive supply chain security management system, certified to ISO 28000, allows us to identify and control security risks throughout the entire process, from quality control on incoming materials to delivery. It includes industry-leading material trustworthiness specifications and security sourcing testing standards, along with supplier trustworthiness maturity assessment standards. To this end, before they are accepted, our suppliers must pass a rigorous security sourcing test and obtain system certification.

In 2020 alone, we assessed, tracked, and managed the cyber security risks of more than 4,000 suppliers worldwide. For privacy protection, we signed data processing agreements (DPAs) with more than 5,000 suppliers and performed extensive due diligence to ensure compliance. Furthermore, we optimized the security baselines and verification processes for supply availability and manufacturing, and implemented them in the production process of new products.

Considering the global nature of our business, we pay close attention to the supply chain security requirements of each country where we operate. We have obtained 35 Authorized Economic Operator (AEO) certificates in 28 countries and regions across five continents. We continue to optimize our product delivery tracking system to quickly resolve any issues and mitigate any risks.

- **Secure and trustworthy service operations**

The global pandemic caused an explosion in network traffic, and therefore a rise in customers' requirements for site construction. Using digital means, we improved personnel qualification management, as well as access, operations, and data security control capabilities. We also raised security awareness among delivery and service personnel using various themed activities, such as the monthly Network Safety Day. Furthermore, we set up both local and remote delivery centers to help carriers quickly and securely build networks, thereby supporting their business activities and reducing the impact of the pandemic.

- **Security awareness among all employees supporting professional capability improvement**

We held the Cyber Security and Privacy Protection Awareness Month, delivering the presidents' messages, expert lectures, a knowledge quiz, an open day at the Cyber Security Transparency

Center, technology contest, verification conference, and other themed activities to strengthen our corporate culture around cyber security and privacy protection. All of these initiatives support our key objective to continually raise the overall levels of awareness among employees.

We also encouraged employees to participate in external professional certification programs and provided professional training to improve their professional capabilities. To date, more than 760 employees have obtained industry-recognized certifications such as Certified Information Systems Security Professional (CISSP) and International Association of Privacy Professionals (IAPP).

Furthermore, we planned and developed relevant courses, and have released 204 courses on our online Cyber Security & Privacy Protection Knowledge Center to date. These courses cover topics such as insights into cyber security and privacy protection, process development, and verification and testing, with a total of more than 200,000 individual enrollments.

- **Increased investment in third-party independent verification**

  We continue our cooperation with industry-recognized certification bodies and third-party labs to test the cyber security and privacy protection capabilities of Huawei products, solutions, and services against industry standards and best practices. This includes:

  - In 2020, we obtained more than 70 certifications related to cyber security and privacy protection. For example, 5G and LTE base stations were the first in the industry to pass the Network Equipment Security Assurance Scheme (NESAS) assessment; 5G base stations obtained the CC EAL4+ certification; routers obtained the CSPN certification from the French National Cybersecurity Agency (ANSSI); iTrustee obtained the CC certification also from ANSSI; firewall and campus switch products completed the Payment Card Industry Data Security Standard (PCI DSS) assessment; HUAWEI Mate 40 series smartphones obtained the digital rights management (DRM) copyright certification and Germany's ePrivacy certification; HUAWEI CLOUD received more than 10 certifications, including Cloud Security Alliance Security, Trust and Assurance Registry (CSA STAR), ISO 27001, ISO 27701, PCI DSS, and Trusted Information Security Assessment Exchange (TISAX).

  - In May 2020, ERNW, an independent IT security service provider in Germany, conducted a technical review of the source code of Huawei's unified distributed gateway (UDG) on 5G core networks. Their report notes that "the overall source code quality is a good indicator that Huawei has established a mature and appropriate software engineering process for UDG".

  - Our bug bounty program in HUAWEI CLOUD, Huawei Mobile Services, mobile phones, and other domains is a continued success. Through this program, we encourage white hat hackers to discover vulnerabilities in Huawei products so that we can work with numerous security experts in the industry to build a responsible, transparent, collaborative, and secure vulnerability ecosystem.

- **Respecting and protecting user privacy**

  Huawei is committed to complying with privacy protection laws and regulations around the world. We have built an end-to-end privacy protection management system with supporting technical capabilities. We have also developed robust privacy protection processes along with a series of IT tools and platforms, helping us to improve compliance effectiveness and management maturity and allowing us to demonstrate our privacy compliance processes and results in a more transparent and clear manner. Furthermore, we continue to invest in and optimize our efforts to assure data subjects' rights, including the prompt and effective handling of more than 20,000 data subject requests to date. We continue to conduct internal and external audits in different countries and business domains to ensure the effective implementation of our personal privacy protection policies.

Sharing responsibility, capacity building, and value

Today, cyber security is a common challenge. All stakeholders, including governments, industry and standards organizations, enterprises, and technology suppliers have a shared responsibility to confront this challenge. We call on all stakeholders to establish a set of globally recognized security standards and conformance mechanisms.

Standards as well as standards-based certifications and assessments allow cyber security risks to be assessed in a rational and objective manner and enhance trust in technologies. For example, the mobile communications field widely recognizes the NESAS/SCAS security standards and assessment methods jointly promoted by 3GPP and GSMA as valuable cyber security baselines. These will surely further improve the capabilities of mobile networks to protect against cyber security and privacy risks.

Huawei looks forward to communicating and cooperating with stakeholders in an open, transparent, and responsible manner. We aim to jointly address cyber security and privacy protection challenges through technological innovation, standards/certifications, and improved governance. We are committed to protecting people's cyber security and personal privacy while they enjoy the benefits of technological advances.

In 2020, we received recognition for many of our contributions to the global cyber security community:

- 253 standards contributions on 5G security submitted by Huawei were accepted by 3GPP, making Huawei the top contributor for several consecutive years.
- In March, the ITU officially released ITU-T X.1365 *Security methodology for the use of identity-based cryptography in support of Internet of things services over telecommunication networks*, which was proposed by Huawei in collaboration with Shenzhen OLYM Information Security Technology and China Telecom. This standard addresses the challenges of identity authentication and password management in scenarios with hundreds of billions of IoT devices, which greatly reduces management costs and contributes to building an efficient trust mechanism in the digital industry.
- In July, the German Federal Office for Information Security (BSI) released the *TR-03148 Secure Broadband Router Technical Guideline*, providing security requirements and test specifications for broadband routers. Huawei was invited to participate in the development and Proof of Concept (PoC) of the specifications.
- In October, the "5G Smart Grid" project put forward by China Mobile, China Southern Power Grid, Huawei, and other partners won first prize in the finals of the third Blossom Cup 5G Application Contest. This project offers a wide portfolio of services tailored to security requirements of electric power applications, safeguards power grid security using diverse measures, and supports 24/7, year-round power grid security monitoring. It was the first to pass the power slice security isolation test and verification, in addition to security testing in all aspects by the IMT-2020 (5G) Promotion Group, among other tests. This project sets a benchmark for synergizing 5G with power grid security.
- In October, the Cyber Security Committee under the Senate of Nigeria presented the "Nigeria Award for Outstanding Contributions to Digital Technology and Cyber Security" to Huawei. In November, Huawei was awarded "Excellence in ICT and Cybersecurity Development in Nigeria" at the Nigeria Tech Innovation & Telecom Awards (NTITA).
- In December, the National Cyber and Encryption Agency (BSSN) of Indonesia presented the "Piagam Apresiasi" award of KAMI (information security) to Huawei, recognizing Huawei's exemplary and outstanding contribution to information security in Indonesia.
- In December, the Romanian Digital Transformation Commission presented the "Best Cyber Security Ecosystem for Digital Transformation" award to Huawei, recognizing Huawei's contribution to promoting new technologies and cyber security.

Huawei has opened six Cyber Security and Privacy Protection Transparency Centers around the world (in the UK, Canada, Germany, the United Arab Emirates, Belgium, and China). These centers serve as a platform for communication and cooperation with stakeholders, and have three main functions:

- Showcasing Huawei's end-to-end cyber security practices, from strategies and supply chain to R&D, products, and solutions
- Facilitating communication and cooperation between Huawei and its key stakeholders to further the development of security standards and verification mechanisms, and to drive technological innovation in cyber security across the industry
- Providing a product security testing and verification platform and related services to Huawei customers

We welcome all stakeholders to use the centers to strengthen communication and cooperation in security standards, testing and verification, and technological innovation. We look forward to continuing to improve capabilities and share value in order to confront the challenges of cyber security and privacy protection together.

Global Cyber Security and Privacy Protection Transparency Center in Dongguan, China

January 2020: 5G security workshop at Huawei Cyber Security Transparency Center in Brussels

Openness. Collaboration. Shared Success.

Our experience over the last year has made us realize more clearly than ever that no one is an island. The whole world is one closely-knit community. We are more certain than ever that global integration and economies of scale can make the whole world more efficient. To achieve these gains, we must work together openly and share both the risks and value. This is the only pathway to shared progress and prosperity, and to bringing digital to every person, home and organization for a fully connected, intelligent world.

Huawei itself focuses on ICT infrastructure and smart devices. Through open collaboration and innovation, we help promote and protect unified global standards, establish industry and ecosystem alliances, support global open source projects, and drive breakthroughs in key technologies. We need to pool, create, and share resources across the entire industry. Together with industry partners worldwide, we are building an open, global ecosystem that will help the ICT sector to develop more sustainably.

Ecosystem and Industry Development: Our Three Guiding Principles

- **Growing the industry.** At the strategic level, we closely follow macro trends and issues affecting our industry, and meet regularly with industry leaders to discuss challenges and solutions for digital transformation.
- **Working together.** We are leveraging our platform strengths and working with partners who complement our capabilities to cultivate robust end-to-end value chains and thriving ecosystems for a more healthy and resilient industry.
- **Sharing value.** We want to serve as the glue that holds ecosystems together and the catalyst that drives ecosystem success. We aim to unite as many people and companies as possible to create a healthy ecosystem and advance the digital economy.

Key Progress and Industry Contributions

As of the end of 2020, Huawei is an active member of more than 600 industry organizations, including standards organizations, industry alliances, open source communities, and academic associations. Within these organizations, we hold more than 400 key positions. We serve as a member of the board or executive committee in 3GPP, ETSI, IETF, IIC, IEEE SA, the Linux Foundation, CCSA, AII, TM Forum, WFA, WWRF, CNCF, OpenInfra (formerly OpenStack), LFN, LFDL, IFAA, GP, CUVA, VRIF, and BBF.

Huawei plays an active role in many industry organizations. With our innovative technologies, we help the industry grow, and promote international cooperation. We also focus on customers' specific business needs. We create resources to help implement industry projects including 5G, AI, industrial Internet, video, broad Internet of Vehicles (IoV), and intelligent computing. To ensure the success of these projects, we offer architectures, pathways, and best practices for digital transformation; as well as test beds, new business models, case studies, open source code, and developers. We also encourage industry organizations to work together and innovate with partners, so that our customers can build the digital edge for success in their own business.

We help create mechanisms for dialogue and exchange at the senior level, including with industry organizations, think tanks, academic researchers, and corporate representatives. This gives industry leaders a chance to explore how to make AI inclusive and use the certainties of technology to address the uncertainty of the future. We analyze digital transformation trends, key topics, and crucial areas of collaboration, and help build industry consensus.

Working with our industry partners worldwide, we have offered national governments advice and recommendations on industrial policies for ICT adoption and digital transformation. We help governments introduce reasonable industrial policies that are necessary to support inclusive economic growth for their country.

In partnership with leading industry organizations, we continue to organize Global Industry Organizations (GIO) roundtables, which are an opportunity for global dialogue, exchange, and cooperation between ICT and vertical industry organizations in various domains. Within the GIO, we have set up working groups on three topics: smart manufacturing, digital health, and autonomous digital infrastructure. We have organized a series of workshops and roundtables, and have created an expert advisory committee. Together, GIO participants share insights into industry trends, identify disconnects and problems different industries face during digital transformation, and find new ways for industry organizations to collaborate across different domains, so that we can accelerate digital transformation for every industry.

The 6th GIO Roundtable during HUAWEI CONNECT 2020

Standards Organizations	**We are an active member and contributor to many international standards organizations. We help grow the industry by driving the upgrade of technology and promoting broader collaboration. We help vertical industries go digital using ICT technology, and work with partners to create an ecosystem where everything is connected.**

Huawei contributes to more than 200 standards organizations on an ongoing basis. To date, we have submitted over 65,000 standards contributions. By working closely with key international standards organizations, we are helping to drive technological progress and carry global industry forward.

- We support 3GPP, working with industry partners to explore the evolution of 5G standards and ensure unified global standards for 5G. We encourage industry organizations in key verticals to work closely with 3GPP to create new value for their industries.

- We are working with partners in the ITU to support the UN's Sustainable Development Goals. In 2020, we contributed to security standards for financial blockchains, optical communications standards, and improved radio spectrum planning.
- Within the IEEE, we are improving standards for Wi-Fi, high-speed Ethernet, AI performance, and smart devices. These improved standards will support better technologies for telecom carriers, industrial automation, and connected vehicles.
- Within the IETF, we are working with ICT partners to drive the standardization of technologies like IPv6 and SRv6, so that IP network technologies can meet the standards required by 5G networks and cloud-based networks.
- Through ETSI, we are working with ICT partners to explore the network architectures of the future and develop standards for automated telecom networks, optical networks, and network functions virtualization (NFV). We are also part of industry-wide efforts to build up cloud-native, multi-access edge computing (MEC), and IPv6+ ecosystems, so that innovative applications can reach the market more quickly.
- We contribute to high-definition audio and video coding standards. We are working with industry partners to develop and release international standards like ITU-T H.266 and MPEG-5 EVC, build up ecosystems, and improve user experience.
- We also contribute to standards in fields like AI, consumer technology, and smart vehicles. By working with these new and innovative industries, we create channels for international conversations on standards, helping industries go digital.

Industry Alliances	**Huawei is a committed partner in major industry alliances and an active contributor to the process of bolstering the weak links in our industry. We support open collaboration for shared success, and drive industry upgrades for healthy, sustainable industry growth.**

- **Bridging industry gaps and driving industry upgrades:** We have worked closely with industry partners and industry alliances such as CUVA, GCC, 5GSA, IPv6+, ONA, OLA, and ICCE to improve ecosystems, including key technologies, standards, and workforce skills. These efforts will help accelerate innovation and growth in domains such as video, green computing, 5GtoB, IP networks, optical transmission and access, IoT, and IoV.
- **Ongoing partnership with industry alliances and contributions to the industry:** Huawei is an active partner in major industry alliances such as GSMA, ITU, AII, 5GAA, and ECC. We are currently involved in more than 30 industry projects, and actively contribute white papers and test beds to support the broadest spread of digital transformation within the telecom sector. We are helping to provide a path to sustainable growth for ICT.
- **International collaboration for shared success:** We are an active member of European industry alliances and associations like 5G-ACIA and RUSSOFT, and have contributed to multiple white papers, test beds, and technical solutions. We worked with Japan's Industrial Value Chain Initiative to promote the development of test bed projects. We organized the Broadband Alliance Summit with Peru's Ministry of Transport and Communications, actively contributing to the development of the local ICT industry.

Open Source Communities	**Huawei continues to promote global open source projects. We have increased our support for open source, and are making ongoing contributions to major open source communities. We are also committed to leading open source foundations and communities, and embrace open innovation.**

- **We have increased our use of open source in basic software.** Huawei is committed to a culture of open innovation. We are continuing to proactively share key technologies in basic software, developed over years of work, with open source communities.

- For mobile distributed systems, we launched the OpenHarmony project. OpenHarmony is the open source version of HarmonyOS, a new distributed operating system for all types of smart devices across all scenarios. This operating system enables seamless app collaboration across devices, and ensures that once an app is developed, it can be deployed on multiple devices.

- For computing and AI, our open source projects openEuler, openGauss, openLooKeng, and MindSpore continue to help accelerate digital transformation and innovation in industries.

- In cloud services, our cloud-native open source projects include a cloud-edge collaboration framework and a high-performance heterogeneous computing scheduling system. These will support the faster development of scenario-based applications for industries.

- In communications services, our focus remains on open source 5G edge computing. We have created an architecture for orchestrating edge-native applications and edge computing resources. This will help support better synergies between MEC resources, applications, security, and open network capabilities, and accelerate the innovation of new services.

- **We build infrastructure for open source communities.** Huawei provides the infrastructure needed for developing, compiling, and verifying software for heterogeneous computing. We also proactively share our best practices in optimization for heterogeneous computing with major open source communities. With our support, more open source communities can support the development, optimization, and release of software for heterogeneous computing.

- **We are an active contributor to leading open source communities.** We are continuing to increase our contributions to leading global open source communities like Linux, Apache, Kubernetes, CNCF, OpenInfra, OCI, ONAP, OPNFV, Akraino, Acumos, Hadoop, and Linaro. We are among the top 10 code contributors in these communities worldwide, and remain the No. 1 code contributor in Asia Pacific.

Academic Associations

Huawei actively embraces an open and diverse academic culture. We have substantially increased our investment into collaborations with academic associations as part of our diversified, multi-path exploration of the uncertainties that industries face. Advancements in basic research and applied technologies foster economic and social prosperity.

- **We promote multilateral exchanges and cooperation between universities, academic associations, and industry players to direct new research through academic conferences and funds for scientific research.**

  - In 2020, we set up the scientific research funds in the China Computer Federation and Chinese Association for Artificial Intelligence. We actively participate at academic conferences, and have initiated special sessions at the International Conference on Communications in China (ICCC).

  - By sharing our vision for industry and the challenges different industries face at flagship conferences such as IEEE GLOBECOM, we engage academic partners to help drive innovation and progress.

- **We are active contributors to academic research activities.** We have published more than 590 journal and conference papers in high-impact channels like the ACM and IEEE. More than 90 of Huawei's technical experts have served as peer reviewers for scientific journals and conferences.

- **We work with academic associations to cultivate new talent and organize academic competitions.** For example, while working with the International Collegiate Programming Contest, we hosted the Graph Mining Challenge and Cloud Scheduling Challenge. These competitions allowed outstanding programmers and algorithm designers to engage directly with real industry problems, and encouraged young people to pursue excellence.

Business Alliances

Huawei works with global partners to provide digital transformation services for customers.

- We continue to expand our ecosystems, deepening and expanding our relationships with solution partners worldwide. We focus on developing scenario-based solutions for four key industries: government, finance, energy, and transportation. We added more than 5,000 registered partners worldwide in 2020. We have launched more than 2,000 joint solutions with over 1,600 partners. We also provide more incentives for our partners to develop replicable solutions.

- We cultivate fertile soil. In our joint innovation programs, we work on joint solutions with global partners in AI, cloud, computing, 5G, and other domains. As of the end of 2020, more than 2,500 partners had obtained over 5,000 technical certifications in 10 major technologies (e.g., Kunpeng and Ascend).

- We have teamed up with more than 120 consulting partners specializing in digital transformation. By tapping into the world's best resources in consulting and top-level designs, we have been able to distill industry know-how and embed it into Huawei's digital platforms, which can help our customers in various sectors as they go digital.

- We work closely with leading global partners to develop innovative solutions for digital transformation. We have built over 40 OpenLabs worldwide, which give our partners access to Huawei's ICT capabilities. These OpenLabs, together with our experience in 5G factories, industrial Internet, edge computing, and big data analytics, are helping a wide range of industries to digitalize and pursue diversified growth.

Ecosystems

Huawei brings together developers from around the world to build four unique ecosystems and explore new business scenarios and business models.

- We are building up developer ecosystems revolving around HUAWEI CLOUD, Kunpeng, and Ascend. Over 2 million developers in the ICT sector are now registered with Huawei.

  - Through the Huawei Developer Program 2.0, we have attracted more than 4,000 ecosystem partners, and worked with developers worldwide to build over 7,000 pieces of software and solutions. A total of 70,000 people have obtained HUAWEI CLOUD Career Certification.

  - We continue to step up efforts to help develop talent. Together with China's Ministry of Education, we established an Intelligent Center, which is a joint business-academia initiative. 72 top universities have signed up for this initiative, and 45 of these universities began offering courses in the autumn semester of 2020.

  - We have helped expand local ecosystems in China by setting up 22 ecosystem innovation centers, of which 16 are already operational.

  - We remain committed to our ecosystem strategy for HUAWEI CLOUD, which is to create, share, and win together with our partners. HUAWEI CLOUD has attracted more than 19,000 partners worldwide, with over 4,000 partner apps now available on the HUAWEI CLOUD Marketplace. In 2020, we launched the Anti-COVID-19 Partner Program, which is helping customers worldwide fight the pandemic with technologies for five major scenarios.

- Development of the Kunpeng ecosystem has accelerated dramatically. We have opened up the Kunpeng hardware (including motherboards) and maintain a partner-first strategy. We are working to build up our competitiveness in the basic software ecosystem by leading and contributing to open source projects. We are now enabling more than 2,200 partners and Kunpeng technical readiness is improving rapidly.

- We have worked closely with more than 150 top partners on Ascend and AI. Since becoming open source, MindSpore has grown rapidly.

- In the consumer domain, the Huawei Mobile Services (HMS) ecosystem has become the world's third largest mobile app ecosystem. We are working with developers around the world to deliver a higher-quality, intelligent experience to consumers across different scenarios.

  - In June 2020, we officially launched HMS Core 5.0, which opened up more than 50 kits and nearly 13,000 APIs to global developers. This means that Huawei's software, hardware, and cloud capabilities are now available for developers to use.

  - We have introduced five basic service engines – Payment, Ads, Browsing, Search, and Map – further building up the HMS ecosystem.

  - We continue to offer the Shining-Star Program and to build DigiX Labs, incentivizing and enabling developers around the world, and helping global industries to digitalize and introduce intelligent technologies.

- Huawei is committed to developing new components for intelligent connected vehicles by leveraging its leading expertise in ICT. We are working with more than 100 ecosystem partners, such as car OEMs, software and hardware component providers, developers, and industry organizations, to accelerate innovation in intelligent connected vehicles and drive this industry forward.

Industrial Policies	**Huawei continues to proactively offer digital economy policy recommendations and support its partners to build back better for a sustainable digital world.**

It became apparent early on in the COVID-19 pandemic how crucial access to digital infrastructure – especially high-speed networks – was for people to continue with a semblance of their previous lives, as they had to shift to virtual spaces. The crisis accelerated many previously underlying digital transformation trends. Businesses and communities need enhanced access to high-quality digital infrastructure and the advantages that digital transformation will bring. These are critical for pandemic resilience and sustainable development. The right policy and regulatory mix to help governments with this paradigm shift has never been more important.

Collaboration has also been vital during this time. In response to the crisis, Huawei proactively opened up discussions and dialogue with many international organizations. At the World Economic Forum, APEC Business Advisory Council, International Chamber of Commerce, the United Nations Global Compact, and other organizations, we argued the case for the temporary release of more spectrum resources, and greater facilitation of telecom network construction and maintenance, as a crucial element of the world's COVID-19 response. We promoted the construction of new digital infrastructure and demonstrated how technology can be a force for good, bring universal digital access, and support a green recovery after the pandemic.

We actively participate in public consultations on industrial policies, standards, and specifications in every country in which we operate. We actively share our experience and recommendations with national governments on developing their local ICT ecosystems. In every country, our goal is to develop advanced digital infrastructure, to encourage innovation, to help spread pervasive digital skills in the local ecosystem, and to strengthen the digital economy to support a sustainable economic recovery.

Results of Operations

Financial Performance

(CNY Million)	2020	2019	YoY
Revenue	**891,368**	858,833	3.8%
Gross profit	**327,132**	322,689	1.4%
– Gross profit margin	**36.7%**	37.6%	(0.9)%
Total operating expenses	**(254,631)**	(244,854)	4.0%
– as % of revenue	**28.6%**	28.5%	0.1%
Operating profit	**72,501**	77,835	(6.9)%
– as % of revenue	**8.1%**	9.1%	(1.0)%
Net finance expenses	**(367)**	178	(306.2)%
Income tax	**(7,655)**	(15,367)	(50.2)%
Net profit	**64,649**	62,656	3.2%

Huawei's total revenue in 2020 reached CNY891,368 million, representing a 3.8% YoY increase. Net profit grew slightly less, 3.2% YoY, to CNY64,649 million. This is attributable to the following factors:

- Our enterprise business maintained steady growth thanks to the digital transformations in multiple industries.
- As we increased our investment in future-oriented research and innovation, branding, and ecosystem building, our total operating expenses as a percentage of revenue increased slightly.

Total operating expenses

(CNY Million)	2020	2019	YoY
Research and development expenses	**141,893**	131,659	7.8%
– as % of revenue	**15.9%**	15.3%	0.6%
Selling and administrative expenses	**113,430**	114,165	(0.6)%
– as % of revenue	**12.7%**	13.3%	(0.6)%
Other (income)/expenses, net	**(692)**	(970)	(28.7)%
– as % of revenue	**(0.1)%**	(0.1)%	0.0%
Total operating expenses	**254,631**	244,854	4.0%
– as % of revenue	**28.6%**	28.5%	0.1%

In 2020, Huawei continued to increase its investment into its business continuity plan as well as future-oriented research and innovation, such as research in 5G, cloud, artificial intelligence, and smart devices. As a result, the company's R&D expenses as a percentage of revenue increased by 0.6 percentage points YoY.

In addition, Huawei continued to increase investment in building its brand and ecosystem. However, selling and administrative expenses as a percentage of revenue declined by 0.6 percentage points as certain business activities like business trips and exhibitions were canceled due to COVID-19.

Net finance expense

(CNY Million)	2020	2019	YoY
Net foreign exchange loss	**1,638**	1,340	22.2%
Other net finance gains	**(1,271)**	(1,518)	(16.3)%
Total net finance expenses	**367**	(178)	(306.2)%

Net finance expense in 2020 amounted to CNY367 million, a YoY increase of CNY545 million. Due to currency fluctuations in emerging markets, net foreign exchange losses increased by CNY298 million in 2020.

Financial Position

(CNY Million)	December 31, 2020	December 31, 2019	YoY
Non-current assets	**185,460**	154,768	19.8%
Current assets	**691,394**	703,893	(1.8)%
Total assets	**876,854**	858,661	2.1%
Among which: Cash and short-term investments	**357,366**	371,040	(3.7)%
Trade receivables	**75,026**	85,294	(12.0)%
Contract assets	**53,602**	53,012	1.1%
Inventories and other contract costs	**167,667**	167,390	0.2%
Non-current liabilities	**154,114**	116,869	31.9%
Among which: Long-term borrowings	**141,270**	104,531	35.1%
Current liabilities	**392,332**	446,255	(12.1)%
Among which: Short-term borrowings	**541**	7,631	(92.9)%
Trade payables	**74,865**	135,654	(44.8)%
Contract liabilities	**71,948**	69,327	3.8%
Equity	**330,408**	295,537	11.8%
Total liabilities and equity	**876,854**	858,661	2.1%

As of December 31, 2020, the balance of cash and short-term investments reached CNY357,366 million, down 3.7% YoY.

At the end of 2020, Huawei's trade receivables balance was CNY75,026 million, a YoY decrease of 12.0%. Thanks to faster payment collection, DSO was reduced to 52 days, 6 days faster than in 2019. The balance of inventories and other contract costs climbed to CNY167,667 million, a YoY increase of 0.2%, and ITO reached 107 days, 4 days faster than in 2019. Trade payables balance dropped to CNY74,865 million, a 44.8% YoY decrease, and DPO reached 48 days, 43 days faster than in 2019.

As of December 31, 2020, total short-term and long-term borrowings amounted to CNY141,811 million, an increase of 26.4% YoY. The primary purpose of these borrowings was to continue with our already heavy investment in key businesses and future-oriented research and innovation as well as investment in other key areas such as branding, ecosystem building, and business continuity.

Cash Flow from Operating Activities

(CNY Million)	2020	2019	YoY
Net profit	**64,649**	62,656	3.2%
Adjustment for depreciation, amortization, net foreign exchange losses and non-operating expenses, net	**33,116**	25,814	28.3%
Cash flow before change in operating assets and liabilities	**97,765**	88,470	10.5%
Change in operating assets and liabilities	**(62,547)**	2,914	(2,246.4)%
Cash flow from operating activities	**35,218**	91,384	(61.5)%

In 2020, Huawei's cash flow from operating activities decreased by 61.5% YoY to CNY35,218 million due to increased investment in areas like cloud and R&D, an increase in depreciation and amortization, and a decline in accounts payable.

Financial Risk Management

In 2020, we closely monitored the changes in our external environment and proactively assessed their impact on Huawei using the financial risk management system we have built over the past years. In addition, we continued to amend and improve our financial risk management policies and processes to further enhance our ability to withstand financial risks and better support our business development.

Liquidity Risk

We have continuously worked to improve our capital structure and short-term liquidity planning, budgeting, and forecasting systems to better assess mid-to long-term liquidity needs and short-term funding shortfalls. We have implemented prudent financial measures to meet our liquidity needs and guarantee our company's business development, including maintaining a robust capital structure and financial flexibility, keeping a proper level of funds, gaining access to adequate and committed credit facilities, creating effective cash plans, and centralizing cash management. As of December 31, 2020, our cash and short-term investments amounted to CNY357,366 million, which shows that we properly managed our liquidity risks.

(CNY Million)	2020	2019	YoY
Cash flow from operating activities	**35,218**	91,384	(61.5)%
Cash and short-term investments	**357,366**	371,040	(3.7)%
Short-term and long-term borrowings	**141,811**	112,162	26.4%

Foreign Exchange Risk

Our presentation currency is CNY, but we have foreign currency exposure related to buying, selling, and financing in currencies other than CNY. According to our established foreign exchange risk management policy, material foreign exchange exposures are hedged based on a comprehensive analysis of market liquidity and hedging costs. We have developed a complete set of foreign exchange management policies, processes, and instructions. These include:

- Natural hedging: We structure our operations to match currencies between procurement and sales transactions, to the greatest extent possible.
- Financial hedging: For certain currencies where natural hedging does not fully offset the foreign currency position, we hedge through forward foreign exchange transactions.

In countries where local currencies depreciate sharply or that have strict foreign exchange controls, we manage foreign exchange exposure using different measures, including exchange rate protection and financial hedging. We have also adopted solutions like accelerating customer payment and promptly transferring cash out of these countries to minimize risks.

With other conditions remaining unchanged, exchange rate fluctuations will impact our net profit as follows:

(CNY Million)	2020	2019
USD depreciates by 5%	**1,350**	2,427
EUR depreciates by 5%	**270**	117

Interest Rate Risk

Interest rate risks mainly arise from Huawei's long-term borrowings. By analyzing interest rate exposure, the company uses a combination of fixed-rate and floating-rate financing tools to mitigate these interest rate risks.

1. Major interest-bearing long-term financial instruments held by the company as at December 31, 2020

	2020		2019	
	Effective Interest Rate (%)	**(CNY million)**	Effective Interest Rate (%)	(CNY million)
Fixed-rate long-term financial instruments:				
Long-term borrowings	**3.85**	**44,261**	3.99	37,338
Floating-rate long-term financial instruments:				
Long-term borrowings	**3.01**	**97,009**	3.82	67,193
Total		**141,270**		104,531

2. Sensitivity analysis

Assuming that the interest rate increased by 50 basis points on December 31, 2020 and other variables remained unchanged, the company's net profit and equity would decrease by CNY388 million (in 2019, the amount decreased by CNY264 million).

Credit Risk

The company has established and implemented globally consistent credit management policies, processes, IT systems, and quantitative credit risk assessment tools. It has established dedicated credit management teams across all regions and business units, and set up centers of expertise specializing in credit management in Europe and Asia Pacific. The company uses quantitative risk assessment models to determine customer credit ratings and credit limits and quantify transaction risks. It has also set risk control points for key activities across the end-to-end sales process to manage credit risks in a closed loop. Huawei's Credit Management Department regularly assesses global credit risk exposures and develops IT tools to help field offices monitor risk status, estimate potential losses, and determine bad debt provisions as appropriate. To minimize risk, a special process is followed if a customer defaults on a payment or poses an unacceptably high credit risk.

Sales Financing

With its global coverage, Huawei's sales financing team maintains close contact with customers to understand their financing needs and taps into a wide range of financing resources around the world. As a bridge for communication and cooperation between financial institutions and customers, the sales financing team provides customers with specialized financing solutions that contribute to ongoing customer success. To transfer risks, Huawei arranges for third-party financial institutions to provide sales financing, such as export credit facilities, leasing, and factoring. These institutions bear the associated risks and profit from these operations. Huawei has established systematic financing policies and project approval processes to strictly control financing risk exposures. Huawei only shares risks with financial institutions on certain projects, and measures and recognizes the risk exposures to ensure that business risks are under control.

Independent Auditors' Report

Independent auditors' report on the consolidated financial statements summary to the Board of Directors of Huawei Investment & Holding Co., Ltd.

Opinion

The consolidated financial statements summary of Huawei Investment & Holding Co., Ltd. and its subsidiaries (the Group) set out on pages 81 to 131, which comprises the summary consolidated statement of financial position as at December 31, 2020, the summary consolidated statements of profit or loss and other comprehensive income and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information, is derived from the audited consolidated financial statements of the Group for the year ended December 31, 2020.

In our opinion, the accompanying consolidated financial statements summary is consistent, in all material respects, with the audited consolidated financial statements, in accordance with the basis described in note 2 to the consolidated financial statements summary.

Consolidated financial statements summary

The consolidated financial statements summary does not contain all the disclosures required by International Financial Reporting Standards applied in the preparation of the audited consolidated financial statements of the Group. Reading the consolidated financial statements summary and the auditors' report thereon, therefore, is not a substitute for reading the audited consolidated financial statements of the Group and the auditors' report thereon. The consolidated financial statements summary and the audited financial statements do not reflect the effects of events that occurred subsequent to that date of our report on the audited financial statements.

The audited consolidated financial statements and our report thereon

We expressed an unmodified audit opinion on the audited consolidated financial statements for the year ended December 31, 2020 in our report dated March 25, 2021.

Management's responsibilities for the consolidated financial statements summary

Management is responsible for the preparation of the consolidated financial statements summary in accordance with the basis described in note 2 to the consolidated financial statements summary.

Auditors' responsibilities

Our responsibility is to express an opinion on whether the consolidated financial statements summary is consistent, in all material respects, with the audited consolidated financial statements based on our procedures, which were conducted in accordance with International Standard on Auditing 810 (Revised), *Engagements to Report on Summary Financial Statements*.

KPMG Huazhen LLP
Certified Public Accountants
15th Floor, China Resources Tower
2666 Keyuan South Road
Shenzhen 518052, China

March 25, 2021

Consolidated Financial Statements Summary

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Summary Consolidated Statement of Profit or Loss and Other Comprehensive Income

(CNY million)	Note	2020	2019
Revenue	8	**891,368**	858,833
Cost of sales		**(564,236)**	(536,144)
Gross profit		**327,132**	322,689
Research and development expenses		**(141,893)**	(131,659)
Selling and administrative expenses		**(113,430)**	(114,165)
Other income, net	9	**692**	970
Operating profit		**72,501**	77,835
Finance income and expenses	11	**(367)**	178
Share of associates' and joint ventures' results (post tax)		**170**	10
Profit before tax		**72,304**	78,023
Income tax	12	**(7,655)**	(15,367)
Profit for the year		**64,649**	62,656
Other comprehensive income (after tax and reclassification adjustments)	13		
Items that will not be reclassified to profit or loss:			
Re-measurement of defined benefit obligations		**3**	186
Equity investments at fair value through other comprehensive income (FVOCI) – net change in fair value		**2,344**	148
		2,347	334
Items that are or may be reclassified subsequently to profit or loss:			
Non-equity financial assets at FVOCI – net change in fair value and impairment loss		**(11)**	(14)
Translation differences on foreign operations		**(3,987)**	1,881
		(3,998)	1,867
Other comprehensive income		**(1,651)**	2,201
Total comprehensive income		**62,998**	64,857
Profit for the year attributable to:			
Equity holders of the Company		**64,595**	62,605
Non-controlling interests		**54**	51
Total comprehensive income attributable to:			
Equity holders of the Company		**62,936**	64,806
Non-controlling interests		**62**	51

The notes on pages 85 to 131 form part of this consolidated financial statements summary.

Summary Consolidated Statement of Financial Position

(CNY million)	Note	December 31, 2020	December 31, 2019
Assets			
Goodwill and intangible assets	14	**9,169**	8,822
Property, plant and equipment	15	**118,378**	97,719
Right-of-use assets	29	**18,423**	17,417
Interests in associates and joint ventures	16	**1,839**	731
Other investments and derivatives	17	**10,244**	7,266
Deferred tax assets	18	**10,748**	10,877
Contract assets	20	**1,648**	2,200
Trade and bills receivable	21	**3,963**	4,540
Other assets	22	**11,048**	5,196
Non-current assets		**185,460**	154,768
Inventories and other contract costs	19	**167,667**	167,390
Contract assets	20	**51,954**	50,812
Trade and bills receivable	21	**74,741**	85,525
Other assets	22	**39,442**	29,126
Other investments and derivatives	17	**184,692**	200,356
Cash and cash equivalents	23	**172,898**	170,684
Current assets		**691,394**	703,893
Total assets		**876,854**	858,661
Equity			
Equity attributable to equity holders of the Company		**330,325**	295,106
Non-controlling interests		**83**	431
Total equity		**330,408**	295,537
Liabilities			
Loans and borrowings	24	**141,270**	104,531
Deferred government grants		**546**	1,013
Deferred tax liabilities	18	**1,921**	1,755
Lease liabilities		**6,608**	6,413
Other liabilities	27	**3,769**	3,157
Non-current liabilities		**154,114**	116,869
Loans and borrowings	24	**541**	7,631
Employee benefits		**105,245**	98,375
Income tax payable		**3,979**	3,909
Trade and bills payable	25	**78,977**	142,185
Contract liabilities	26	**71,948**	69,327
Lease liabilities		**3,042**	3,274
Other liabilities	27	**104,308**	106,005
Provisions	28	**24,292**	15,549
Current liabilities		**392,332**	446,255
Total liabilities		**546,446**	563,124
Total equity and liabilities		**876,854**	858,661

The notes on pages 85 to 131 form part of this consolidated financial statements summary.

Summary Consolidated Statement of Cash Flows

(CNY million)	Note	2020	2019
Cash flows from operating activities			
Cash receipts from goods and services		**989,447**	959,785
Cash paid to suppliers and employees		**(1,010,231)**	(929,482)
Other operating cash flows		**56,002**	61,081
Net cash generated from operating activities		**35,218**	91,384
Net cash used in investing activities		**(30,793)**	(145,001)
Net cash generated from financing activities		**1,653**	37,744
Cash and cash equivalents			
Net increase/(decrease)		**6,078**	(15,873)
At January 1	23	**171,070**	184,106
Effect of foreign exchange rate changes		**(4,098)**	2,837
At December 31	23	**173,050**	171,070

The notes on pages 85 to 131 form part of this consolidated financial statements summary.

Notes to the Consolidated Financial Statements Summary

1 Reporting entity

Huawei Investment & Holding Co., Ltd. (the Company) is a limited liability company established in Shenzhen in the People's Republic of China (PRC). The Company's registered office is at Building 1, Zone B, Huawei Base, Bantian, Longgang District, Shenzhen City, PRC.

The Company and its subsidiaries (the Group) principally provide end to end information and communication technology solutions. This includes the research, design, manufacture and marketing of telecom network equipment, IT products and solutions, cloud technology and services and smart devices for telecom carriers, enterprises and consumers. The principal activities and other particulars of the Company's major subsidiaries are set out in note 32(b) to the consolidated financial statements summary.

2 Preparation basis of the consolidated financial statements summary

The Group has prepared a full set of consolidated financial statements (consolidated financial statements) for the year ended December 31, 2020 in accordance with International Financial Reporting Standards (IFRSs).

The consolidated financial statements summary has been prepared and presented based on the audited consolidated financial statements for the year ended December 31, 2020 in order to disclose material financial and operational information.

3 Significant accounting policies

(a) Basis of preparation of the consolidated financial statements

The consolidated financial statements have been prepared under the historical cost basis modified for the fair valuation of certain financial instrument classifications (see note 3(e)).

The preparation of consolidated financial statements in accordance with IFRSs requires management to make judgements, estimates and assumptions that affect the application of policies and reported amounts of assets, liabilities, income and expenses. Estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed regularly and revised when required. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

Judgements made by management in the application of IFRSs that have significant effect on the consolidated financial statements and major sources of estimation uncertainty are discussed in note 5.

(b) Functional and presentation currency

All financial information in the consolidated financial statements summary is presented in millions of Chinese Yuan (CNY), which is the Company's functional currency.

(c) Consolidation

(i) Business combinations

The Group accounts for business combinations using the acquisition method when the acquired set of activities and assets meets the definition of a business. To be considered a business, an acquisition would have to include an input and a substantive process that together significantly contribute to the ability to create outputs.

The Group may determine that an acquired set of activities and assets is not a business if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets.

The difference between the fair value of the consideration paid and the fair value of net identifiable assets is recorded as goodwill. Transaction costs incurred in an acquisition are recognised in profit or loss. Where the fair value of the assets acquired less liabilities assumed exceeds the consideration paid, the excess is recognised immediately in profit or loss as a gain.

(ii) Subsidiaries

The financial statements consolidate the results, assets, liabilities and cash flows of all subsidiaries which the Group controls.

Subsidiaries are consolidated from the date that control commences until the date that control ceases. Intra-group balances, transactions, cash flows and any unrealised gains arising from intra-group transactions are eliminated in preparing the consolidated financial statements. Unrealised losses resulting from intra-group transactions are eliminated in the same way as unrealised gains but only to the extent that there is no evidence of impairment.

The Group controls an entity when it is exposed, or has rights, to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. When assessing whether the Group has power, only substantive rights are considered.

(iii) Non-controlling interests

Non-controlling interests represent the carrying value of the net assets of subsidiaries attributable to non-controlling equity holders. The Group measures non-controlling interests at the non-controlling interests' proportionate share of the subsidiary's net identifiable assets. Changes in the Group's interests in a subsidiary that do not result in a loss of control are accounted for as equity transactions, whereby adjustments are made to the amounts of controlling and non-controlling interests within consolidated equity to reflect the change in relative interests, but no adjustments are made to goodwill and no gain or loss is recognised.

(iv) Loss of control

When the Group loses control of a subsidiary, it is accounted for as a disposal of the entire interest in that subsidiary, with a resulting gain or loss being recognised in profit or loss. Any interest retained in that former subsidiary at the date when control is lost is recognised at fair value or, when appropriate, the cost on initial recognition of an investment in an associate or a joint venture (see note 3(d)).

(d) Associates and joint ventures

An associate is an entity in which the Group has significant influence, but not control or joint control, over its management, including participation in the financial and operating policy decisions.

A joint venture is an arrangement whereby the Group and other parties contractually agree to share control of the arrangement, and have rights to the net assets of the arrangement.

An investment in an associate or a joint venture is accounted for in the consolidated financial statements using the equity method until the date on which significant influence or joint control ceases. It is initially recognised at cost and subsequently adjusted to include the Group's share of the profit or loss and other comprehensive income (OCI).

Unrealised profits and losses resulting from transactions between the Group and its associates and joint ventures are eliminated to the extent of the Group's interest in the investee, except where unrealised losses provide evidence of an impairment of the asset transferred, in which case they are recognised immediately in profit or loss.

(e) Financial instruments

(i) Recognition and derecognition

Financial instruments, comprising financial assets and financial liabilities, are recognised in the consolidated statement of financial position when the Group becomes a party to the contractual provisions of the instrument.

The Group derecognises a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows in a transaction in which substantially all of the risks and rewards of ownership of the financial asset are transferred or where it neither transfers nor retains substantially all of the risks and rewards of ownership and loses control. When control is retained, the Group continues to recognise the financial asset to the extent of its continuing involvement. Financial assets are also de-recognised when they are written off. Financial assets are written off when there is no reasonable expectation of further recoveries even though there may be enforcement actions ongoing.

The Group derecognises a financial liability when its contractual obligations are discharged, cancelled, or expire.

Financial assets and financial liabilities are offset and the net amount presented in the consolidated statement of financial position when, and only when, the Group currently has a legally enforceable right to set off the recognised amounts and intends either to settle them on a net basis or to realise the asset and settle the liability simultaneously.

(ii) Classification and measurement

All financial assets and liabilities are initially recognised at fair value, with the exception of trade receivables without a significant financing component, which are measured at their transaction price, determined in accordance with the Group's accounting policies for revenue. Subsequently, measurement depends on the financial assets/ liabilities classification as follows:

- Financial assets measured at fair value through profit or loss (FVPL)

  Non-equity financial assets are classified as FVPL if they arise from contracts which do not give rise to cash flows which are solely principal and interest, or otherwise where they are held in a business model which mainly realises them through sale. Such assets are re-measured to fair value at the end of each reporting period. Gains and losses arising from re-measurement are taken to profit or loss, as are transaction costs.

  Equity investments are classified as FVPL unless they are designated as at FVOCI on initial recognition (see below). Dividends from equity investments, irrespective of whether classified as FVPL or FVOCI, are recognised in profit or loss as finance income.

- Financial assets measured at FVOCI

  Non-equity financial assets are classified as FVOCI where they arise from contracts which give rise to contractual cash flows which are solely principal and interest and which are held in a business model which realises some through sale and some by holding them to maturity. They are recognised initially at fair value plus any directly attributable transaction costs, or in the case of trade receivables, at the transaction price.

  At the end of each reporting period they are re-measured to fair value, with the cumulative gain or loss compared to their amortised cost (AC) being recognised as fair value reserve through other comprehensive income, except for the recognition in profit or loss of expected credit losses, interest income (calculated using the effective interest method) and foreign exchange gains and losses.

  When these assets are derecognised, the cumulative gain or loss is reclassified from equity to profit or loss.

  Equity investments not held for trading purposes are designated as at FVOCI where they are considered strategic to the Group. Such designation is made on an instrument-by-instrument basis, but may only be made if the investment meets the definition of equity from the issuer's perspective. Amounts accumulated in the fair value reserve in respect of these investments are transferred directly to retained earnings on the disposal of the investment. These investments are not subject to impairment.

- Financial assets measured at amortised cost

  Financial assets are held at amortised cost when they arise from contracts which give rise to contractual cash flows which are solely principal and interest and are held in a business model which mainly holds the assets to collect contractual cash flows.

  Financial assets measured at amortised cost when they are not purchased or originated credit-impaired are measured at amortised cost using the effective interest method. For those purchased or originated credit-impaired, the Group applies the credit-adjusted effective interest rate since initial recognition. These assets are also subject to impairment losses (see note 3(j)). Interest income is calculated based on the gross carrying amount of the financial asset unless the financial asset is credit impaired, in which case interest income is calculated on the amortised cost (i.e. gross carrying amount less loss allowance). Interest income is included in finance income.

- Financial liabilities at amortised cost

  Financial liabilities, except those designated as at FVPL, are stated at amortised cost using the effective interest method. Interest is included in finance expenses unless capitalised into an asset (see note 3(s)).

- Financial liabilities designated as at FVPL

  The Group has irrevocably designated certain financial liabilities as at FVPL on initial recognition because they are managed and their performance is evaluated on a fair value basis and information is provided internally on that basis to the Group's key management personnel.

(f) Investment property

Investment properties are land and buildings which are owned or held under a leasehold interest (see note 3(i)) to earn rental income and/or for capital appreciation.

Investment properties are stated at cost less accumulated depreciation (see note 3(g)(ii)) and impairment losses (see note 3(j)). Rental income from investment properties is accounted for as described in note 3(p)(ii).

(g) Other property, plant and equipment

(i) Cost

Items of property, plant and equipment are stated at cost less accumulated depreciation and impairment losses (see note 3(j)). Cost includes expenditure that is directly attributable to the acquisition of the assets including for self-constructed assets, the cost of materials, direct labour, the initial estimate, where appropriate, of the costs of dismantling and removing the items and restoring the site on which they are located, and an appropriate proportion of production overheads and borrowing costs.

Construction in progress is transferred to other property, plant and equipment when it is ready for its intended use.

Gains or losses arising from the retirement or disposal of an item of property, plant and equipment are determined as the difference between the net disposal proceeds and the carrying amount of the item and are recognised in profit or loss on the date of retirement or disposal.

(ii) Depreciation

Depreciation is calculated to write off the cost of items of investment property and other property, plant and equipment, less their estimated residual value, if any, using the straight line method over their estimated useful lives as follows:

■ Buildings	30 years
■ Machinery	2 to 10 years
■ Motor vehicles	5 years
■ Electronic and other equipment	2 to 5 years
■ Decoration and leasehold improvements	2 to 15 years

Where components of an item of investment property and other property, plant and equipment have different useful lives, the cost or valuation of the item is allocated on a reasonable basis between the parts and each part is depreciated separately. Both the useful life of an item of investment property and other property, plant and equipment and its residual value, if any, are reviewed annually.

Freehold land and construction in progress are not depreciated.

(h) Goodwill and intangible assets

(i) Goodwill

Goodwill represents the excess of the fair value of consideration paid to acquire a subsidiary over the acquisition date fair value of the acquiree's identifiable assets acquired less liabilities, including contingent liabilities, assumed as at the acquisition date, less impairment losses (see note 3(j)).

(ii) Other intangible assets

Other intangible assets are stated at cost less accumulated amortisation and impairment losses (see note 3(j)).

(iii) Amortisation

Goodwill is not amortised but subject to impairment testing (see note 3(j)) annually.

The cost of other intangible assets with finite useful lives is amortised to profit or loss on a straight-line basis over the assets' estimated useful lives from the date they are available for use. Their estimated useful lives are as follows:

- Software 2 to 10 years
- Patents and royalties 2 to 10 years
- Trademark and others 2 to 20 years

Both the useful lives and method of amortisation are reviewed annually and revised when necessary.

(iv) Research and development

Research and development costs are all costs directly attributable to research and development activities together with cost which can be allocated on a reasonable basis to such activities. The nature of the Group's research and development activities is such that the criteria for the recognition of such costs as assets are generally not met until late in the development stage of the project when the remaining development costs are immaterial. Therefore, expenditure on research and development activities is generally recognised as an expense in the period in which it is incurred.

(i) Leases

A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time, the lease term, in exchange for consideration. The Group assesses whether a contract is, or contains, a lease on inception.

The lease term is the non-cancellable period of the lease, together with any additional periods when there is an enforceable option to extend the lease and it is reasonably certain that the Group will extend the term, or when there is an option to terminate the lease and it is reasonably certain that the Group will not exercise the right to terminate. The lease term is reassessed if there is a significant change in circumstances.

(i) As a lessee

At commencement, or on the modification, of a contract that contains a lease component, the Group allocates the consideration in the contract to each lease component on the basis of its relative stand-alone prices.

The Group recognises a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is depreciated using the straight-line method from the commencement date to the end of the lease term. If the lease transfers ownership of the underlying asset to the Group by the end of the lease term or if the Group expects to exercise a purchase option, the right-of-use asset will be depreciated over the useful life of the underlying asset, which is determined on the same basis as the Group's other property, plant and equipment.

Right-of-use assets are reduced by impairment losses, if any, and adjusted for certain re-measurements of the lease liability.

The lease liability is initially measured at the present value of the total lease payments due on the commencement date, discounted using either the interest rate implicit in the lease, if readily determinable, or more usually, an estimate of the Group's incremental borrowing rate on the inception date for a loan with similar terms to the lease.

The incremental borrowing rate is estimated by obtaining interest rates from various external financing sources and making certain adjustments to reflect the terms of the lease and type of the asset leased.

Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, including payments which are substantively fixed;
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- amounts expected to be payable under a residual value guarantee; and
- the exercise price under a purchase option that the Group is reasonably certain to exercise, lease payments in an optional renewal period if the Group is reasonably certain to exercise an extension option, and penalties for early termination of a lease unless the Group is reasonably certain not to terminate early.

The lease liability is measured at amortised cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Group's estimate of the amount expected to be payable under a residual value guarantee, if the Group changes its assessment of whether it will exercise a purchase, extension or termination option or if there is a revised in-substance fixed lease payment.

When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

Short-term leases and leases of low-value assets

As permitted by IFRS 16 *Leases*, the Group does not recognise right-of-use assets and lease liabilities for leases of low-value assets and short-term leases. Payments associated with these leases are recognised as an expense on a straight-line basis over the lease term.

(ii) As a lessor

When the Group acts as a lessor, it determines at lease inception whether each lease is a finance lease or an operating lease.

To classify each lease, the Group makes an overall assessment of whether the lease transfers substantially all of the risks and rewards incidental to ownership of the underlying asset. If this is the case, then the lease is a finance lease; if not, then it is an operating lease.

The Group recognises lease payments received under operating leases as income on a straight-line basis over the lease term as part of Revenue (see note 3(p)(ii)).

(j) Impairment of assets

(i) Impairment of financial assets, contract assets and lease receivables

The Group recognises an allowance for impairment on non-equity financial assets held at FVOCI and AC, and also on contract assets and lease receivables on an expected credit loss basis. Increases and decreases in the impairment allowance are recognised in profit or loss. The expected credit losses are the difference (on a present value basis) between the contractual cash flows (or transaction price) and the present value of cash flows expected to be received based on the Group's past loss experience and reasonable and supportable expectations, at the end of the reporting period, about future credit conditions.

For trade receivables, contract assets and lease receivables, the Group recognises impairment both individually and using provision matrices based on the probability that the customer will default during the lifetime of the asset, and the loss that will be incurred given the default (the lifetime expected loss). The Group defines default as the customer being more than 90 days past due.

For all other financial assets that are not purchased or originated credit-impaired, the Group recognises impairment initially based on the probability that the customer or counterparty will default in the next 12 months unless there has been a significant deterioration in credit quality, or the financial asset becomes credit impaired in which case the impairment allowance is increased to the lifetime expected loss.

An asset is credit impaired when it has one or more of the loss events described below:

- significant financial difficulty of the borrower or issuer;
- a breach of contract, such as a default or past due event;
- the restructuring of a loan or advance by the Group on terms that the Group would not consider otherwise;
- it is probable that the borrower will enter bankruptcy or other financial reorganisation; or
- the disappearance of an active market for a security because of financial difficulties.

In the case of purchased or originated credit-impaired financial assets, the Group only recognises the cumulative changes in lifetime expected credit losses since initial recognition as a loss allowance.

(ii) Impairment of other non-financial assets

Internal and external sources of information are reviewed at the end of each reporting period to identify indications that non-financial assets, including property, plant and equipment, right-of-use assets, intangible assets and other long-term assets may be impaired.

Goodwill is tested for impairment at least annually. For the purposes of impairment testing, goodwill is allocated to each cash generating unit, or a group of cash generating units, that is expected to benefit from the synergies of the acquisition. Where impairment testing is of a cash generating unit (or group of units), an impairment loss is recognised in profit or loss where the recoverable value is less than the carrying value of the unit (or group of units) and the impairment loss recognised is allocated first to reduce the carrying amount of any goodwill allocated to the unit (or group of units).

Other assets are impaired and an impairment loss is recognised in profit or loss where the recoverable value of the asset is less than its carrying amount, and reversed where there has been a favourable change in the recoverable amount. Impairment of goodwill is not reversed.

The recoverable amount of an asset or group of assets is the greater of its fair value less costs of disposal and value in use. Value in use is the total estimated future cash flows from the asset or, where the asset does not generate cash flows independent of other assets, a group of assets, discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset, or group of assets.

(k) Inventories

Inventories are assets which are held for sale in the ordinary course of business, in the process of production for such sales or in the form of material or supplies to be consumed in the production process or in the rendering of services.

Inventories are carried at the lower of cost and net realisable value.

Cost is calculated based on the standard cost method with periodic adjustments of cost variance to arrive at the actual cost, which approximates to weighted average cost. Cost includes expenditures incurred in acquiring the inventories and bringing them to their present location and condition. The cost of manufactured inventories and work in progress includes an appropriate share of overheads based on normal operating capacity.

Net realisable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and the estimated costs necessary to make the sale.

When inventories are sold, the carrying amount of those inventories is recognised as an expense in the period in which the related revenue is recognised. Any write-down of inventories to net realisable value and all losses of inventories are recognised as an expense in the period the write-down or loss occurs.

(l) Cash and cash equivalents

Cash and cash equivalents comprise cash at bank and on hand, demand deposits with banks and other financial institutions, demand deposits with third party merchants, and short-term, highly liquid investments that are readily convertible into known amounts of cash and which are subject to an insignificant risk of changes in value. Bank overdrafts that are repayable on demand and form an integral part of the Group's cash management are also included as a component of cash and cash equivalents for the purpose of the consolidated statement of cash flows.

(m) Employee benefits

(i) Short-term employee benefits, contributions to defined contribution retirement plans and other long-term employee benefits

Salaries, profit-sharing and bonus payments, paid annual leave and contributions to defined contribution retirement plans and non-monetary benefits are recognised as liabilities and in profit or loss or in the cost of related assets in the period in which the associated services are rendered by employees. Where payment or settlement is expected to be made 12 months after the end of the reporting period, these amounts are discounted and stated at their present values.

(ii) Defined benefit obligations

The Group's obligation in respect of defined benefit plans is calculated separately for each plan by estimating the total amount of future benefit that employees have earned in return for their service in the current and prior periods which is then discounted to present value. The calculation is performed by management using the projected unit credit method.

Service cost and interest cost on the defined benefit obligations and any curtailment gains and losses are recognised in profit or loss.

Re-measurements arising from changes in actuarial assumptions regarding the amounts of future benefits are recognised immediately in other comprehensive income and shall not be reclassified to profit or loss in a subsequent period. However, the Group may transfer those amounts recognised in other comprehensive income within equity.

(n) Income tax

Income tax for the year comprises current tax and movements in deferred tax assets and liabilities. Current tax and movements in deferred tax assets and liabilities are recognised in profit or loss except to the extent that they relate to items recognised in other comprehensive income or directly in equity, in which case the relevant amounts of tax are recognised in other comprehensive income or directly in equity, respectively.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the end of the reporting period, and any adjustment to tax payable in respect of previous years.

Deferred tax is recognised on temporary differences, representing the difference between the carrying amounts of assets and liabilities for financial reporting purposes and their tax bases. Deferred tax assets also arise from unused tax losses and unused tax credits.

Deferred tax assets are recognised to the extent that it is probable that future taxable profits will be available against which the asset can be utilised. Future taxable profits that may support the recognition of deferred tax assets arising from deductible temporary differences include those that will arise from the reversal of existing taxable temporary differences, provided those differences relate to the same taxation authority and the same taxable entity, and are expected to reverse either in the same period as the expected reversal of the deductible temporary difference or in periods into which a tax loss arising from the deferred tax asset can be carried back or forward. The same criteria are adopted when determining whether existing taxable temporary differences support the recognition of deferred tax assets arising from unused tax losses and credits, that is, those differences are taken into account if they relate to the same taxation authority and the same taxable entity, and are expected to reverse in a period, or periods, in which the tax loss or credit can be utilised.

No deferred tax is recognised for temporary differences on:

- the initial recognition of goodwill;
- the initial recognition of assets or liabilities that affect neither accounting nor taxable profit (provided they are not part of a business combination); and
- investments in subsidiaries to the extent that, in the case of taxable differences, the Group controls the timing of the reversal and it is probable that the differences will not reverse in the foreseeable future, or in the case of deductible differences, unless it is probable that they will reverse in the future.

The amount of deferred tax recognised is measured based on the expected manner of realisation or settlement of the carrying amount of the assets and liabilities, using tax rates enacted or substantively enacted at the end of the reporting period. Deferred tax assets and liabilities are not discounted.

The carrying amount of a deferred tax asset is reviewed at the end of each reporting period and is reduced to the extent that it is no longer probable that sufficient taxable profits will be available to allow the related tax benefit to be utilised. Any such reduction is reversed to the extent that it becomes probable that sufficient taxable profits will be available.

A provision is recognised for those matters for which the tax determination is uncertain but it is considered probable that there will be a future outflow of funds to a tax authority. The provisions are measured at the best estimate of the amount expected to become payable.

Current tax balances and deferred tax balances, and movements therein, are presented separately from each other and are not offset. Current tax assets are offset against current tax liabilities, and deferred tax assets against deferred tax liabilities, if the Group has legally enforceable rights to set off current tax assets against current tax liabilities and the following additional conditions are met:

- in the case of current tax assets and liabilities, the Group intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously; or
- in the case of deferred tax assets and liabilities, if they relate to income taxes levied by the same taxation authority on either:
  - the same taxable entity; or
  - different taxable entities, which, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered, intend to realise the current tax assets and settle the current tax liabilities on a net basis or realise and settle simultaneously.

(o) Provisions and contingent liabilities

Provisions are recognised for liabilities of uncertain timing or amount when the Group has a legal or constructive obligation arising as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation and a reliable estimate can be made. Where the time value of money is material, provisions are stated at the present value of the expenditure expected to settle the obligation.

Where it is not probable that an outflow of economic benefits will be required, or the amount cannot be reliably estimated, disclosure is made of the contingent liability, unless the probability of outflow of economic benefits is remote. Possible obligations, whose existence will only be confirmed by the occurrence or non-occurrence of one or more future events are also disclosed as contingent liabilities unless the probability of outflow of economic benefits is remote.

The main types of provisions are as follows:

(i) Provision for warranties

The Group provides assurance warranty on its standard consumer and certain enterprise products for a period typically covering 12 to 24 months.

The Group estimates the costs that may be incurred under its assurance warranty obligations and records a liability in the amount of such costs when revenue is recognised. Warranty costs generally include spare parts, labour costs and service centre support. Factors that affect the Group's warranty liability include the amount of products sold, historical and anticipated rates of warranty claims. The Group periodically reassesses its warranty liabilities and adjusts the amounts as necessary.

(ii) Provision for onerous contracts

A provision for onerous contracts is recognised when the expected benefits to be derived by the Group from a contract are lower than the estimated cost of meeting its obligations under the contract. The provision is measured at the present value of the lower of the expected cost of terminating the contract and the expected net cost of continuing with the contract. Before a provision is established, the Group recognises any impairment loss on the assets associated with that contract.

(p) Revenue

Revenue is income arising from sales of products, provision of services or use by others of the Group's properties under leases in the ordinary course of the Group's business.

(i) Revenue from customer contracts

The Group divides its business into three operating segments, Carrier Business, Enterprise Business and Consumer Business. The principal activities of each segment are disclosed in note 7.

The Group applies its revenue accounting policies based on the features of the contracts and the business practices of its business groups.

Revenue is measured based on the consideration the Group expects to be entitled to from the contract with the customer and excludes those amounts collected on behalf of third parties. The Group recognises revenue when it transfers control over a product or service (or bundle) to a customer.

i. Contract combinations and modifications

The Group combines separate customer contracts with the same customer or related parties of the same customers entered into at or near the same time when those contracts are negotiated as a package to form a single commercial objective, are significantly interdependent in nature or contain significant pricing dependencies.

Contract modifications are generally treated either as a new separate contract, or as a prospective change to an existing contract. In cases when the additional or the remaining goods and services are not distinct from those transferred before the date of modification, typically in the Carrier Business and Enterprise Business, modifications are accounted for through a cumulative catch-up adjustment.

ii. Performance Obligations (POB)

In the Consumer Business, POBs are typically terminal devices, accessories and services. In the Carrier Business, there are generally more POBs due to the nature of the contracts which typically involve sales of networking hardware, software and a wide range of services. In the Enterprise Business where the Group delivers bespoke end-to-end solutions, there may in some cases only be a few POBs.

iii. Warranties

In the Carrier Business and Enterprise Business, customer service warranties, except for those related to certain Enterprise products, are generally recognised as a distinct service for which revenue is allocated and recognised over the service period. In the Consumer Business, warranties provided on terminal devices and accessories are generally standard assurance in nature and are accounted for as a warranty provision at the time of the sale (see note 3(o)).

iv. Timing of revenue recognition

The Group determines at contract inception whether it transfers the control of a good or service underlying a POB to the customer over time or at a point in time. A POB is satisfied and related revenue is recognised over time, if one of the following criteria is met:

- The customer simultaneously receives and consumes the benefits provided by the Group's performance as the Group performs;
- The Group's performance creates or enhances an asset that the customer controls as the asset is created or enhanced; or
- The Group's performance does not create an asset with an alternative use to the Group and the Group has an enforceable right to payment for performance completed to date.

If a POB is not satisfied and the control over the related good or service is not transferred over time in accordance with the above criteria, it is satisfied and revenue is recognised at a point in time.

Most Carrier Business contracts include multiple POBs for which revenue is recognised when the Group transfers control of each obligation, either at a point in time such as delivery or acceptance, or over time as the obligation is being fulfilled or the customer obtains control of the goods and/or services. Some Carrier Business construction contracts represent a single or a few POBs for which revenue is recognised over the delivery period.

Within the Enterprise Business certain solution build contracts constitute a single or a small number of POBs for which revenue is recognised over the delivery period. For the remaining contracts with multiple POBs, revenue is recognised as and when control related to each obligation is transferred, either at a point in time, such as delivery or acceptance, or over time, as the obligation is being fulfilled and the customer obtains control of the goods and/or services.

Sales of terminal devices and accessories by the Consumer Business to distribution channels are recognised when control of the goods has transferred. In most cases, this is when the sell-in to the channel occurs; however, in a limited number of cases, this is when the goods are sold to the second tier distribution channels or end-users.

v. Variable consideration

Revenue is measured at the fair value of the consideration received or receivable, adjusted at contract inception for penalties, price concessions, returns, trade discounts, volume rebates and other sales incentives, such as coupons, provided that the level of expected return of goods, volume rebates and other incentives given can be estimated reliably and that revenue is only recognised to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognised will not occur. When making an estimate for variable consideration, the Group considers several factors, including but not limited to, contract commitments, business practices, historical experience, customer take-up rates, and expected purchase volumes.

vi. Significant financing component

In the Carrier Business and Enterprise Business, payments are generally received according to the payment milestones set out in the contracts before or after the obligations are fulfilled, usually including advance payments, delivery payments and completion payments. In the Consumer Business and certain business units under the Enterprise Business, advance payments are commonly received. Advance payments are usually received less than one year ahead of satisfaction of a performance obligation.

The amount of consideration in a sales contract is adjusted for the existence of significant financing component in determining the transaction price only when the payment terms exceed one year in duration between performance and payment.

The Group recognises interest income where payment is received more than one year in arrears of satisfaction of a performance obligation, reflecting a deemed lending of cash to a customer. Such interest income is presented in finance income. The consideration attributable to other goods and services in the contract is reduced by a corresponding amount and is included within revenue.

The Group adopts the practical expedient under IFRS 15 *Revenue from Contracts with Customers* (IFRS 15), and does not account for the significant financing components where the Group anticipates at contract inception that the timing difference between transfer of control of a good or service to a customer, and the customer paying for that good or service will be one year or less.

vii. Stand-alone selling prices (SSP)

The transaction price of a contract with a customer is allocated to each POB in proportion to its SSP. The Carrier Business and Enterprise Business primarily use estimated SSP and the Consumer Business uses directly observable SSP.

Within the Carrier Business and the Enterprise Business, the Group establishes the SSP for products mainly using an average price approach by product category. Average price of a product is calculated with reference to the historical stand-alone product sale transactions for the product and the product category is determined with reference to the product family and geographical region.

For services that are regularly sold on a stand-alone basis, most of such services are customised and priced on a project basis, therefore the transaction prices generally reflect the SSP. For the services where an observable transaction price is unavailable such as the services sold in a bundle with products, the Group determines the SSP using a cost-plus approach, taking into account several factors, including but not limited to labour cost, competition and company business strategy.

When a significant discount is granted and is specifically attributable to one or more POBs that discount is allocated to the identified POB(s) if the allocation reflects the Group's regular sales pattern. In all other cases the discount is allocated to the contract overall.

viii. Contract assets and liabilities

When revenue is recognised under a contract with a customer before the Group becomes unconditionally entitled to the consideration under the relevant payment terms of the contract, a contract asset is recognised. Contract assets are reclassified to trade receivables when the right to consideration becomes unconditional.

When consideration is received (or the right to consideration is unconditional) before the related revenue is recognised, a contract liability is recognised.

For a single contract with the customer, either a net contract asset or a net contract liability is presented. For multiple contracts, contract assets and contract liabilities of unrelated contracts are not presented on a net basis.

Trade receivables are recognised when the right to consideration under a revenue contract becomes unconditional, regardless of the billing date.

ix. Refund liabilities

A refund liability, such as the accrued rebates to customers and other sales-based incentives granted, is recognised when the Group receives consideration from the customer and expects to refund some or all of that consideration to the customer. Refund liabilities are presented in Other liabilities in the consolidated statement of financial position.

x. Contract costs

Certain incremental acquisition costs (those paid to acquire a contract such as commission) and fulfilment costs (those incurred to deliver services to customers) are initially capitalised to the extent that the costs are recoverable, and subsequently recognised as expense over the period of expected benefit, which is generally the associated contract duration.

Incremental acquisition costs incurred in its major businesses are minimal and generally expensed immediately.

The Group recognises a contract cost impairment when the carrying amount of unamortised contract costs exceeds the difference between the remaining consideration expected to recover and the associated costs relating to providing those goods and services under the contract.

(ii) Rental income from operating leases

Rental income receivable under operating leases is recognised in profit or loss in equal instalments over the periods covered by the lease term, except where an alternative basis is more representative of the pattern of benefits to be derived from the use of the leased asset. Lease incentives granted are recognised in profit or loss as an integral part of the aggregate net lease payments receivable. Variable lease payments that do not depend on an index or a rate are recognised as income in the accounting period in which they are earned.

(q) Government grants

Government grants are initially recognised in the statement of financial position at fair value when there is reasonable assurance that they will be received and that the Group will comply with the conditions attaching to them.

Grants that compensate the Group for expenses incurred are recognised as income in profit or loss in the same periods in which the expenses are incurred, unless the conditions for receiving the grant are met after the related expenses have been recognised. In this case, the grant is recognised when it becomes receivable. Grants that compensate the Group for the cost of an asset are initially recognised as deferred income and then recognised in profit or loss on a systematic and rational basis over the useful life of the related asset.

(r) Translation of foreign currencies

(i) Foreign currency transactions

Foreign currency transactions during the year are translated into the respective functional currencies of group entities at the foreign exchange rates ruling at the transaction dates.

Monetary assets and liabilities denominated in foreign currencies are translated into the functional currency at the foreign exchange rates ruling at the end of the reporting period. Exchange gains and losses are recognised in profit or loss.

Non-monetary assets and liabilities that are measured in terms of historical cost in a foreign currency are translated using the foreign exchange rates ruling at the transaction dates. Non-monetary assets and liabilities denominated in foreign currencies that are stated at fair value are translated using the foreign exchange rates ruling at the dates the fair value was measured.

(ii) Foreign operations

The results of foreign operations, except for foreign operations in hyperinflationary economies, are translated into the presentation currency of the Group (CNY) at the exchange rates approximating the foreign exchange rates ruling at the dates of the transactions. Statement of financial position items are translated into CNY at the closing foreign exchange rates at the end of the reporting period. The resulting exchange differences are recognised in other comprehensive income and accumulated separately in equity in the translation reserve. If the operation is a non-wholly-owned subsidiary, then the relevant proportionate share of the translation difference is allocated to the non-controlling interests.

The results and financial position of foreign operations in hyperinflationary economies are translated to CNY at the exchange rates ruling at the end of the reporting period. Prior to translating the financial statements of foreign operations in hyperinflationary economies, their financial statements for the current year are restated to account for changes in the general purchasing power of the local currencies. The restatement is based on relevant price indices at the end of the reporting period.

When a foreign operation is disposed of in its entirety or partially such that control, significant influence or joint control is lost, the cumulative amount in the translation reserve related to that foreign operation is reclassified to profit or loss as part of the gain or loss on disposal.

(s) Borrowing costs

Borrowing costs that are directly attributable to the acquisition, construction or production of an asset which necessarily takes a substantial period of time to get ready for its intended use or sale are capitalised as part of the cost of that asset. Other borrowing costs are expensed in the period in which they are incurred.

4 Changes in accounting policies

From January 1, 2020, the Group applied *Definition of a Business (Amendments to IFRS 3 Business Combinations)* to determine whether it had acquired a business or a group of assets in acquisitions after that date. The details of accounting policies are set out in note 3(c).

A number of other new standards are effective from January 1, 2020 but they do not have a material effect on the Group's consolidated financial statements.

5 Accounting judgements and estimates

(a) Accounting judgements

(i) Revenue recognition

Revenue is recognised when control of a good or service is transferred to a customer as disclosed in note 3(p). To determine the satisfaction of performance obligations the Group applies the following judgements:

- Where revenue is recognised over time, the Group primarily uses the output method to measure progress; however, in a limited number of business units, the input method is adopted when the Group is unable to reasonably measure the outcome of a performance obligation. Judgements applied when using the output method include assessing progress and milestones achieved and determining if that represents the value of goods and/or services delivered to the customer to date. Judgements applied when using the input method include determining if consumption of the resources relative to the total expected amount faithfully depicts the transfer of control of goods and/or services promised to the customer.

- Where revenue is recognised at a point in time, the Group assesses the transfer of control by reference to the contractual terms and the circumstance of the arrangements including a consideration of past business practice, such as whether the Group has a legal right to payment, title has passed, the customer has the risks and rewards of ownership, or the customer is using the asset to generate value for themselves.

- For sales to distribution channels, judgement is also applied in determining when the control of the goods is transferred to distributors. These judgements involve several external and internal factors including, but not limited to, market conditions, product life cycles, distributor sales, competitive conditions and the extent to which the Group has continuing managerial involvement over the goods after their delivery.

(ii) Contract modification

The Group applies judgements in determining whether a contract modification should be treated as a new contract or a prospective change to an existing contract, or accounted for through a cumulative catch-up adjustment to revenue, by considering the nature of the goods and services, and sales price data.

The Group judges a contract modification as a separate contract when the increase in contract scope is due to additional distinct promised goods or services and the price increases reflect the SSP of such goods or services plus any appropriate adjustments. Otherwise, a contract modification is judged as a prospective change to an existing contract when the remaining goods or services are distinct from those transferred before the date of the modification, or accounted for as cumulative catch-up adjustment to the revenue when the new or remaining goods or services are not distinct from those transferred.

(b) Sources of estimation uncertainty

Key sources of estimation uncertainty are as follows:

(i) Revenue recognition

To determine the transaction price and the amounts allocated to performance obligations the Group applies the following estimation:

- Variable consideration is estimated using the most likely amount or expected value based on the nature of the specific consideration and the analysis of relevant contract terms, taking into consideration historical, current and expected information.

- SSP is determined using observable evidence of sales prices, where available. In a number of cases statistical analysis is used to identify the historical price a product/service has been sold for as its SSP. Where observable evidence is not available, SSP is estimated using multiple inputs (see note 3(p)(i)vii). SSP is monitored regularly to ensure they remain appropriate.

- Obligations for returns and refunds are judged based on estimates made from historical information associated with similar products and anticipated rates of claims for the products.

- The collectability of a consideration is estimated at contract inception, based on the Group's assessment on the customer's ability and intention to pay when due and is reassessed if there are significant changes in the facts and circumstances.

Estimation is inherent in revenue recognition and revenue may materially change if management's estimation were to change or to be found inaccurate or the occurrence of unexpected events.

(ii) Impairment of trade receivables and contract assets

The credit risk of customers is regularly assessed with a focus on the customer's ability and willingness to pay, reflected by the Group's estimation of the expected credit loss allowance on trade receivables and contract assets. The Group estimates expected credit loss by assessing the loss that will be incurred given customer default based on past payment experience and adjusted by the cash flow expected from collateral or credit risk mitigation received where these are considered to be integral to the asset, and by assessing the probability of default taking into account information specific to the customer as well as pertaining to the country and economic environment in which the customer operates. The estimate also incorporates forward looking data.

Impairment is assessed on an individual basis for trade receivables and contract assets meeting pre-determined criteria, including customers in financial difficulties, and contracts with risk mitigation arrangements or significant financing arrangements, amongst others. Apart from receivables and contract assets that have been assessed and provided for individually, allowances are estimated using provision matrices by management with reference to the customers' credit risk ratings and aging analysis of the remaining trade receivable and contract asset balances. Different provision matrices have been developed by the Group based on different customer groups which exhibit different risk characteristics.

If the financial condition of customers were to deteriorate or improve, or actual future economic performance is different to the Group's estimates, additional allowances or reversals may be required in future periods.

(iii) Net realisable value of inventories

The net realisable value of inventories is the estimated selling price in the ordinary course of business, less the estimated costs of completion and the estimated costs necessary to make the sale, adjusted by the losses for obsolescence and redundancy. These estimates are based on the current market condition, economic lives of the Group's products, availability of components required to assemble the Group's products and the historical experience of inventory losses. They could change significantly as a result of industrial technology upgrades, competitor actions, development of the Events as described in note 5(c) or other changes in market condition. Management will reassess the estimations at the end of each reporting period.

(iv) Impairment losses of long-lived assets

The carrying amounts of long-lived assets (including goodwill) are reviewed periodically in order to assess whether the recoverable amounts have declined below their carrying amounts. In order to determine the recoverable amount, the Group uses assumptions and develops expectations, which requires significant judgement. The Group uses all readily available information in determining an amount that is a reasonable approximation of recoverable amount, including estimates based on reasonable and supportable assumptions and projections of production volume, sales price, amount of operating costs, discount rate and growth rate.

(v) Income tax

The Group is subject to income taxes in various jurisdictions. Significant judgement is required in determining the Group's provision for income taxes. There are many transactions and computations for which the ultimate tax determination is uncertain during the ordinary course of business. The Group recognises liabilities in relevant accounting period based on estimates of the probabilities of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact current and deferred tax liabilities and the taxation charge for the year.

(vi) Provision for warranties

As explained in note 28(b), the Group makes provision for assurance warranties in respect of its Consumer Business and certain Enterprise Business products, taking into account the Group's recent claim experience and anticipated claim rates for affected products. As the Group is continually upgrading its product designs and launching new models, it is possible that the recent claim experience is not indicative of future claims that it will receive in respect of past sales. Any increase or decrease in the provision would affect profit or loss in future years.

(vii) Other provisions

The Group makes provisions for onerous contracts, outstanding litigations and claims based on project budgets, contract terms, available knowledge, legal advice and past experience. The Group recognises provisions to the extent that it has a present legal or constructive obligation as a result of a past event; that it is probable that an outflow of resources will be required to settle the obligation; and that the amount can be reliably estimated. Judgement is required in making such estimates and the ultimate outcome may be different.

The Group makes provisions for onerous contracts in respect of losses arising from non-cancellable procurement agreements when there is a change in the Group's procurement demands such that the Group may not proceed with committed purchase orders or use the goods concerned. Provisions are made taking into account the contract terms, the suppliers' losses resulting from the Group's termination of the agreements and the extent to which the goods under the committed purchase orders will no longer be used in the Group's production. Judgement is required in making the estimates and the ultimate outcome may be different. The Group regularly updates its production plan and procurement demands, estimates probable losses, and adjusts provisions accordingly.

(viii) Deferred tax assets

Estimation uncertainty arises from the recognition of deferred tax assets in respect of unused tax losses and deductible temporary differences. As explained in note 3(n), all deferred tax assets are recognised to the extent that it is probable that future taxable profits will be available against which they can be utilised. Adverse changes to the operating environment or changes in the Group's organisation structure could result in a future write-down of the deferred tax assets recognised.

(ix) Determining the lease term

In determining the lease term at the commencement date for leases that include renewal options exercisable by the Group, the Group evaluates the likelihood of exercising the renewal options taking into account all relevant facts and circumstances that create an economic incentive for the Group to exercise the option. The lease term is reassessed when there is a significant event or significant change in circumstance that is within the Group's control. Any increase or decrease in the lease term would affect the amount of lease liabilities and right-of-use assets recognised in future years.

(c) Financial impact of the Entity List event

On May 16, 2019 and August 19, 2019 (dates in note 5(c) are in U.S. time), pursuant to part 744.11(b) of the United States Export Administration Regulations (EAR), the Bureau of Industry and Security (BIS) of the United States added Huawei Technologies Co., Ltd. and certain non-US affiliates (the Entities) to the Entity List. Upon the Entities being added to the Entity List, export, re-export or in-country transfer of items subject to the EAR (including hardware, software, technology, etc.) to the Entities shall be subject to a BIS license requirement.

On May 15, 2020, the BIS amended the foreign-produced direct product rule (the Rule) by bringing certain foreign-produced items subject to the EAR and applied this new control to the Entities. On August 17, 2020, in addition to adding another 38 Huawei non-US affiliates to the Entity List, the BIS revised the Rule again by expanding the scope of foreign-produced items subject to the EAR so as to further restrict access by the Entities to items produced from U.S. technology or software (collectively referred to as the Events).

As a result, supplies of relevant items to the Group and sales of certain products of the Group are adversely affected. The Group has been taking active measures to mitigate the impact of the Events. In preparing these financial statements, management has applied significant judgments to estimate the impacts arising from the Events and relevant impairments and provisions have been recognised appropriately. The Group continuously assesses these impacts and makes adjustment to relevant estimates based on the development of the Events.

6 Possible impact of amendments, new standards and interpretations issued but not yet effective for the year ended December 31, 2020

The International Accounting Standards Board has issued a number of new standards and amendments which will affect the financial statements in subsequent accounting periods. They are not expected to have a significant impact on the Group's consolidated financial statements.

7 Segment information

Operating segments are determined based on the types of customers, products and services provided, as well as the Group's organisation structure, management requirement and reporting system. The Group divides its business into three operating segments:

Carrier Business

The Carrier Business provides a series of products, services and business solutions encompassing wireless and cloud core network, fixed network, cloud and data centre, and service and software, for global telecom carriers.

Enterprise Business

The Enterprise Business builds a digital infrastructure by using new ICT technologies such as artificial intelligence, cloud, big data, Internet of Things, video and data communication to provide products and services that help industries (such as government, public utilities, finance, energy, transport, motor vehicle, etc) go digital.

Consumer Business

The Consumer Business provides smartphones, tablets, personal computer, wearable devices, converged home devices, as well as the applications and services on these devices for consumers and businesses.

There are no inter-segment transactions. The financial information of the different segments is regularly reviewed by the Group's most senior executive management for the purpose of resource allocation and performance assessment. During the year, the classification for certain products among operating businesses was changed. Comparative figures have been adjusted to reflect the current year presentation.

Revenue information in respect of business segments

(CNY million)	**2020**	2019
Carrier	**302,621**	301,965
Enterprise	**100,339**	81,554
Consumer	**482,916**	467,304
Other items	**5,492**	8,010
Total	**891,368**	858,833

Revenue information in respect of geographical segments

(CNY million)	2020	2019
China	**584,910**	506,733
Europe, the Middle East and Africa (EMEA)	**180,849**	206,007
Asia Pacific	**64,369**	70,533
Americas	**39,638**	52,478
Others	**21,602**	23,082
Total	**891,368**	858,833

8 Revenue

(CNY million)	2020	2019
Revenue from contracts with customers	**890,863**	858,473
Rental income	**505**	360
	891,368	858,833

Revenue from contracts with customers is analysed by timing of revenue recognition as follows:

(CNY million)	2020	2019
Recognised at a point in time	**745,171**	722,274
Recognised over time	**145,692**	136,199
	890,863	858,473

Further disaggregation of revenue by business and geography is set out in note 7.

The amount of revenue recognised for the year ended December 31, 2020 from POBs satisfied (or partially satisfied) in previous years amounted to CNY1,706 million (2019: CNY1,616 million). The revenue was constrained in prior years mainly because provision was made for sales return, and the relevant customers were high credit risk rated and the collectability of sales consideration was estimated to be low.

Transaction price allocated to remaining performance obligations

As at December 31, 2020, the aggregated amount of transaction price allocated to the remaining performance obligations under the Group's existing customer contracts is CNY96,662 million (2019: CNY96,525 million). This amount mainly represents the remaining performance obligations under the Group's Carrier Business and Enterprise Business contracts. The Group will recognise the revenue in future when control of the corresponding service or product is transferred to the customer as stipulated in note 3(p). 73% of the amount is expected to occur over the next year (2019: 71%), while the remaining portion is expected to occur in the years that follow. The amounts disclosed above do not include any estimated amounts of variable consideration that are constrained.

The Group does not disclose information about remaining performance obligations that have original expected durations of one year or less as permitted by IFRS 15.

Revenue is recognised when a performance obligation is satisfied in accordance with the accounting policies in note 3(p). The timing of payment from customers relative to revenue recognition generates either contract assets or trade receivables for payments received in arrears or contract liabilities for payments received in advance.

Contract assets and contract liabilities are presented in notes 20 and 26 respectively.

9 Other income, net

(CNY million)	Note	2020	2019
Government grants	(i)	**2,785**	1,667
Gain/(loss) on disposal of subsidiaries	(ii)	**592**	(55)
Commissions on individual income tax payments withheld		**504**	453
Impairment of property, plant and equipment, intangible assets, goodwill and right-of-use assets		**(2,170)**	(140)
Factoring expenses		**(811)**	(1,151)
Donation		**(724)**	(183)
Net gain/(loss) on disposal of property, plant and equipment, intangible assets and right-of-use assets		**(205)**	(233)
Others, net		**721**	612
		692	970

(i) During the year ended December 31, 2020, the Group received unconditional government grants of CNY904 million (2019: CNY1,189 million) which were immediately recognised in other income. Conditional government grants of CNY1,881 million (2019: CNY478 million) were recognised in profit or loss.

(ii) On March 6, 2020, the Group sold its submarine business to a third party at a consideration totalling CNY1,004 million, including cash consideration of CNY301 million and 48 million ordinary shares issued by the buyer (included in equity securities measured at FVPL within Other investments and derivatives). A gain on disposal of CNY463 million was recorded.

10 Personnel expenses

(CNY million)	2020	2019
Salaries, wages and other benefits	**139,095**	134,937
Time-based unit plan (TUP)	**9,550**	14,048
Post-employment plans and others		
Defined benefit plan	**5,183**	4,713
Defined contribution plans and others	**12,233**	14,631
	17,416	19,344
	166,061	168,329

TUP

TUP is a profit-sharing and bonus plan based on employee performance for all eligible employees (recipients) in the Group. Under TUP, time-based units (TBUs) are granted to recipients for a term of five years which entitle them to receive an annual cash incentive based on an annual profit-sharing amount and an end-of-term cumulative appreciation amount. Both the annual profit-sharing and the end-of-term appreciation amount are determined at the discretion of the Group. Recipients receive the annual profit-sharing amount in each year following the financial year in which it is earned during the five-year period. TBUs expire on the earlier of the end of the five-year period or the date recipients leave the Group's employment, when the accrued end-of-term appreciation amount will be paid.

Defined contribution plans

The Group contributes to defined contribution retirement plans for eligible employees. The plans are managed either by the governments in the countries where the employees are employed, or by independent trustees. Contribution levels are determined by the relevant laws and regulations concerned.

11 Finance income and expenses

(CNY million)	Note	2020	2019
Interest income on financial assets measured at amortised cost			
– deposits and wealth management products		**3,828**	6,228
– other financial assets		**691**	480
Interest income on financial assets measured at FVOCI		**83**	128
Dividend income		**750**	634
Net gains on non-derivative financial assets mandatorily measured at FVPL	(i)	**1,913**	28
Net gains on disposal of financial assets measured at FVOCI	13(b)	**–**	78
Interest income on lease receivables		**33**	22
Finance income		**7,298**	7,598
Interest expense on loans and borrowings		**(4,779)**	(4,807)
Interest cost on employee benefit obligations		**(600)**	(637)
Interest expense on lease liabilities	29(a)(ii)	**(420)**	(374)
Other interest expense		**(229)**	(252)
Net foreign exchange loss		**(1,638)**	(1,340)
Impairment loss reversals		**5**	–
Bank charges		**(4)**	(10)
Finance expenses		**(7,665)**	(7,420)
Net finance (expenses)/income		**(367)**	178

(i) Non-derivative financial assets mandatorily measured at FVPL mainly represent investment funds and equity securities measured at FVPL.

(ii) During the year ended December 31, 2020, interest expenses of CNY5 million were capitalised (2019: nil).

12 Income tax in the summary consolidated statement of profit or loss and other comprehensive income

Charge for the year

(CNY million)	2020	2019
Current tax		
Provision for the year	**8,855**	9,419
Over provision in respect of prior years	**(221)**	(151)
	8,634	9,268
Deferred tax	**(979)**	6,099
	7,655	15,367

13 Other comprehensive income

(a) Tax effects relating to each component of other comprehensive income

(CNY million)	2020			2019		
	Before-tax amount	**Tax benefit**	**Net-of-tax amount**	Before-tax amount	Tax benefit	Net-of-tax amount
Re-measurement of defined benefit obligations						
– The Group	**1**	**2**	**3**	202	(16)	186
Net change in the fair value and impairment loss of financial assets measured at FVOCI:						
Net change in the fair value of equity investments						
– The Group	**3,018**	**(674)**	**2,344**	184	(36)	148
Net change in the fair value and impairment loss of non-equity financial assets						
– The Group	**(12)**	**1**	**(11)**	(11)	(3)	(14)
	3,006	**(673)**	**2,333**	173	(39)	134
Translation differences on foreign operations						
– The Group	**(3,987)**	**–**	**(3,987)**	1,881	–	1,881
	(980)	**(671)**	**(1,651)**	2,256	(55)	2,201

(b) Components of other comprehensive income, including reclassification adjustments

(CNY million)	**2020**	2019
Net change in the fair value and impairment loss of financial assets measured at FVOCI:		
Changes in fair value recognised during the year	**3,022**	238
Reclassification adjustment for amounts transferred to profit or loss:		
– Gain on derecognition (note 11)	**–**	(78)
Loss allowances recognised during the year	**(16)**	13
Net deferred tax debited to other comprehensive income	**(673)**	(39)
Net movement in the fair value reserve during the year	**2,333**	134

(CNY million)	**2020**	2019
Translation differences on foreign operations:		
Recognised during the year	**(3,995)**	1,820
Reclassification adjustments for amounts transferred to profit or loss:		
– Disposal of subsidiaries	**8**	55
– Disposal of an associate and a joint venture	**–**	6
Net movement in the translation reserve during the year	**(3,987)**	1,881

14 Goodwill and intangible assets

(CNY million)	Goodwill	Software	Patents and royalties (note (a))	Trademark and others	Total
Cost:					
At January 1, 2019	4,382	2,690	10,649	963	18,684
Exchange adjustments	115	12	12	3	142
Additions	–	642	1,674	1,409	3,725
Acquisition of subsidiaries	108	29	277	20	434
Reclassified as assets held for sale	(136)	–	(111)	(156)	(403)
Disposals	–	(967)	(1,080)	(139)	(2,186)
At December 31, 2019	4,469	2,406	11,421	2,100	20,396
At January 1, 2020	**4,469**	**2,406**	**11,421**	**2,100**	**20,396**
Exchange adjustments	**(250)**	**(20)**	**(16)**	**(20)**	**(306)**
Additions	**–**	**549**	**3,105**	**1,013**	**4,667**
Acquisition of a subsidiary	**21**	**–**	**–**	**538**	**559**
Reclassified as assets held for sale	**–**	**(4)**	**(51)**	**(30)**	**(85)**
Disposals	**–**	**(192)**	**(1,080)**	**(303)**	**(1,575)**
At December 31, 2020	**4,240**	**2,739**	**13,379**	**3,298**	**23,656**
Amortisation and impairment:					
At January 1, 2019	4,005	1,950	4,255	510	10,720
Exchange adjustments	97	9	10	4	120
Amortisation for the year	–	513	1,802	632	2,947
Impairment loss	–	11	–	–	11
Reclassified as assets held for sale	–	–	(10)	(54)	(64)
Disposals	–	(964)	(1,059)	(137)	(2,160)
At December 31, 2019	4,102	1,519	4,998	955	11,574
At January 1, 2020	**4,102**	**1,519**	**4,998**	**955**	**11,574**
Exchange adjustments	**(243)**	**(16)**	**(27)**	**(15)**	**(301)**
Amortisation for the year	**–**	**495**	**1,986**	**804**	**3,285**
Impairment loss	**17**	**25**	**1,324**	**–**	**1,366**
Reclassified as assets held for sale	**–**	**(3)**	**(8)**	**(7)**	**(18)**
Disposals	**–**	**(191)**	**(967)**	**(261)**	**(1,419)**
At December 31, 2020	**3,876**	**1,829**	**7,306**	**1,476**	**14,487**
Carrying amount:					
At December 31, 2020	**364**	**910**	**6,073**	**1,822**	**9,169**
At December 31, 2019	367	887	6,423	1,145	8,822

(a) As at December 31, carrying amounts of patents and royalties are analysed as follows:

(CNY million)	2020	2019
Patents	**3,612**	3,286
Royalties	**2,461**	3,137
	6,073	6,423

(b) Based on the use of the related assets, the amortisation charge for the year is allocated to Cost of sales, Research and development expenses, Selling and administrative expenses. Impairment losses are mainly recognised on certain intangible assets with recoverable amounts less than carrying amounts as a result of the Events and are charged to Cost of sales and Other income, net in the summary consolidated statement of profit or loss and other comprehensive income.

(c) As at December 31, 2020 and 2019, all of the carrying amount of goodwill is allocated across multiple CGUs and the amount so allocated to each unit is not significant.

(d) As at December 31, 2020 and 2019, the Group did not hold any intangible assets whose title is restricted or pledged as security for liabilities.

15 Property, plant and equipment

(CNY million)	Freehold land	Buildings	Machinery	Electronic and other equipment	Motor vehicles	Construction in progress	Investment property	Decoration and leasehold improvements	Total
Cost:									
At January 1, 2019	434	22,111	22,660	42,868	566	14,998	323	18,337	122,297
Exchange adjustments	16	24	20	193	(2)	(16)	25	66	326
Additions	1	227	4,230	4,138	84	32,330	–	108	41,118
Acquisition of subsidiaries	–	–	–	1	–	–	–	1	2
Transfer from construction in progress	–	4,759	6,547	16,934	3	(33,229)	–	4,986	–
Disposals	–	(385)	(446)	(1,528)	(60)	(108)	–	(415)	(2,942)
Reclassified as assets held for sale	–	–	(18)	(20)	(1)	(1)	–	(2)	(42)
Hyperinflation adjustments	–	–	1	72	1	–	–	16	90
At December 31, 2019	451	26,736	32,994	62,658	591	13,974	348	23,097	160,849
At January 1, 2020	**451**	**26,736**	**32,994**	**62,658**	**591**	**13,974**	**348**	**23,097**	**160,849**
Exchange adjustments	**(24)**	**(191)**	**(171)**	**(1,115)**	**(12)**	**(96)**	**(12)**	**(257)**	**(1,878)**
Additions	**1**	**2,428**	**1,708**	**1,499**	**25**	**40,912**	**25**	**1,319**	**47,917**
Acquisition of a subsidiary	**–**	**–**	**–**	**1**	**–**	**–**	**–**	**–**	**1**
Transfer from construction in progress	**–**	**2,019**	**6,067**	**20,643**	**13**	**(31,888)**	**–**	**3,146**	**–**
Disposals	**–**	**(19)**	**(249)**	**(1,807)**	**(31)**	**(2)**	**–**	**(317)**	**(2,425)**
Reclassified as assets held for sale	**–**	**–**	**(1,170)**	**(869)**	**–**	**–**	**–**	**–**	**(2,039)**
Hyperinflation adjustments	**–**	**–**	**1**	**132**	**8**	**7**	**–**	**26**	**174**
At December 31, 2020	**428**	**30,973**	**39,180**	**81,142**	**594**	**22,907**	**361**	**27,014**	**202,599**
Accumulated depreciation and impairment:									
At January 1, 2019	–	4,262	8,403	24,672	356	7	88	9,847	47,635
Exchange adjustments	–	2	5	109	(1)	–	1	31	147
Depreciation charge for the year	–	430	3,369	10,834	73	–	9	2,920	17,635
Impairment loss	–	–	31	62	–	8	–	22	123
Disposals	–	(273)	(362)	(1,386)	(53)	(5)	–	(386)	(2,465)
Reclassified as assets held for sale	–	–	(3)	(9)	–	–	–	(1)	(13)
Hyperinflation adjustments	–	–	–	54	1	–	–	13	68
At December 31, 2019	–	4,421	11,443	34,336	376	10	98	12,446	63,130
At January 1, 2020	**–**	**4,421**	**11,443**	**34,336**	**376**	**10**	**98**	**12,446**	**63,130**
Exchange adjustments	**–**	**(17)**	**(40)**	**(531)**	**(11)**	**–**	**(2)**	**(124)**	**(725)**
Depreciation charge for the year	**–**	**923**	**4,289**	**14,346**	**71**	**–**	**6**	**2,912**	**22,547**
Impairment loss	**–**	**–**	**1,310**	**483**	**–**	**5**	**–**	**189**	**1,987**
Disposals	**–**	**–**	**(173)**	**(1,561)**	**(27)**	**(2)**	**–**	**(219)**	**(1,982)**
Reclassified as assets held for sale	**–**	**–**	**(443)**	**(435)**	**–**	**–**	**–**	**–**	**(878)**
Hyperinflation adjustments	**–**	**–**	**–**	**112**	**4**	**–**	**–**	**26**	**142**
At December 31, 2020	**–**	**5,327**	**16,386**	**46,750**	**413**	**13**	**102**	**15,230**	**84,221**
Carrying amount:									
At December 31, 2020	**428**	**25,646**	**22,794**	**34,392**	**181**	**22,894**	**259**	**11,784**	**118,378**
At December 31, 2019	451	22,315	21,551	28,322	215	13,964	250	10,651	97,719

Based on the use of related assets, the depreciation charge for the year is allocated to Cost of sales, Research and development expenses, Selling and administrative expenses. Impairment losses are recognised on assets being idle mainly as a result of the Events and are charged to Cost of sales and Other income, net in the summary consolidated statement of profit or loss and other comprehensive income.

As at December 31, 2020 and 2019, the Group did not hold any property, plant and equipment as collateral for liabilities or contingent liabilities.

Investment property

The fair value of investment property as at December 31, 2020 is estimated by management to be CNY380 million (2019: CNY417 million).

The fair value of investment property is determined by the Group with reference to market conditions and discounted cash flow forecasts, taking into account current lease agreements on an arm's-length basis.

16 Interests in associates and joint ventures

(CNY million)	**2020**	2019
Associates	**1,672**	674
Joint ventures	**167**	57
	1,839	731

Associates and joint ventures are accounted for using the equity method. None of the associates and joint ventures is individually significant.

Aggregate carrying amounts and summarised financial information of associates and joint ventures are as follows:

	Associates		Joint ventures	
(CNY million)	**2020**	2019	**2020**	2019
Aggregate carrying amount	**1,672**	674	**167**	57
Aggregate amount of the Group's share of those associates' and joint ventures'				
Profit for the year	**170**	10	**–**	–
Total comprehensive income	**170**	10	**–**	–

For the years ended December 31, 2020 and 2019, no dividend was declared or paid by the associates or joint ventures.

17 Other investments and derivatives

(CNY million)	Note	2020	2019
Financial assets measured at amortised cost			
Investment funds	(i)	**2,000**	76,800
Fixed deposits		**34,375**	60,930
Debt securities	(ii)	**4,595**	–
		40,970	137,730
Less: Loss allowances		**(4)**	(10)
		40,966	137,720
Financial assets measured at FVPL			
Investment funds	(i)	**143,769**	66,324
Equity securities		**1,097**	372
Foreign exchange derivatives		**224**	159
Compound financial instruments	(iv)	**973**	168
		146,063	67,023
Financial assets measured at FVOCI			
Debt securities	(ii)	**3,272**	1,766
Equity securities	(iii)	**4,635**	1,113
		7,907	2,879
		194,936	207,622
Non-current portion		**10,244**	7,266
Current portion		**184,692**	200,356
		194,936	207,622

(i) Investment funds comprise short-term investments in wealth management products, money market funds and structured deposits. Investment funds with guaranteed principal and interest are measured at amortised cost where the Group intends to hold them to maturity; other investment funds are measured at FVPL where the Group intends to sell them or where the investments do not give rise to cash flows which are solely principal and interest.

(ii) Debt securities comprise investments in fixed rate bonds, floating rate notes, certificates of deposit, commercial papers, etc. Debt securities are measured at amortised cost where the Group intends to hold them to collect contractual cash flows. Other debt securities are classified as FVOCI since they are held to collect and for sale, and also give rise to cash flows which are solely principal and interest. The loss allowances on debt securities at FVOCI amounted to CNY723 thousand as at December 31, 2020 (2019: CNY302 thousand).

(iii) The Group designated equity investments at FVOCI where they are considered strategic to the Group. Dividend income received on these investments amounted to CNY2 million (2019: CNY4 million) for the year ended December 31, 2020.

(iv) Compound financial instruments comprise equity instruments with redemption options and convertible notes which are designated at FVPL.

(v) As at December 31, 2020 and 2019, the Group did not hold any investments pledged as collateral for liabilities or contingent liabilities.

18 Deferred tax assets/(liabilities)

(a) Components of recognised deferred tax assets/(liabilities)

(CNY million)	2020	2019
Accruals, provisions and unperformed obligations	**6,336**	7,023
Depreciation of property, plant and equipment	**(2,139)**	(1,831)
Provision for loss allowances	**353**	303
Write-down of inventories	**617**	372
Unrealised profit	**3,801**	3,195
Tax losses	**1,726**	1,331
Undistributed profits of subsidiaries	**(1,297)**	(1,641)
Others	**(570)**	370
Total	**8,827**	9,122

Reconciliation to the summary consolidated statement of financial position:

(CNY million)	2020	2019
Net deferred tax assets recognised in the summary consolidated statement of financial position	**10,748**	10,877
Net deferred tax liabilities recognised in the summary consolidated statement of financial position	**(1,921)**	(1,755)
	8,827	9,122

(b) Deferred tax assets not recognised

Deferred tax assets were not recognised in relation to certain unused tax losses, deductible temporary differences and unused tax credits in accordance with the accounting policy set out in note 3(n).

As at December 31, 2020, deferred tax assets have not been recognised in respect of unused tax losses amounting to CNY32,068 million (2019: CNY16,065 million) and deductible temporary differences amounting to CNY155,083 million (2019: CNY134,955 million); additionally, unused tax credits relating to overseas withholding income tax and research and development expenditure totalling CNY1,739 million (2019: CNY3,099 million) have not been recognised as deferred tax assets.

As permitted by the relevant income tax laws in the PRC, a group entity chose to utilise overseas withholding tax credits from current and previous years against taxable income from its foreign operations in the current year, in priority to utilising unused tax losses from current and previous years. This resulted in a decrease in unrecognised overseas withholding tax credits as at December 31, 2020.

19 Inventories and other contract costs

(CNY million)	2020	2019
Inventories		
Raw materials	**89,196**	58,520
Manufacturing work in progress	**24,869**	27,103
Finished goods	**34,384**	52,241
Dispatched goods and contract work in progress	**12,534**	20,527
Other inventories	**6,320**	6,970
	167,303	165,361
Other contract costs	**364**	2,029
	167,667	167,390

As at December 31, 2020 and 2019, the Group did not hold any inventories pledged as collateral for liabilities or contingent liabilities.

(a) Amount of inventories recognised as an expense and included in profit or loss:

(CNY million)	2020	2019
Carrying amount of inventories sold	**460,028**	456,577
Write-down of inventories	**11,308**	3,796
	471,336	460,373

The Group wrote down certain raw materials and manufacturing work in progress that may not be capable of being used in production as a result of the Events disclosed in note 5(c). The write-down is included in Cost of sales.

(b) Contract costs

The Group's contract costs represent contract fulfilment costs incurred to deliver services to customers, which will be charged to Cost of sales when the corresponding performance obligations are satisfied.

No provision for impairment was required on contract costs as at December 31, 2020 or 2019.

20 Contract assets

(CNY million)	2020	2019
Gross carrying amount	**53,924**	53,389
Less: loss allowances (note 21(b))	**(322)**	(377)
	53,602	53,012
Non-current portion	**1,648**	2,200
Current portion	**51,954**	50,812
	53,602	53,012

Contract assets relate to the Group's rights to consideration for performance obligations that have been satisfied but not billed, primarily from Carrier Business and Enterprise Business contracts. Contract assets are transferred to receivables when the right to payment becomes unconditional, other than the passage of time. This usually occurs when the Group issues an invoice to the customer in accordance with the billing milestones agreed in the contract, which are generally upon passing of the product acceptance tests.

Significant changes in the gross balances of contract assets during the year are as follows:

(CNY million)	2020	2019
At January 1	**53,389**	48,693
Addition during the year	**50,497**	50,193
Transfers to receivables or reversal during the year	**(48,375)**	(45,163)
Reclassified as assets held for sale	**(1)**	(702)
Exchange adjustments	**(1,586)**	368
At December 31	**53,924**	53,389

21 Trade and bills receivable

(CNY million)	Note	2020	2019
Trade receivables			
Trade receivables from third parties	(i)	**74,999**	85,217
Trade receivables from related parties	31	**27**	77
		75,026	85,294
Bills receivable			
Bank acceptance bills		**689**	1,821
Commercial acceptance bills		**2,140**	2,245
Letters of credit		**849**	705
	(ii)	**3,678**	4,771
		78,704	90,065
Non-current portion		**3,963**	4,540
Current portion		**74,741**	85,525
		78,704	90,065

(i) As at December 31, 2020, the Group's trade receivables that may be sold through reverse factoring arrangements amounted to CNY6,344 million (2019: CNY7,805 million). These trade receivables are managed in a business model whose objective is achieved by both collection and sale, and are therefore measured at FVOCI.

(ii) The Group's bills receivable are due within twelve months from issuance date.

(a) Ageing analysis

At the end of the reporting period, the ageing analysis of trade receivables is as follows:

(CNY million)	2020	2019
Not past due	**63,903**	68,378
Less than 90 days past due	**8,349**	13,249
90 days to 1 year past due	**4,548**	5,409
1 year and above past due	**1,631**	1,783
	78,431	88,819
Less: loss allowances	**(3,405)**	(3,525)
	75,026	85,294

Trade receivables are generally due within 30 days from the date of billing.

(b) Loss allowances of trade receivables and contract assets

Loss allowances in respect of trade receivables and contract assets are recorded using an allowance account unless the Group is satisfied that there is no reasonable expectation of further recoveries in which case the receivables are written off (see note 3(e)(i)).

The movement in loss allowances in respect of trade receivables and contract assets during the year is as follows:

(CNY million)	Note	2020	2019
At January 1		**3,953**	4,265
Loss allowances recognised		**266**	46
Uncollectible amounts written-off		**(233)**	(420)
Collection of previously written-off debtors		**31**	49
Reclassified as assets held for sale		**(2)**	(4)
Disposal of a subsidiary		**(2)**	–
Exchange adjustments		**(251)**	17
At December 31		**3,762**	3,953
Representing loss allowance			
– on trade receivables		**3,405**	3,525
– on contract assets	20	**322**	377
– included in OCI on trade receivables at FVOCI		**35**	51
Total		**3,762**	3,953

Loss allowances recognised on trade receivables and contract assets are included in Selling and administrative expenses.

During the year ended December 31, 2020, loss allowances recognised increased following the Group's credit risk management policies; out of the uncollectible amounts written-off, CNY195 million was due from customers in Latin American, Southern African and Eurasian markets.

(c) Transferred trade receivables not derecognised in their entirety

As at December 31, 2020, the Group's undue trade receivables with the face value of CNY63 million (2019: CNY25 million) have been transferred to banks and the Group received the corresponding remittance of CNY63 million (2019: CNY25 million). As these transactions are with recourse, the Group therefore has retained substantially all the risks and rewards and continues to recognise these trade receivables and the relevant financing as loans and borrowings (note 24).

As at December 31, 2020, the Group's trade receivables with the carrying amount of CNY3,162 million (2019: CNY3,333 million) have been transferred to banks. These trade receivables are covered by insurance policies issued by third party credit insurance agencies with the transferees as the loss payees. In these transactions, the Group retains risk not covered by the insurance, therefore the Group has neither transferred nor retained substantially all the risks and rewards in relation to the trade receivables and the Group is considered to have retained control of these trade receivables as the transferees have no practical ability to sell these trade receivables without the Group's consent. As such, the Group continues to recognise the transferred trade receivables of CNY695 million (2019: CNY808 million) and associated liabilities of CNY750 million (2019: CNY874 million) to the extent of its continuing involvement. The associated liabilities are included in Other liabilities. As at December 31, 2020, loss allowances of CNY476 million (2019: CNY554 million) were made on these transferred receivables.

(d) Collateral

Except as disclosed in note 21(c), as at December 31, 2020 and 2019, the Group did not hold any other trade and bills receivable pledged as collateral for liabilities or contingent liabilities.

22 Other assets

(CNY million)	Note	2020	2019
Advance payments to suppliers		**8,757**	2,868
Tax receivables on unbilled deliveries	(i)	**4,947**	4,760
Income tax related assets		**2,947**	2,215
Other tax related assets		**10,680**	8,659
Pledged deposits with banks		**1,329**	2,116
Restricted deposits relating to government grants	(ii)	**976**	1,259
Other third party receivables		**10,943**	8,810
Other long-term deferred assets		**404**	340
Related party receivables	31	**396**	376
Prepayment for acquisition of long-term assets		**4,889**	755
Assets held for sale	(iii)	**4,222**	2,164
		50,490	34,322
Non-current portion		**11,048**	5,196
Current portion		**39,442**	29,126
		50,490	34,322

(i) Under PRC tax regulations, value added tax (VAT) and other surcharges are payable at the earlier of delivery of goods and services or issuance of VAT invoices. These balances represent VAT and surcharge receivable from customers on unbilled deliveries and will be reclassified to trade receivables upon billing.

(ii) Conditional government grants received by the Group are required to be deposited in restricted bank accounts until the government acceptance documents for the related research and development projects are obtained.

(iii) As at December 31, 2020 and 2019, assets held for sale and liabilities directly associated with the assets held for sale were relating to sale of Honor business (note 34) and sale of submarine business (note 9(ii)) respectively, which mainly include cash and cash equivalents, inventories, equipment and machinery, intangible assets, operating receivables and payables, and contract liabilities.

23 Cash and cash equivalents

(CNY million)	2020	2019
Cash on hand	**6**	5
Deposits with banks and other financial institutions	**162,317**	142,374
Highly liquid short-term investments	**10,424**	28,200
Deposits with third party merchants	**151**	105
Cash and cash equivalents in the summary consolidated statement of financial position	**172,898**	170,684
Reclassified as assets held for sale	**152**	386
Cash and cash equivalents in the summary consolidated statement of cash flows	**173,050**	171,070

Short-term investments included in cash and cash equivalents are highly liquid, readily convertible into known amounts of cash and subject to an insignificant risk of changes in value. As at December 31, 2020, these short-term investments comprised wealth management products of CNY7,200 million (2019: CNY26,200 million), reverse repurchase agreements with maturities of less than three months of nil (2019: CNY2,000 million) and money market funds of CNY3,224 million (2019: CNY1 thousand). The wealth management products are purchased from commercial banks with maturities of less than three months or with maturities of less than one year which can be redeemed at any time without penalty and are measured at amortised cost.

As at December 31, 2020, cash and cash equivalents of CNY963 million (2019: CNY488 million) were held in countries where exchange controls or other legal restrictions were in force.

As at December 31, 2020, the Group held cash equivalent to CNY1,555 million (2019: CNY2,940 million) in two multicurrency pooling arrangements to meet its day to day cash requirements and also to economically hedge foreign exchange rate movements arising from foreign currency cash flows. The facilities allow participating subsidiaries to place deposits and borrow funds from the counterparty banks in any freely convertible currency subject to the overall balance on the pools being positive.

As at December 31, 2020 and 2019, the Group did not hold any cash and cash equivalents pledged as collateral for liabilities or contingent liabilities.

24 Loans and borrowings

Contractual terms of the Group's loans and borrowings are summarised below.

(CNY million)	2020	2019
Short-term loans and borrowings:		
– Unsecured	**177**	733
Long-term loans and borrowings:		
– Intra-group guaranteed	**691**	903
– Trade receivables financing (note 21(c))	**63**	25
– Unsecured	**96,691**	73,247
– Corporate bonds	**44,189**	37,254
	141,634	111,429
	141,811	112,162
Non-current portion	**141,270**	104,531
Current portion	**541**	7,631
	141,811	112,162

Intra-group guaranteed loans are external borrowings which have been raised by one group entity but contractual payments of principal and interest are guaranteed by another group entity.

Terms and repayment schedule

A summary of the main terms and conditions of outstanding loans and borrowings are as follows:

At December 31, 2020

(CNY million)		Interest rate	Total	1 year or less	1 to 5 years	Over 5 years
Intra-group guaranteed bank loans:						
South African Rand (ZAR)	variable	5.10% p.a.	**123**	**59**	**64**	**–**
CNY	variable	4.41% ~ 4.90% p.a.	**568**	**205**	**363**	**–**
			691	**264**	**427**	**–**
Trade receivables financing:						
United States Dollar (USD)	variable	1.84% ~ 4.41% p.a.	**63**	**5**	**54**	**4**
Unsecured bank loans:						
CNY	variable	3.74% ~ 4.75% p.a.	**57,264**	**95**	**49,239**	**7,930**
Russian Ruble (RUB)	variable	7.50% ~ 9.00% p.a.	**16**	**16**	**–**	**–**
Euro (EUR)	fixed	0.50% p.a.	**1**	**–**	**1**	**–**
EUR	variable	0.75% ~ 1.00% p.a.	**4,482**	**119**	**1,846**	**2,517**
Hungarian Forint (HUF)	fixed	4.36% p.a.	**70**	**–**	**–**	**70**
Hong Kong Dollar (HKD)	variable	1.20% ~ 1.67% p.a.	**15,548**	**–**	**7,449**	**8,099**
Saudi Arabian Riyal (SAR)	variable	2.61% ~ 3.90% p.a.	**42**	**42**	**–**	**–**
USD	variable	1.17% ~ 1.19% p.a.	**19,445**	**–**	**19,445**	**–**
			96,868	**272**	**77,980**	**18,616**
Corporate bonds:						
CNY	fixed	3.09% ~ 3.49% p.a.	**14,970**	**–**	**14,970**	**–**
USD	fixed	3.25% ~ 4.13% p.a.	**29,219**	**–**	**12,990**	**16,229**
			44,189	**–**	**27,960**	**16,229**
			141,811	**541**	**106,421**	**34,849**

At December 31, 2019

(CNY million)		Interest rate	Total	1 year or less	1 to 5 years	Over 5 years
Intra-group guaranteed bank loans:						
ZAR	variable	8.53% p.a.	198	61	137	–
CNY	variable	4.41% ~ 4.90% p.a.	705	136	569	–
			903	197	706	–
Trade receivables financing:						
USD	variable	5.94% p.a.	25	5	14	6
Unsecured bank loans:						
CNY	variable	4.28% ~ 4.75% p.a.	42,029	6,695	35,334	–
RUB	variable	8.46% ~ 10.20% p.a.	293	293	–	–
EUR	variable	1.55% p.a.	1	1	–	–
HUF	fixed	4.36% p.a.	84	–	–	84
HKD	variable	3.43% ~ 3.83% p.a.	10,391	41	6,223	4,127
Philippine Peso	variable	4.58% ~ 4.60% p.a.	370	370	–	–
SAR	variable	4.03% p.a.	29	29	–	–
USD	variable	2.86% ~ 2.91% p.a.	20,783	–	20,783	–
			73,980	7,429	62,340	4,211
Corporate bonds:						
CNY	fixed	3.48% ~ 3.49% p.a.	5,984	–	5,984	–
USD	fixed	3.25% ~ 4.13% p.a.	31,270	–	6,970	24,300
			37,254	–	12,954	24,300
			112,162	7,631	76,014	28,517

Certain of the Group's banking facilities are subject to compliance with covenants relating to financial ratios. In the event of breach, the drawn down facilities would become payable on demand. The Group regularly monitors its compliance with these covenants. As at December 31, 2020 and 2019, no covenants had been breached.

Corporate bonds

Corporate bonds were issued by the Company and its two wholly-owned subsidiaries, Proven Honour Capital Limited (Proven Honour) and Proven Glory Capital Limited (Proven Glory). Main terms of the outstanding corporate bonds are as follows:

Corporate bond	Issuer	Issue date	Principal amount million	Interest rate per annum	Term
USD bond	Proven Honour	May 19, 2015	1,000	4.125%	10 years
USD bond	Proven Honour	May 6, 2016	2,000	4.125%	10 years
USD bond	Proven Glory	February 21, 2017	1,000	3.250%	5 years
USD bond	Proven Glory	February 21, 2017	500	4.000%	10 years
CNY medium-term note	The Company	October 24, 2019	3,000	3.480%	3 years
CNY medium-term note	The Company	November 7, 2019	3,000	3.490%	3 years
CNY medium-term note	The Company	March 6, 2020	2,000	3.240%	5 years
CNY medium-term note	The Company	March 23, 2020	2,000	3.380%	5 years
CNY medium-term note	The Company	April 24, 2020	2,000	3.090%	5 years
CNY medium-term note	The Company	June 24, 2020	3,000	3.280%	3 years

USD bonds issued by Proven Honour and Proven Glory are fully guaranteed by the Company.

Reconciliation of movements of major liabilities to cash flows arising from financing activities

Year ended December 31, 2020

Related liabilities/ (CNY million)	Other loans and borrowings	Corporate bonds	Long-term assets instalments	Lease liabilities	Interest payable related to financing activities
Balance at January 1, 2020	**74,908**	**37,254**	**3,674**	**9,687**	**518**
Proceeds from borrowings	**62,946**	**8,968**	**–**	**–**	**–**
Repayment of borrowings	**(32,397)**	**–**	**–**	**–**	**–**
Long-term assets acquired	**–**	**–**	**1,179**	**–**	**–**
Instalment payments	**–**	**–**	**(1,738)**	**–**	**–**
New leases	**–**	**–**	**–**	**3,201**	**–**
Payment of lease liabilities	**–**	**–**	**–**	**(3,063)**	**–**
Interest incurred during the year	**–**	**–**	**–**	**420**	**4,525**
Interest paid	**–**	**–**	**–**	**(251)**	**(4,403)**
Amortisation of capitalised interests and transaction costs	**92**	**39**	**132**	**–**	**–**
Issuance cost payable	**–**	**8**	**–**	**–**	**–**
Non-cash transaction (note)	**(5,110)**	**–**	**–**	**–**	**–**
Termination of leases	**–**	**–**	**–**	**(39)**	**–**
Reclassified as liabilities directly associated with the assets held for sale	**(95)**	**–**	**–**	**(19)**	**–**
Exchange adjustments	**(2,722)**	**(2,080)**	**14**	**(286)**	**(49)**
Balance at December 31, 2020	**97,622**	**44,189**	**3,261**	**9,650**	**591**

Year ended December 31, 2019

Related liabilities/ (CNY million)	Other loans and borrowings	Corporate bonds	Long-term assets instalments	Lease liabilities	Interest payable related to financing activities
Balance at January 1, 2019	39,274	30,667	4,055	7,303	392
Net proceeds from borrowings	77,622	5,991	–	–	–
Repayment of borrowings	(35,549)	–	–	–	–
Long-term assets acquired	–	–	454	–	–
Instalment payments	–	–	(1,111)	–	–
New leases	–	–	–	5,076	–
Payment of lease liabilities	–	–	–	(2,378)	–
Interest incurred during the year	–	–	–	374	4,040
Interest paid	–	–	–	(179)	(3,855)
Amortisation of capitalised interests and transaction costs	57	32	92	–	–
Issuance cost payable	–	(8)	–	–	–
Non-cash transaction (note)	(6,900)	–	–	–	–
Termination of leases	–	–	–	(354)	–
Reclassified as liabilities directly associated with the assets held for sale	–	–	–	(13)	–
Exchange adjustments	404	572	184	(142)	(59)
Balance at December 31, 2019	74,908	37,254	3,674	9,687	518

Note: Under certain financing arrangements, the Group's entitlement to consideration from customer contracts is transferred for cash to financial institutions before the Group obtains unconditional rights, giving rise to financial liabilities included in loans and borrowings. During the year ended December 31, 2020, the Group derecognised loans and borrowings equivalent to CNY5,110 million (2019: CNY6,900 million) under these arrangements upon becoming unconditionally entitled to the relevant contract consideration.

25 Trade and bills payable

(CNY million)	Note	2020	2019
Trade payables			
Related party trade payables	31	**702**	585
Third party trade payables		**74,163**	135,069
		74,865	135,654
Bills payable			
Bank acceptance bills		**645**	5,187
Letters of credit payable		**3,467**	1,344
		4,112	6,531
		78,977	142,185

26 Contract liabilities

(CNY million)	2020	2019
Consideration received in advance of performance	**14,561**	10,726
Billing in advance of performance	**57,387**	58,601
	71,948	69,327

Significant changes in contract liabilities during the year were as follows:

(CNY million)	2020	2019
At January 1	**69,327**	58,278
Revenue recognised that was included in the contract liability balance at the beginning of the year	**(51,472)**	(45,101)
Increases due to cash received or billing for unperformed obligations	**56,477**	55,878
Reclassified as liabilities directly associated with the assets held for sale	**(141)**	(348)
Exchange adjustments	**(2,243)**	620
At December 31	**71,948**	69,327

27 Other liabilities

(CNY million)	Note	2020	2019
Accrued expenses		**33,098**	42,287
Refund liabilities	(i)	**18,430**	24,141
Other taxes payable		**9,899**	9,288
Due in relation to property, plant and equipment		**9,213**	9,910
Due in relation to intangible assets		**3,954**	5,102
Foreign exchange derivatives		**205**	165
Others		**32,455**	16,901
Liabilities directly associated with the assets held for sale	22(iii)	**823**	1,368
		108,077	109,162
Non-current portion		**3,769**	3,157
Current portion		**104,308**	106,005
		108,077	109,162

(i) Refund liabilities mainly comprise the rebates and other sales-based incentives to customers.

28 Provisions

(CNY million)	Note	2020	2019
Provision for warranties	(b)	**5,023**	5,740
Onerous contracts with customers		**1,049**	1,692
Onerous contracts with suppliers	(c)	**15,417**	4,548
Others	(d)	**2,803**	3,569
		24,292	15,549

(a) Movement in provisions during the year is shown as below:

(CNY million)	Provision for warranties	Onerous contracts with customers	Onerous contracts with suppliers	Others	Total
At January 1, 2020	**5,740**	**1,692**	**4,548**	**3,569**	**15,549**
Provisions made, net of reversal	**4,970**	**127**	**11,236**	**258**	**16,591**
Provisions utilised	**(5,541)**	**(755)**	**(367)**	**(213)**	**(6,876)**
Reclassified as liabilities directly associated with the assets held for sale	**(38)**	**–**	**–**	**–**	**(38)**
Exchange adjustments	**(108)**	**(15)**	**–**	**(811)**	**(934)**
At December 31, 2020	**5,023**	**1,049**	**15,417**	**2,803**	**24,292**

(b) Provision for warranties

Provision for warranties relates mainly to products sold during the year and is determined based on estimates made from historical warranty data associated with similar products and the amount of products covered by warranty at the end of the reporting period and their corresponding remaining warranty periods. Most claims are expected to be settled within one year.

(c) Provision for onerous contracts with suppliers

The Group has entered into certain non-cancellable procurement agreements in its normal course of business. As a result of the Events disclosed in note 5(c), certain items under these procurement agreements may not be capable of being used in production and provision has been made for the estimated losses arising from fulfilling, amending or terminating relevant agreements in accordance with the accounting policy set out in note 3(o). The provision is charged to Cost of sales.

(d) Others

Others are mainly provisions for outstanding claims, cases and disputes.

29 Leases

(a) As a lessee

The Group leases office premises, staff apartments, warehouses, production equipments and motor vehicles in its normal course of business. These leases typically run for an initial period of one to five years. Some property leases contain extension options after the contract period and only a limited number of leases comprise variable payments. The Group also holds land use rights in the PRC, which are recognised as right-of-use assets at the date the Group became entitled to the rights.

Information about leases for which the Group is a lessee is presented below.

(i) Right-of-use assets

(CNY million)	Land use rights	Buildings	Motor vehicles and others	Total
At January 1, 2019	6,896	6,513	740	14,149
Depreciation charge for the year	(176)	(2,340)	(378)	(2,894)
Additions	1,676	4,650	426	6,752
Derecognition	(209)	(149)	(204)	(562)
Hyperinflation adjustments	–	8	1	9
Reclassified as assets held for sale	–	(13)	–	(13)
Impairment loss	–	(53)	–	(53)
Exchange adjustments	(13)	26	16	29
At December 31, 2019	8,174	8,642	601	17,417
At January 1, 2020	**8,174**	**8,642**	**601**	**17,417**
Depreciation charge for the year	**(206)**	**(2,769)**	**(478)**	**(3,453)**
Additions	**1,915**	**2,660**	**589**	**5,164**
Derecognition	**(45)**	**(83)**	**(2)**	**(130)**
Hyperinflation adjustments	**–**	**19**	**(1)**	**18**
Reclassified as assets held for sale	**–**	**(18)**	**–**	**(18)**
Disposal of a subsidiary	**–**	**(1)**	**–**	**(1)**
Transfer to investment property	**(55)**	**–**	**–**	**(55)**
Impairment loss	**–**	**(220)**	**(4)**	**(224)**
Exchange adjustments	**(7)**	**(268)**	**(20)**	**(295)**
At December 31, 2020	**9,776**	**7,962**	**685**	**18,423**

During the years ended December 31, 2020 and 2019, certain right-of-use assets were derecognised as a result of lease cancellation or entering into finance sub-leases.

(ii) Amounts recognised in profit or loss

(CNY million)	Note	2020	2019
Interest expenses on lease liabilities	11	**420**	374
Expenses relating to short-term leases		**913**	1,747
Expenses relating to leases of low-value assets, excluding short-term leases of low-value assets		**38**	41
Variable lease payments not included in the measurement of lease liabilities		**9**	5
Income from subleasing right-of-use assets		**58**	66

(iii) Amounts recognised in summary consolidated statement of cash flows are disclosed in note 24.

(b) As a lessor

Most of the Group's leases are operating leases under which certain properties are leased out (see note 8).

As at December 31, a maturity analysis of undiscounted lease payments to be received after the reporting date is as follows:

(CNY million)	2020	2019
Within 1 year	**69**	59
After 1 year but within 2 years	**57**	45
After 2 years but within 3 years	**26**	31
After 3 years but within 4 years	**12**	11
After 4 years but within 5 years	**9**	11
After 5 years	**72**	68
	245	225

30 Capital commitments

(CNY million)	2020	2019
Contracted for acquisition and construction of long-term assets	**9,641**	15,768
Investment commitment	**386**	141
Total	**10,027**	15,909

31 Related parties

A related party is a person or an entity that has control or joint control or significant influence over the Group, or is a member of its key management personnel, or is member of the Group, including joint ventures and associates.

Transactions between the Group and related parties are conducted on an arm's length basis. Outstanding receivables and payables with related parties are collected or paid in accordance with contracts, without additional interest or collateral.

Details of the Group's significant transactions with related parties are set out below.

Transactions with related parties

(CNY million)	2020	
	Sales of goods and services	Purchase of goods and services
Associates	**2,567**	**1,422**

(CNY million)	2019	
	Sales of goods and services	Purchase of goods and services
An associate	1,589	894

Balances with related parties

(CNY million)	December 31, 2020					
	Trade receivables	Contract assets	Other assets	Trade payables	Contract liabilities	Other liabilities
Associates	**27**	**7**	**396**	**702**	**99**	**470**

(CNY million)	December 31, 2019					
	Trade receivables	Contract assets	Other assets	Trade payables	Contract liabilities	Other liabilities
An associate	77	16	376	585	17	415

32 Group enterprises

(a) Parent and ultimate controlling party

The Group's ultimate controlling party is the Union of Huawei Investment & Holding Co., Ltd.

(b) Major subsidiaries

Name of subsidiaries	Place of incorporation and business	Proportion of ownership interest		Principal activities
		2020	2019	
Huawei Technologies Co., Ltd.	PRC	**100%**	100%	Development, manufacture and sale of telecommunication and related products and provision of support and maintenance services
Huawei Device Co., Ltd.	PRC	**100%**	100%	Development, manufacture and sale of mobile communication products and ancillaries
Huawei Machine Co., Ltd.	PRC	**100%**	100%	Manufacture of telecommunication products
Shanghai Huawei Technologies Co., Ltd.	PRC	**100%**	100%	Development of telecommunication products
Beijing Huawei Digital Technologies Co., Ltd.	PRC	**100%**	100%	Development of telecommunication products
Huawei Tech. Investment Co., Limited	Hong Kong	**100%**	100%	Trading of materials
Huawei International Co. Limited	Hong Kong	**100%**	100%	Distribution of telecommunication products
Huawei International Pte. Ltd.	Singapore	**100%**	100%	Distribution of telecommunication products
Huawei Technologies Japan K.K.	Japan	**100%**	100%	Development and sale of telecommunication products and ancillary services
Huawei Technologies Deutschland GmbH	Germany	**100%**	100%	Development and sale of telecommunication products and ancillary services
Huawei Device (Shenzhen) Co., Ltd.	PRC	**100%**	100%	Development, manufacture and sale of mobile communication products and ancillaries
Huawei Device (Hong Kong) Co., Limited	Hong Kong	**100%**	100%	Sale and related services of mobile communication products and ancillaries
Huawei Technical Service Co., Ltd	PRC	**100%**	100%	Installation and maintenance of telecommunication products and ancillaries, including consultancy
Huawei Software Technologies Co., Ltd.	PRC	**100%**	100%	Development, manufacture and sale of telecommunication software and related products and services. Sale of cloud business
HiSilicon Technologies Co., Ltd.	PRC	**100%**	100%	Development and sale of semiconductors
HiSilicon (Shanghai) Technologies CO., LIMITED	PRC	**100%**	100%	Development and sale of semiconductors
HiSilicon Optoelectronics Co., Ltd.	PRC	**100%**	100%	Development, manufacture and sale of optoelectronic products related to information technology
Huawei Digital Technologies (Suzhou) Co., Ltd.	PRC	**100%**	100%	Development and sale of inverter

Name of subsidiaries	Place of incorporation and business	Proportion of ownership interest		Principal activities
		2020	2019	
Huawei Technologies Coöperatief U.A.	Netherlands	**100%**	100%	Intermediate parent company for certain overseas subsidiaries
Huawei Global Finance (UK) Limited	United Kingdom	**100%**	100%	Treasury and risk management
Huawei Global Finance (HK) Co., Limited	Hong Kong	**100%**	100%	Treasury Management
Proven Honour	British Virgin Islands	**100%**	100%	Financing
Proven Glory	British Virgin Islands	**100%**	100%	Financing

(c) Acquisition of a subsidiary

During the year ended December 31, 2020, the Group acquired entire equity interests in a company from a third-party selling shareholder at aggregate consideration equivalent to CNY596 million. The business combination is not significant to the Group.

33 Contingent liabilities

(a) On September 2, 2014 (dates in note 33 are in U.S. time), T-Mobile USA, Inc. ("T-Mobile") filed a civil action against the Group's subsidiary, Huawei Device USA Inc., in relation to the alleged misappropriation of trade secrets relating to certain of T-Mobile's mobile phone test equipment. The two parties reached a settlement on November 8, 2017.

On January 16, 2019, the United States Department of Justice issued an indictment against Huawei Device USA Inc. and Huawei Device Co., Ltd., containing 10 charges in relation to the alleged theft of trade secrets relating to the above equipment and alleged wire fraud and obstruction of justice. The charges relate to the years from 2012 to 2014.

(b) On January 24, 2019, the United States Department of Justice issued an indictment against Huawei Technologies Co., Ltd., Huawei Device USA Inc. and other parties. The indictment contains 13 charges in relation to alleged bank and wire fraud, violation of the International Emergency Economic Powers Act of the United States with respect to certain transactions involving Iran, and associated matters.

On February 13, 2020, the United States Department of Justice issued a superseding indictment which, on top of the charges filed on January 24, 2019, added Huawei Device Co., Ltd. and Futurewei Technologies, Inc. as defendants, and added 3 new charges of alleged racketeering conspiracy, alleged conspiracy to steal trade secrets and alleged conspiracy to commit wire fraud. The superseding indictment also includes new allegations including the defendants' alleged involvement in transactions involving North Korea and Iran.

The Group has engaged external counsels to assist it in respect of the matters referred to in (a) and (b) above. With regard to the matter referred to in (a) above, on March 17, 2020, the US Government and the defendants filed a motion requesting the trial to be continued until October 18, 2021 due to the complexity of the charges contained in this indictment, its overlapping with the superseding indictment issued on February 13, 2020 referred to in (b) above and the difficulties for the parties to prepare for the trial as a result of the COVID-19 pandemic. The judge granted the request for continuance and reset the trial date to October 18, 2021. As a result of the continuing outbreak of the pandemic, the US Government and the defendants filed a further motion on February 23, 2021 requesting the trial to be continued until October 17, 2022, and the judge granted the request on February 24, 2021. With regard to the matter referred to in (b) above, it is currently in the process of pre-trial discovery and the trial date has not yet be scheduled.

Given the relatively early stage of these proceedings, as at the date of approval of these financial statements, management considers that both the timing and the outcome of these matters are inherently uncertain, and that the amount of any possible obligation of the Group, if any, cannot be reliably estimated. Accordingly, these indictments give rise to contingent liabilities for the Group and no provision has been made in this regard in these financial statements. It is also not practicable at this stage for the Group to disclose an estimate of the possible future financial effect on the Group's financial statements of these matters.

34 Sale of Honor business

In 2020 the Group reached an agreement with Shenzhen Zhixin New Information Technology Co., Ltd. (Shenzhen Zhixin) to sell the entire Honor business (one of the important brands and components of the Group's Consumer Business) to Shenzhen Zhixin. On November 17, 2020, the Group transferred the entire wholly owned equity interests in Honor Device Co., Ltd. (Honor Device) to Shenzhen Zhixin. Handover of Honor business related assets has been delayed by the COVID-19 pandemic and relevant matters and will be completed no later than June 30, 2021. According to the contract terms, Shenzhen Zhixin will pay the consideration in instalments and there exits uncertainty over the ultimate consideration the Group is entitled to.

The cash flows from the sales deposit of CNY10,000 million received during the year are included in Other liabilities in the consolidated statement of financial position and presented as investing activities in the consolidated statement of cash flows. As at December 31, 2020, the assets and liabilities related to Honor business were separately presented as Assets held for sale and Liabilities directly associated with the assets held for sale within Other assets (note 22) and Other liabilities (note 27) respectively.

35 Financial impact of COVID-19

During the year, the COVID-19 pandemic caused serious disruption to trade and business activity worldwide, and economic uncertainty and risk have increased significantly. The telecoms industry, however, is a vital part of the social and economic infrastructure, and has been less affected than others. The pandemic has accelerated the digital transformation of many industries and sped up the expansion of the digital economy and e-commerce. The Group acted decisively to safeguard the health of its employees and business partners, to resume operations as soon as possible and to ensure timely delivery to customers so as to minimise the adverse impact of the pandemic on its activities. While business in some countries has been affected, the overall impact of the pandemic on the Group's operating results in 2020 has been limited.

36 Subsequent events

(a) In January and March 2021, the Company issued two tranches of 3-year medium-term notes with an aggregate principal amount of CNY8,000 million.

(b) Subsequent to December 31, 2020 and up to the date of approval of these financial statements, the Group has drawn down accumulatively CNY5,000 million from a syndicated loan facility entered into by Huawei Technologies Co., Ltd., a wholly-owned subsidiary of the Group, on March 12, 2021.

37 Comparative figures

The presentation of certain prior year comparative figures has been adjusted to reflect current year presentation requirements. None of these changes were material.

Risk Factors

Huawei's risk factors refer to factors that could make the company's ultimate achievement of its business objectives uncertain. Such factors are identified in our strategic plans, business models, financial systems, or the external environment. In this section, we will detail the major risk factors that could significantly impact the company's competitiveness, reputation, financial position, operating results, or long-term prospects.

Huawei's Risk Management System

In line with the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework, and referencing ISO 31000 risk management standards, Huawei uses an Enterprise Risk Management (ERM) system that accounts for our unique organizational structure and operating model. Under this system, we have defined a robust set of ERM policies and processes, continuously refined our ERM organizations and operating mechanisms, and ramped up efforts to assess risk management. Huawei's ERM system ensures the following:

- The Board of Directors approves solutions related to managing the company's major risks, crises, and unforeseen events.
- Business managers, as the primary risk owners in their respective business domains, proactively identify and manage risks to ensure they remain at an acceptable level.

At Huawei, risk management factors are incorporated into both strategic planning and business planning processes: Business departments and field offices systematically identify and assess risks during strategic planning, list appropriate countermeasures in their annual business plans, and then monitor and report on high-priority risks during routine operations. Huawei ensures uninterrupted business operations by identifying major risk factors during strategic decision making and planning, and taking necessary measures to control risks during business planning and execution.

Strategic Risks

Humankind will enter an intelligent world in the next two or three decades. Digital technology is reshaping the world around us, and we want to make sure that this future is inclusive so that everyone can benefit from the changes digital technology brings. Mature commercial applications of new technologies – particularly 5G, cloud computing, AI, and blockchain – are speeding up the digital transformation of all industries. This will present enormous opportunities.

That said, Huawei's external environment is more volatile and complicated than ever, and the COVID-19 pandemic has changed people's lives and hit major industries, including the aviation and logistics industries, very hard. The global economy is struggling, and the world must now face the significant challenge of deciding how globalization should progress. In the long term, the US government will continue to suppress the development of leading technologies, making it difficult for Huawei to survive and thrive.

Looking towards the future, we can see that the digital economy will definitely become the main engine for global economic growth, and governments and businesses will all go digital and intelligent. Huawei will leverage its ICT strengths to enable the digital transformation of all industries, and ultimately bring digital to every person, home and organization for a fully connected, intelligent world.

Going forward, we remain committed to embracing and leveraging a global supply chain to hone our competitive edge. Beyond developing leading products, we need to extend our roots deep into the soil and build a diverse ecosystem that does not depend on any one country. We also need to go beyond the limits of the skies above us, striving for theoretical breakthroughs, technological inventions, and ground-breaking products and business models. We will keep enhancing our software engineering capabilities, pressing ahead with our US$2 billion five-year budget for building quality, trustworthy products and solutions.

External Risks

Macro environment: The global economy is expected to gradually rebound in 2021. However, some countries may still enact new restrictions on economic activities until COVID-19 is under control. Such restrictions could lead to uneven recovery between countries. Trade frictions and geopolitical tensions are likely to continue straining business confidence and investment. Against this backdrop, Huawei will continue facing an uncertain external environment. Therefore, business departments and field offices must ramp up efforts to identify and control risks and promptly adjust strategies accordingly.

Compliance: Operational compliance provides a solid foundation on which Huawei can survive, and continue serving and contributing to the world. Huawei has always been dedicated to strictly complying with all applicable laws and regulations of the countries and regions in which it operates. These include all applicable laws and regulations of the UN, US, and EU.

Through sustained investment, we have established a compliance management system that applies to all our businesses and employees worldwide and covers all legal obligations including but not limited to trade compliance, financial compliance, anti-bribery compliance, intellectual property (IP) and trade secret protection, cyber security and privacy, and anti-unfair competition. This enables the systematic management of compliance risks through established policies, organizations, regulations, processes, etc.

Despite these efforts, we may still experience negative impacts due to the complex legal environments of some of the countries and regions in which we operate. For example, a lack of clarity or transparency in regards to local laws or ambiguity surrounding the legal system or law enforcement. Huawei will continue, as always, to learn from industry best practices and take preventative measures to address risks. The certainty of legal compliance is our best bulwark against the uncertainty of external environment.

Trade: Throughout 2020, many multinational companies, small– and medium-sized enterprises, and individual economies were afflicted by trade protectionism and supply chain adjustments. As trade restrictions increase, deglobalization and protectionism have become two prominent risks within global trade. At the same time, the challenges facing international trade were exacerbated to an unprecedented degree by the COVID-19 pandemic. As a result of pandemic-related restrictions enforced by many governments, as well as disruptions of supply chains and logistics, 2020 saw a sharp decline in global trade volume.

In late 2020, China ratified the *Regional Comprehensive Economic Partnership* (RCEP) with ASEAN countries, Japan, South Korea, Australia, and New Zealand. Despite this, uncertainty is still the watchword of future global trade policy. As a global company, Huawei embraces the values of free trade, open markets, and fair competition, while opposing trade protectionism. Huawei supports equitable and non-discriminatory multilateral trade rules and places trade compliance above its own commercial interests.

Natural disasters: It is our mission and primary social responsibility to maintain stable network operations. Earthquakes, typhoons, epidemics, and other natural disasters can impact Huawei's business operations in many different ways and thus can impact the operations of the networks we have deployed. We have robust mechanisms for responding to natural disasters and continue to improve our capabilities in this regard. This has helped us to ensure business continuity and effectively support our customers' network stability.

Country-specific risks: Huawei currently operates in more than 170 countries and regions worldwide. Therefore, the complex international economic and political landscape could expose Huawei to particular risks in certain countries and regions. These risks include economic and political instability, exchange rate fluctuations, capital controls, and sovereign defaults. Bilateral or multilateral tensions between certain countries or regions caused by special circumstances could hinder Huawei's local business operations and bring uncertainty to our local business development. To address these issues, Huawei requires exceptional risk management and response capabilities. We will closely monitor any potential risks or changes in the environment, such as further developments related to the pandemic in specific countries, and promptly employ effective countermeasures to help achieve business objectives.

Operational Risks

Business continuity: In today's highly globalized and highly specialized world, Huawei relies heavily on many third parties to help us in procurement, manufacturing, logistics, and global technical services. This makes business continuity management (BCM) critical.

Through years of sustained investment, Huawei has established a BCM system for domains such as procurement, manufacturing, logistics, and global technical services. This system covers our end-to-end processes, from suppliers to Huawei and on to our customers. As part of this system, we have developed and established effective measures to manage risks that arise during our daily work. Specifically, we have built up management organizations, processes, and IT platforms, prepared business continuity plans and incident management plans, and organized BCM training and drills for employees.

On May 15 and August 17, 2020*, the US Department of Commerce amended their foreign-produced direct product rule and released the final ruling on Huawei Technologies Co., Ltd. and a number of its non-US affiliates. This means the export, re-export, or in-country transfer of any item subject to the EAR (including hardware, software, and technologies) to Huawei or its listed affiliates requires a license from the Department of Commerce.

This ruling has affected our business development to some extent. As a staunch advocate of globalization, we will continue to pursue supply chain diversity without depending on any one country or region, and then build our supply continuity upon the global supply chain. Remaining on the Entity List does not restrict or prohibit Huawei from providing products and services to our customers in accordance with compliance requirements. Based on the principles of collaboration for shared success and mutual development, Huawei is confident in our ability to work with partners to forge a secure, reliable, competitive, and healthy industry chain. Huawei products will continue to meet customer requirements for sustained supply and delivery, and we will continue to deliver quality products, solutions, and services to our customers worldwide.

For further information on business continuity, see pages 59 to 60 of this Annual Report.

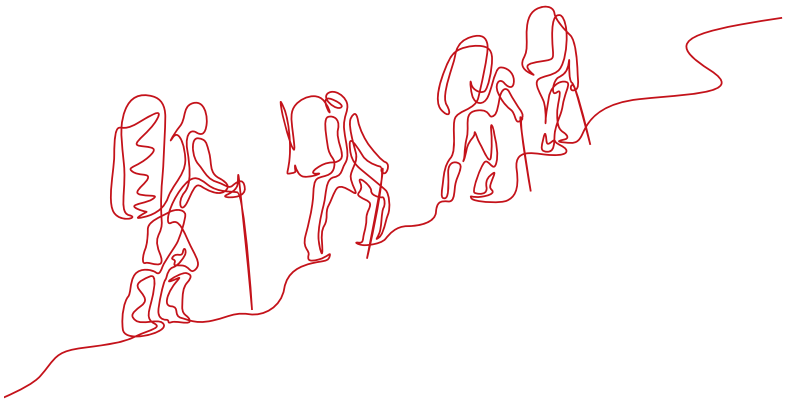
Information security and IP: Although Huawei has adopted stringent information security measures to protect its IP, it is impossible to completely prevent other companies from improperly using our proprietary information or patented technologies. Even when we are able to protect our IP through the judicial means, we may still suffer losses due to improper usage.

Financial Risks

For further information on financial risks, see pages 78 to 79 of this Annual Report.

* Local dates in Washington D.C.

Corporate Governance Report



The company only exists to serve its customers. The purpose of growing our harvest and increasing the fertility of our soil is to better serve our customers. "Staying customer-centric and creating value for customers" are the company's common values. The conferment of authority is required to drive the facilitation and implementation of the company's common values. However, without effective controls in place, authority un-checked will ultimately hinder such common values. The company has a well-developed internal governance structure, under which all governance bodies have clear and focused authority and responsibility, but operate under checks and balances. This creates a closed cycle of authority and achieves rational and cyclical succession of authority.

The company's fate cannot be tied to any single individual and the governance bodies of the company shall follow a model of collective leadership. This collective leadership model is created upon common values, focused responsibility, democratic centralized authority, checks and balances, and growth by self-reflection.

In addition, the company stays customer-centric, inspires dedication, and continuously improves its governance structure, organizations, processes, and appraisal systems to sustain its long-term and profitable growth.

Shareholders

Huawei Investment & Holding Co., Ltd. is a private company wholly owned by its employees. Huawei's shareholders are the Union of Huawei Investment & Holding Co., Ltd. (the "Union") and Mr. Ren Zhengfei.

Through the Union, the company implements an Employee Shareholding Scheme (the "Scheme"), which involved 121,269 employees as of December 31, 2020. The Scheme effectively aligns employee contribution and development with the company's long-term development, fostering Huawei's continued success.

Mr. Ren Zhengfei is the Company's natural person shareholder and also participates in the Scheme. As of December 31, 2020, Mr. Ren's investment accounts for nearly 0.90% of the Company's total share capital.

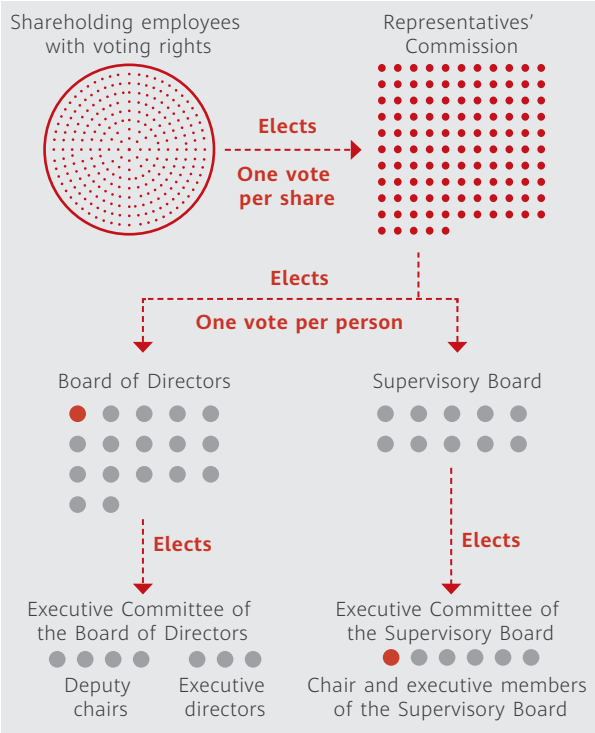
The Shareholders' Meeting and the Representatives' Commission

The Shareholders' Meeting, the company's authoritative body, comprises two shareholders: the Union and Mr. Ren Zhengfei.

The Representatives' Commission (the "Commission") is the organization through which the Union fulfills shareholder responsibilities and exercises shareholder rights. The Commission consists of 115 representatives of shareholding employees ("Representatives") and exercises rights on behalf of all shareholding employees. In 2020, the Commission held two meetings, at which it reviewed and approved the report from the Board of Directors on the company's financial and operating results, the work report from the Supervisory Board, and proposals for matters such as annual profit distribution, annual capital increases, and the sale of the Honor business.

The Representatives and Alternate Representatives are elected by the shareholding employees with voting rights, and serve for a term of five years. In the event that there is a vacancy in the Commission, the Alternate Representatives shall take up the vacancy in a predetermined sequence.

The shareholding employees with voting rights elect the Commission on a one-vote-per-share basis, after which the Commission elects the company's Board of Directors and Supervisory Board on a one-vote-per-person basis. The Commission, along with the Board of Directors and Supervisory Board, decides on, manages, and monitors major company matters.



Representatives Mr. Zhou Daiqi, Mr. Dong Ming and Mr. Cai Yinghua left the company, so Alternate Representatives Mr. Wang Ban, Mr. Zuo Defeng, and Mr. Xia Jian became Representatives according to preset rules. Representatives Mr. Zhao Ming, Mr. Peng Qiu'en, Mr. Wan Biao, Mr. Li Shanlin, and Mr. Wang Ban resigned from Huawei following the sale of the Honor business. Alternate Representatives Mr. Chen Yue, Mr. Ye Xiaowen, Ms. Song Yanling, Mr. Wu Congcheng, and Mr. Bai Yi became Representatives according to preset rules.

Current members of the Commission are:

Mr. Ren Zhengfei, Ms. Sun Yafang, Mr. Liang Hua, Mr. Guo Ping, Mr. Xu Zhijun, Mr. Hu Houkun, Ms. Meng Wanzhou, Mr. Ding Yun, Mr. Yu Chengdong, Mr. Wang Tao, Mr. Xu Wenwei, Ms. Chen Lifang, Mr. Peng Zhongyang, Ms. He Tingbo, Mr. Li Yingtao, Mr. Yao Fuhai, Mr. Tao Jingwen, Mr. Yan Lida, Mr. Li Jie, Mr. Ren Shulu, Mr. Yin Xuquan, Mr. Li Jin'ge, Mr. Li Dafeng, Mr. Song Liuping, Mr. Tian Feng, Mr. Yi Xiang, Mr. Li Jian, Mr. Li Jianguo, Mr. Peng Bo, Ms. Zhao Minglu, Ms. Shi Yanli, Ms. Zhang Xiaoqing, Mr. Gao Aozhan, Mr. Yang Shubin, Ms. Ji Hui, Mr. Zou Zhilei, Mr. Lu Yong, Mr. Peng Song, Mr. Liu Hongyun, Mr. Yang Yougui, Mr. Li Peng, Mr. Cao Jibin, Mr. Wu Weitao, Mr. Chen Hao, Mr. Wang Shengniu, Mr. Wang Jianfeng, Mr. Chen Lei, Mr. Wu Hui, Mr. Meng Ping, Mr. Lv Ke, Mr. Jiang Xisheng, Mr. Pan Shaoqin, Mr. Jiang Yafei, Mr. Zhang Wenlin, Mr. Wang Weijian, Mr. Su Liqing, Mr. Luo Wencheng, Mr. Zhang Hongxi, Mr. Xiong Lening, Mr. Ying Weimin, Mr. Wu Kunhong, Mr. Wei Chengmin, Mr. Wu Qinming, Mr. Xie Guohui, Mr. Wang Kexiang, Mr. Tang Qibing, Mr. Wang Shengqing, Mr. Sun Fuyou, Mr. Ma Yue, Mr. Zhou Jianjun, Mr. Xun Su, Mr. Lu Qi, Mr. Lin Baifeng, Mr. Shen Huifeng, Mr. Zheng Liangcai, Mr. Ma Qingqing, Mr. Wang Hua'nan, Mr. Bai Limin, Ms. Yang Li, Mr. Hou Jinlong, Mr. Deng Taihua, Mr. Zheng Yelai, Mr. Hu Kewen, Mr. Zhang Shunmao, Mr. Zha Jun, Mr. Zhou Hong, Mr. Ma Haixu, Mr. Liu Shaowei, Mr. Tang Xinhong, Mr. Yang Chaobin, Mr. Gong Ti, Mr. Cai Changtian, Mr. Gao Ji, Mr. Xiong Yan, Mr. Zhou Taoyuan, Mr. Wang Yixiang, Mr. Li Zhoujian, Mr. Yu Quan, Mr. He Gang, Mr. Zhang Ping'an, Mr. Bian Honglin, Mr. Wang Chenglu, Mr. Xu Qinsong, Mr. Li Xiaolong, Mr. Zhu Ping, Mr. Shao Yang, Mr. Su Jie, Mr. Zhu Yonggang, Mr. Chen Yue, Mr. Bai Yi, Mr. Wu Congcheng, Mr. Ye Xiaowen, Ms. Song Yanling, Mr. Zuo Defeng, and Mr. Xia Jian.

Board of Directors

The Board of Directors (BOD) is the highest body responsible for corporate strategy, operations management, and customer satisfaction. The BOD's mission is to lead the company forward. It exercises decision-making authority for corporate strategy and operations management, and ensures customer and shareholder interests are protected.

The main responsibilities of the BOD are to:

- Develop proposals for corporate governance.
- Review proposals to increase or decrease the company's registered capital, as well as proposals related to profit distribution and loss recovery.
- Review the company's stock options plan and other long-term incentive plans.
- Review or approve plans for entering and exiting different industry sectors, and approve the company's strategic plan.
- Approve major organizational restructuring, management system development, and business transformation.
- Approve major financial policies, financial plans, and business transactions.
- Approve the company's annual budget proposal, annual operations report, and annual audit report.
- Approve the appointment/removal, compensation, and long-term incentives of senior management.
- Approve major HR policies and plans at the corporate level.
- Approve proposals for managing major risks and crises, and manage major emergencies.
- Approve the development of internal controls and compliance systems.

In 2020, the BOD held 10 meetings. At the meetings, the BOD reviewed and approved matters such as the company's medium-to-long-term strategic plan, as well as the company's annual business plan, audit report, profit distribution, capital increases, and the proposal for selling the Honor business.

Currently, the BOD is comprised of 17 members, who were elected by the Commission and voted in by the Shareholders' Meeting.

Current board members include:

- Chairman: Mr. Liang Hua
- Deputy Chairs: Mr. Guo Ping, Mr. Xu Zhijun, Mr. Hu Houkun, and Ms. Meng Wanzhou
- Executive Directors: Mr. Ding Yun, Mr. Yu Chengdong, and Mr. Wang Tao
- Directors: Mr. Xu Wenwei, Ms. Chen Lifang, Mr. Peng Zhongyang, Ms. He Tingbo, Mr. Li Yingtao, Mr. Ren Zhengfei, Mr. Yao Fuhai, Mr. Tao Jingwen, and Mr. Yan Lida

In the event that there is a vacancy in the BOD, alternate directors will take up the vacancy in a predetermined sequence. In November 2020, Mr. Zhao Ming resigned as an alternate director. Currently, alternate directors include Mr. Li Jianguo and Mr. Peng Bo.

From the left in the first row: Ms. Meng Wanzhou, Mr. Hu Houkun, Mr. Guo Ping, Mr. Xu Zhijun, and Mr. Liang Hua
From the left in the second row: Ms. He Tingbo, Mr. Xu Wenwei, Mr. Yan Lida, Mr. Ding Yun, Mr. Ren Zhengfei, Mr. Tao Jingwen, Mr. Li Yingtao, Mr. Wang Tao, Mr. Peng Zhongyang, Mr. Yu Chengdong, Ms. Chen Lifang, and Mr. Yao Fuhai

Mr. Liang Hua
(Howard Liang)

Chairman

Born in 1964, Mr. Liang holds a doctorate degree from Wuhan University of Technology. Mr. Liang joined Huawei in 1995 and has served as President of Supply Chain, CFO of Huawei, President of the Business Process & IT Mgmt Dept, President of the Global Technical Service Dept, Chief Supply Chain Officer, Chairman of the Audit Committee, and Chairman of the Supervisory Board. Mr. Liang is now Chairman of Huawei's Board of Directors.

Mr. Guo Ping

Deputy Chairman,
Rotating Chairman

Born in 1966, Mr. Guo holds a master's degree from Huazhong University of Science and Technology. Mr. Guo joined Huawei in 1988 and has served as R&D Project Manager, General Manager of Supply Chain, Director of Huawei Executive Office, Chief Legal Officer, President of the Business Process & IT Mgmt Dept, President of the Corporate Development Dept, Chairman and President of Huawei Device, Rotating CEO of Huawei, and Chairman of the FC. Currently, Mr. Guo serves as Deputy Chairman of the Board and Rotating Chairman of Huawei.

Mr. Xu Zhijun
(Eric Xu)

Deputy Chairman,
Rotating Chairman

Born in 1967, Mr. Xu holds a doctorate degree from Nanjing University of Science & Technology. Mr. Xu joined Huawei in 1993 and has served as President of the Wireless Network Product Line, Chief Strategy & Marketing Officer, Chief Products & Solutions Officer, Chairman of the Investment Review Board, Rotating CEO of Huawei, and Chairman of the SDC. Currently, Mr. Xu serves as Deputy Chairman of the Board and Rotating Chairman of Huawei.

Mr. Hu Houkun
(Ken Hu)

Deputy Chairman,
Rotating Chairman

Born in 1968, Mr. Hu holds a bachelor's degree from Huazhong University of Science and Technology. Mr. Hu joined Huawei in 1990 and has served as President of the Marketing & Sales Dept in China, President of the Latin America Region, President of the Global Sales Dept, Chief Sales & Service Officer, Chief Strategy & Marketing Officer, Chairman of the Global Cyber Security and User Privacy Protection Committee (GSPC), Chairman of the BOD of Huawei USA, Deputy Chairman of the Board, Rotating CEO, and Chairman of the HRC. Currently, Mr. Hu serves as Deputy Chairman of the Board and Rotating Chairman of Huawei.

Ms. Meng Wanzhou
(Sabrina Meng)

Deputy Chairwoman

Ms. Meng holds a master's degree from Huazhong University of Science and Technology. Ms. Meng joined Huawei in 1993 and has held the positions of Director of the International Accounting Dept, CFO of Huawei Hong Kong, and President of the Accounting Mgmt Dept. Ms. Meng now serves as CFO of Huawei and Deputy Chairwoman of the Board.

In 2003, Ms. Meng established Huawei's globally unified finance organization, and developed the standardized and unified organizational structure, financial processes, financial systems, and IT platforms.

Since 2005, Ms. Meng has led the founding of five shared service centers around the world, and she also promoted the completion of the Global Payment Center in Shenzhen, China. These centers have boosted Huawei's accounting efficiency and monitoring quality, providing accounting services to sustain the company's rapid overseas expansion.

Since 2007, Ms. Meng has been in charge of the Integrated Financial Services (IFS) Transformation Program, an eight-year partnership between Huawei and IBM. This transformation program helped Huawei develop its data systems and rules for resource allocation, operating efficiency improvement, process optimization, and internal controls. IFS also took Huawei's financial management to a new level, creating new DNA for the company's sustainable growth.

In recent years, Ms. Meng has focused on advancing fine-grained and comprehensive financial management at Huawei, working to align these efforts with the company's long-term development plan. Ms. Meng has continually worked to improve treasury risk and tax compliance management systems, and has helped to make financial operations within the company more efficient, agile, and intelligent.

Mr. Ding Yun
(Ryan Ding)

Executive Director

Born in 1969, Mr. Ding holds a master's degree from Southeast University. Mr. Ding joined Huawei in 1996 and has served as Product Line President, President of the Global Solution Sales Dept, President of the Global Marketing Dept, President of Products & Solutions, and President of the Carrier BG.

Mr. Yu Chengdong
(Richard Yu)

Executive Director

Born in 1969, Mr. Yu holds a master's degree from Tsinghua University. He joined Huawei in 1993 and has served as 3G Product Director, Vice President of the Wireless Technical Sales Dept, President of the Wireless Network Product Line, President of the European Area, and Chief Strategy & Marketing Officer. Currently, Mr. Yu serves as CEO of the Consumer BG, President of the Cloud & AI BG, President of the Cloud BU, and Director of the Investment Review Board for Smart Devices and Intelligent Automotive Components.

Mr. Wang Tao
(David Wang)

Executive Director

Born in 1972, Mr. Wang holds a master's degree from Xi'an Jiaotong University. Mr. Wang joined Huawei in 1997 and has served as R&D Manager in Wireless, Vice President of the UMTS Technical Sales Dept, President of Technical Sales of the European Area, Managing Director of Huawei Italy and Switzerland, President of the Wireless Network Product Line, President of the Network Product Line, and President of Products & Solutions. Currently, Mr. Wang serves as Chairman of the Investment Review Board, President of Network Products & Solutions, President of ICT Strategy & Marketing, and Deputy Chairman of the ICT Infrastructure Managing Board.

Mr. Xu Wenwei
(William Xu)

Director

Born in 1963, Mr. Xu holds a master's degree from Southeast University. In 1991, Mr. Xu joined Huawei's Research & Development, leading the development of the first generation of Huawei's public program controlled switches. Mr. Xu also took charge of work related to chips, general technology, strategy planning, and research. He has served as President of the International Technical Sales & Marketing Dept, President of the European Area, Chief Strategy & Marketing Officer, Chief Sales & Service Officer, President of the Joint Committee of Regions, CEO of the Enterprise BG, Chief Strategy Marketing Officer, and Chairman of the Investment Review Board. Mr. Xu is currently President of the Institute of Strategic Research.

Ms. Chen Lifang
(Catherine Chen)

Director

Born in 1971, Ms. Catherine Chen graduated from Northwest University in China. She joined Huawei in 1995 and has served as Chief Representative of the Beijing Representative Office, Vice President of the International Marketing Dept, Deputy Director of the Domestic Marketing Management Office, a member of the Board, President of the Public Affairs and Communications Dept, and Corporate Senior Vice President.

Mr. Peng Zhongyang

Director

Born in 1968, Mr. Peng holds a bachelor's degree from Huazhong University of Science and Technology. Mr. Peng joined Huawei in 1997 and has served as Technical Service Engineer of the South China Area, Transmission Project Manager and Development Engineer of the Russia Representative Office, General Manager of the Yemen Representative Office, Assistant to President of the Middle East and Northern Africa Region, President of the Northern Africa Region, President of the China Region, and President of the Corporate Leadership Mgmt Dept. Currently, Mr. Peng serves as President of the Enterprise BG.

Ms. He Tingbo
(Teresa He)

Director

Born in 1969, Ms. He holds a master's degree from Beijing University of Posts and Telecommunications. She joined Huawei in 1996 and has since served as Chief ASIC Engineer, R&D Director of HiSilicon, and Vice President of the 2012 Laboratories. Currently, she serves as President of HiSilicon and President of the 2012 Laboratories.

Mr. Li Yingtao

Director

Born in 1969, Mr. Li holds a doctorate degree from Harbin Institute of Technology. Mr. Li joined Huawei in 1997 and has served as Chief of the Sweden Research Center, Director of the Product Mgmt Dept of Wireless Marketing, Director of the Research Dept of Products & Solutions, Director of the General Technology Office of Products & Solutions, President of the Central Research & Development Unit, President of the 2012 Laboratories, President of Products & Solutions, and President of Network Products & Solutions. Currently, Mr. Li serves as President of Administration of the 2012 Laboratories.

Mr. Ren Zhengfei

Director

Born on October 25, 1944 into a rural family where both parents were school teachers, Mr. Ren Zhengfei spent his primary and middle school years in a remote mountainous town in Guizhou Province. In 1963, he studied at the Chongqing Institute of Civil Engineering and Architecture. After graduation, he was employed in the civil engineering industry until 1974 when he joined the military's Engineering Corps as a soldier tasked to establish the Liao Yang Chemical Fiber Factory. Subsequently, Mr. Ren had taken positions as a Technician, an Engineer, and was lastly promoted as a Deputy Director, which was a professional role equivalent to a Deputy Regimental Chief, but without military rank. Because of his outstanding performance, Mr. Ren was invited to attend the National Science Conference in 1978 and the 12th National Congress of the Communist Party of China in 1982. Mr. Ren retired from the army in 1983 when the Chinese government disbanded the entire Engineering Corps. He then worked in the logistics service base of the Shenzhen South Sea Oil Corporation. As he was dissatisfied with his job, he decided to establish Huawei with a capital of CNY21,000 in 1987. He became the CEO of Huawei in 1988 and has held the title ever since.

Mr. Yao Fuhai

Director

Born in 1968, Mr. Yao holds a bachelor's degree from the University of Electronic Science and Technology of China. Mr. Yao joined Huawei in 1997 and has served as Director of the Pricing Center, Vice President of the Business Process & IT Mgmt Dept, Vice President of the Strategy Cooperation Dept, Vice President of the Global Technical Sales Dept, President of the Global Technical Service Dept, and President of the Global Procurement Qualification Mgmt Dept. Currently, Mr. Yao serves as a member of the Board, Chief Supply Chain Officer, and Director of the Group Procurement Management Committee.

Mr. Tao Jingwen

Director

Born in 1971, Mr. Tao graduated from Beijing University of Posts and Telecommunications. Mr. Tao joined Huawei in 1996 and has served as a product development engineer, Deputy General Manager of the Market Technology Section, Executive Deputy Director of the International Technical Sales Dept, Executive Vice President and President of the Sub-Sahara Region, President of the Global Technical Sales & Marketing Dept, President of Huawei Device, President of the West European Region, and President of the Quality, Business Process & IT Mgmt Dept.

Mr. Yan Lida

Director

Born in 1970, Mr. Yan holds a bachelor's degree from Tsinghua University. Mr. Yan joined Huawei in 1997 and has served as Vice President of the European Region, General Manager of the Japan Representative Office, President of the East Asia Region, and President of the Enterprise BG. Currently, Mr. Yan serves as a member of the Board and a member of the ICT Infrastructure Managing Board.

Executive Committee

The BOD has established the Executive Committee, which acts as the standing executive body of the BOD. Entrusted by the BOD, the Executive Committee examines and reflects on major issues within the company, decides on issues authorized by the BOD, and oversees their execution. In 2020, the Executive Committee held 18 meetings.

Members of the BOD Executive Committee include Mr. Guo Ping, Mr. Xu Zhijun, Mr. Hu Houkun, Ms. Meng Wanzhou, Mr. Ding Yun, Mr. Yu Chengdong, and Mr. Wang Tao.

Rotating chairs

The BOD and its Executive Committee are led by rotating chairs. During their terms, the rotating chairs serve as the foremost leader of the company. Rotating chairs' terms last six months at a time. The rotation schedule is as follows:

- Mr. Xu Zhijun: October 1, 2019 to March 31, 2020
  April 1, 2021 to September 30, 2021
  October 1, 2022 to March 31, 2023
- Mr. Guo Ping: October 1, 2018 to March 31, 2019
  April 1, 2020 to September 30, 2020
  October 1, 2021 to March 31, 2022
- Mr. Hu Houkun: April 1, 2019 to September 30, 2019
  October 1, 2020 to March 31, 2021
  April 1, 2022 to September 30, 2022

Audit Committee

The Audit Committee (AC) operates under the BOD to oversee internal controls, including the internal control system, internal and external audits, corporate processes, legal compliance, and adherence to the BCGs.

The main responsibilities of the AC are to:

- Approve the annual internal audit plan, and review its scope, required resources, and audit outputs.
- Approve corporate policies for internal controls; approve the corporate development plan for internal controls and the plan's key milestones; and regularly assess the company's internal control status.
- Evaluate the effectiveness of the ethics and compliance function, legal compliance, and adherence to corporate policies.
- Approve the selection of the external auditor, notify the BOD of any proposed change to the external auditor for approval, approve related budgets, and evaluate the work of the external auditor.
- Supervise the completeness, accuracy, and legal compliance of the company's financial statements; and review compliance with and application of accounting policies as well as financial disclosures.
- Approve internal control Key Performance Indicators (KPIs), and instruct Global Process Owners (GPOs) and business executives to report internal control results.

The AC generally holds monthly meetings and convenes special sessions as necessary. Business executives and various experts are invited to attend as non-voting participants.

The committee held 10 meetings in 2020. Focusing on topics such as anti-corruption, internal controls, external audit management, accounting monitoring, financial reporting management, and implementation of internal audit transformation, the AC has reviewed and approved the company's annual plans for internal audit and internal controls, as well as anti-corruption plans and progress reports on high-risk businesses including the Consumer BG, Enterprise BG, and Carrier BG.

In addition, the committee Chairman and the external auditor discussed external audit plans and management improvement proposals.

Supervisory Board

Pursuant to the requirements of *the Company Law of the People's Republic of China*, Huawei has established its Supervisory Board. The key responsibilities of the Supervisory Board include overseeing the responsibility fulfillment of BOD members and senior management, monitoring the company's operational and financial status, and supervising compliance. Members of the Supervisory Board attend BOD and EMT meetings as non-voting participants.

The Supervisory Board held 11 meetings in 2020. At the meetings, it reviewed the company's annual financial statements, inspected major areas that may face risks, and guided and managed oversight-oriented members of the Subsidiary Board Directors Resources Bureau.

Throughout the year, members of the Supervisory Board attended all meetings of the BOD as non-voting participants, overseeing the legitimacy of BOD decisions and operations, as well as the responsibility fulfillment of BOD members and other executives, and assessed BOD members' responsibility fulfilment in 2019.

The members of the Supervisory Board were elected by the Commission and voted in by the Shareholders' Meeting. In April 2020, Mr. Zhou Daiqi resigned from his position as a member of the Supervisory Board.

The Supervisory Board currently has 9 members, including:

- Chairman: Mr. Li Jie
- Executive members: Mr. Ren Shulu, Mr. Yin Xuquan, Mr. Li Jin'ge, and Mr. Li Dafeng
- Members: Mr. Song Liuping, Mr. Tian Feng, Mr. Yi Xiang, and Mr. Li Jian

The Supervisory Board has established the Executive Committee, which acts as authorized by the Supervisory Board. Members of the Executive Committee are Mr. Li Jie, Mr. Ren Shulu, Mr. Yin Xuquan, Mr. Li Jin'ge, and Mr. Li Dafeng.

From left to right: Mr. Li Jian, Mr. Yin Xuquan, Mr. Yi Xiang, Mr. Song Liuping, Mr. Li Jie, Mr. Tian Feng, Mr. Li Jin'ge, Mr. Li Dafeng, and Mr. Ren Shulu

Mr. Li Jie

Chairman of
the Supervisory Board

Born in 1967, Mr. Li holds a bachelor's degree in wireless communications and a master's degree in computer image processing from Xi'an Jiaotong University. Mr. Li joined Huawei in 1992 and has served as an R&D engineer, General Manager of a representative office in China, General Manager of the Moscow Representative Office, President of the Commonwealth of Independent States Region, President of the Global Technical Sales Dept, President of the Global Technical Service Dept, President of the Human Resource Mgmt Dept, President of the Joint Committee of Regions, President of Huawei University, and President of the Corporate Leadership Mgmt Dept. Currently, Mr. Li serves as Chairman of the Supervisory Board and Chairman of the Audit Committee.

Mr. Ren Shulu
(Steven Ren)

Executive Member of
the Supervisory Board

Born in 1956, Mr. Ren holds a bachelor's degree from Yunnan University. Mr. Ren joined Huawei in 1992 and has served as President of Shenzhen Smartcom Business Co., Limited, Chairman of the Capital Construction Investment Management Committee, and Chairman of the Internal Service Management Committee. Currently, Mr. Ren serves as Huawei's Chief Logistics Officer.

Mr. Yin Xuquan

Executive Member of
the Supervisory Board

Born in 1964, Mr. Yin holds a master's degree from Xi'an Jiaotong University. Mr. Yin joined Huawei in 1995 and has served as President of the Southern Africa Region, Vice President of the Turnkey Business Dept, President of the Optical Network Product Line, HR Director of Sales & Services, and Vice President of the Global Procurement Qualification Mgmt Dept.

Mr. Li Jin'ge

Executive Member of
the Supervisory Board

Born in 1968, Mr. Li holds a bachelor's degree from Beijing University of Posts and Telecommunications. Mr. Li joined Huawei in 1992 and has served as Regional Vice President, Regional President, President of the Global Technical Sales Dept, President of the Sub-Sahara Area, a member of the Joint Committee of Regions, a member of the Human Resources Committee, President of the Asia Pacific Area, a member of the Audit Committee, and President of the Internal Audit Dept.

Mr. Li Dafeng

Executive Member of
the Supervisory Board

Born in 1966, Mr. Li holds a bachelor's degree from the Department of Radio Engineering, Changchun Institute of Posts and Telecommunications, and a master's degree in signal and information processing, Harbin Institute of Technology. Mr. Li joined Huawei in 1996 and has served as Deputy Sales Director of the Beijing Office, General Manager of the Tianjin Office, General Manager of the Shijiazhuang Office, Deputy Director of the China Telecom Account Dept, Deputy Sales President of the Southern Africa Region, Director of the MTN Account Dept, President of the Eastern and Southern Africa Region, President of the Sales & Delivery Finance Mgmt Dept, President of the Middle East and Africa Area, and Director of the ICT Infrastructure Managing Board Office.

Mr. Song Liuping

Member of
the Supervisory Board

Born in 1966, Mr. Song completed his postdoctoral research at Beijing Institute of Technology. Mr. Song joined Huawei in 1996 and has served successively as Manager of the Product Strategy Planning Dept, Director of the IPR Dept, Director of the External Cooperation Dept, PSST member, President of the Legal Affairs Dept, President of the Patent Review Board, Director of the Trade and Customs Compliance Committee, a member of the Disciplinary and Supervisory Sub-committee of the Human Resources Committee, and a member of the AC and Finance Committee, Chief Legal Officer, and Chief Compliance Officer.

Mr. Tian Feng

Member of the Supervisory Board

Born in 1969, Mr. Tian holds a bachelor's degree from Xidian University. Mr. Tian joined Huawei in 1995 and has served as General Manager of the Shijiazhuang Office, HR Director of the Domestic Marketing Dept, Director of the Market Finance Dept, EVP of the Middle East and Northern Africa Area, President of the Middle East Region, President of the China Region, CEO of Huawei Agisson, Vice President (acting) of the Human Resource Mgmt Dept, EVP of Huawei University, Director of the Institute of Education of Huawei University, Director of the Disciplinary and Supervisory Sub-committee of the Human Resources Committee, an executive member of the Management Team of the Joint Committee of Regions, Director of the Subsidiary Board Directors Resources Bureau, President of the Central Asia and Russia Area, a member of the Management Team of the Corporate Leadership Mgmt Dept, a member of the AC, a member of the ICT Infrastructure Managing Board, Director of the Disciplinary and Supervisory Committee, President of the Asia Pacific Area, President of the Internal Audit Dept, and a member of the Supervisory Board.

Mr. Yi Xiang
(Steven Yi)

Member of the Supervisory Board

Born in 1975, Mr. Yi holds a bachelor's degree from Wuhan University. Mr. Yi joined Huawei in 1998 and has served as General Manager of the Pakistan Representative Office, President of the Middle East Region, President of the Sales & Delivery Finance Mgmt Dept, Deputy CFO of Huawei, President of the Regions Mgmt Dept, and President of the America Area. Currently, Mr. Yi serves as President of the Middle East and Africa Area and a member of the ICT Infrastructure Managing Board.

Mr. Li Jian

Member of the Supervisory Board

Born in 1973, Mr. Li holds a master's degree from Xidian University. Mr. Li joined Huawei in 2001 and has served as General Manager of the Nigeria Representative Office, President of the Western Africa Region, Special Assistant to President of Sales & Services, President of the Accounts & Regions Business Support Dept, President of the CEE & Nordic European Region, a member of the Human Resources Committee, an executive member of the Management Team of the Joint Committee of Regions, Vice President of the Joint Committee of Regions, Global Process Owner of LTC, and President of the America Area. Currently, Mr. Li serves as President of the European Area and a member of the ICT Infrastructure Managing Board.

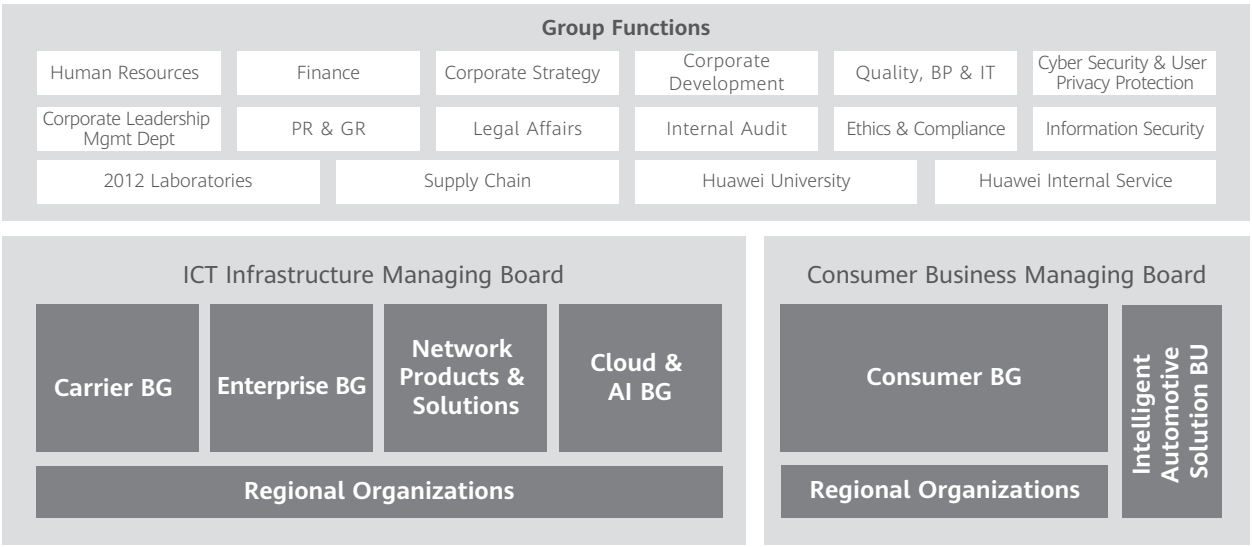
Independent Auditor

An independent auditor is responsible for auditing a company's annual financial statements. In accordance with applicable accounting standards and audit procedures, the independent auditor expresses an opinion as to whether the financial statements are true and fair.

The scope of the financial audit and the annual audit results are subject to review by the Audit Committee. Any relationship or service that may potentially affect the objectivity and independence of the independent auditor must be discussed with the Audit Committee. The independent auditor may discuss any issues identified or any difficulties encountered during the course of the financial audits with the Audit Committee.

KPMG has been Huawei's independent auditor since 2000.

Business Structure



As the primary owner of our business strategy, operations management, and customer satisfaction for ICT infrastructure business, the ICT Infrastructure Managing Board conducts end-to-end operations management of our ICT infrastructure business.

- The Carrier BG and the Enterprise BG manage and support solution marketing, sales, and services that target carrier customers and enterprise/industry customers respectively. The two BGs provide innovative, differentiated, and advanced solutions based on the business characteristics and operational patterns of different customers while continuously improving the company's industry competitiveness and customer satisfaction.
- Network Products & Solutions is a department that provides connectivity products and solutions to carriers and enterprise/industry customers. This department is responsible for product planning, development, and delivery as well as for building product competitiveness. Network Products & Solutions is committed to building the best, intelligent connections, delivering better service experiences, and enabling customers' business success.
- The Cloud & AI BG is responsible for the competitiveness and success of Huawei's cloud and computing business. This BG is also responsible for the business's R&D, marketing, ecosystem development, technical sales, consulting, and integrated enablement services. This BG will focus on Kunpeng, Ascend, and HUAWEI CLOUD to build an ecosystem and cultivate fertile soil, so that Huawei can become a cornerstone of the digital world.
- ICT regional organizations are the company's regional ICT business operations centers. They are responsible for developing and effectively leveraging regional resources and capabilities, and also for implementing the company's ICT business strategy in their regions. While establishing closer partnerships with customers and helping them achieve business success, ICT regional organizations

will develop ICT management systems, cyber security and privacy protection management systems, and internal control systems in their regions, and will continue to support the company in achieving profitable and sustainable growth.

To strengthen strategy and risk management within our consumer business and increase the efficiency of its decision-making process, the company operates a Consumer Business Managing Board, which is the primary owner of consumer business strategies, operations management, and customer satisfaction.

- The Consumer BG focuses on serving device consumers and ecosystem partners, and deals with all aspects of the consumer domain. This BG is responsible for business performance, risk controls, market competitiveness, and customer satisfaction in the consumer business.

- The Consumer BG's regional organizations are responsible for their overall business results, consumer satisfaction, ecosystem partner experience, and the brand image enhancement of regional consumer business. They need to gain insight into environmental changes and competition dynamics for the consumer electronics industry, and develop and implement regional consumer business plans and resource investment strategies. These organizations are also responsible for launching products, managing product lifecycles, developing ecosystems, planning and implementing marketing events, and developing and managing channels, retail outlets, and services in their regions. They also need to develop and maintain partnerships, create a favorable business environment, and ensure operational compliance and sustainable development of regional consumer business.

- The Intelligent Automotive Solution BU is an end-to-end organization responsible for the company's intelligent automotive business. By leveraging Huawei's expertise in ICT, the BU is committed to providing new components for intelligent connected vehicles and helping car OEMs build better vehicles.

To gradually build a shared service platform to support the development of our multiple businesses and create an anchor for corporate policy execution, the company operates a Platform Coordination Committee. This committee is designed to push group functions to optimize their execution and operations, simplify cross-function operations, and strengthen collaboration, so that group functions will become the best service organizations available to support and promote business operations. Group functions provide business support, services, and oversight. They are positioned to offer accurate, timely, and effective services to field offices and strengthen oversight while delegating sufficient authority to them.

Improving the Internal Control System

Huawei continued to design and implement an internal control system based on its organizational structure and operating model. The internal control framework and its management system apply to all business and financial processes of the company and its subsidiaries and business units. The internal control system is based on the five components of the COSO framework: Control Environment, Risk Assessment, Control Activities, Information & Communication, and Monitoring. It also covers internal controls of financial statements to ensure their truthfulness, integrity, and accuracy.

Control Environment

A control environment is the foundation of an internal control system. Huawei is committed to a corporate culture of integrity, business ethics, and compliance with laws and regulations. Huawei has issued the *Business Conduct Guidelines* (BCGs) to identify acceptable business conduct. The BCGs must be observed by all employees, including senior executives. Regular training programs are offered, and all employees are requested to sign the BCGs to ensure that the BCGs have been read, understood, and observed.

Huawei has implemented a mature governance structure, with clearly defined authorization and accountability mechanisms. The governance structure comprises the Board of Directors (BOD), its committees, group functions, and multi-level management teams. Huawei clearly defines the roles and responsibilities of its organizations to ensure the effective separation of authority and responsibilities as well as checks and balances through mutual oversight. The CFO of Huawei is in charge of internal controls. The business control department reports to the CFO for any possible defects and improvements already made in terms of internal controls, and assists the CFO in building the internal control environment. The internal audit department independently monitors and assesses the status of internal controls for all business operations.

Risk Assessment

Huawei has a department dedicated to internal controls and risk management to regularly assess risks to the company's global business processes. This department identifies, manages, and monitors significant risks, forecasts potential risks caused by changes to the internal and external environments, and submits risk management strategies along with risk mitigation measures for decision making. All process owners are responsible for identifying, assessing, and managing business risks and taking necessary internal control measures. Huawei has instituted a mechanism for improving internal controls and risk controls to efficiently manage critical risks.

Control Activities

Huawei has established the Global Process Management System and the Business Transformation Management System, released the global Business Process Architecture (BPA), and appointed Global Process Owners (GPOs) in line with the BPA.

Responsible for building processes and internal controls, GPOs:

- Identify key control points and the Separation of Duties Matrix for each process, and apply these to all regional offices, subsidiaries, and BUs.
- Conduct monthly compliance tests on key control points and issue test reports to ensure the effectiveness of internal controls is continuously monitored.
- Optimize processes and internal controls based on business pain points and key requirements for financial statements. The aim is to improve operating efficiency and financial results, ensure compliance and the accuracy and reliability of financial statements, and help achieve business objectives.
- Perform annual assessments of internal controls, comprehensively assess overall process design and process execution within each business unit, and then report the results to the Audit Committee (AC).

Information & Communication

Huawei has developed multi-dimensional information and communication channels to ensure the timely acquisition of external information from customers, suppliers, and other parties. It has also created formal channels for transferring internal information, and offered an online space, the *Xinsheng Community*, for employees to freely communicate their thoughts and ideas. Corporate management holds regular meetings with departments at all levels to effectively communicate management orientation to employees and ensure effective implementation of management decisions. All business policies and processes are available on the company's Intranet.

Managers and process owners regularly organize training programs on business processes and internal controls to ensure that up-to-date information is made available to all employees. The company has established a mechanism for process owners at all levels to regularly communicate with each other, review the execution of internal controls, follow up on internal control issues, and implement improvement plans.

Monitoring

Huawei has established an internal complaint channel, an investigation mechanism, an anti-corruption mechanism, and an accountability system. The *Agreement on Honesty and Integrity* that Huawei has signed with its suppliers clearly stipulates that suppliers may report improper conduct by Huawei employees through the channels stipulated in the *Agreement* to assist the company in monitoring the integrity of its employees. The internal audit department independently assesses the overall status of the company's internal controls, investigates any suspected violations of the BCGs, and reports the audit and investigation results to the AC and senior management. Huawei has also implemented a mechanism for internal control appraisals of GPOs and regional managers, holding them accountable and pursuing impeachment when and where necessary. The AC and the CFO regularly review the company's internal control status, and listen to and review reports on action plans for improving internal controls and plan execution progress. Both have the authority to request the relevant GPOs or business executives to explain their internal control issues and take corrective actions.

Creating Social Value

Balancing Business Value and Social Value

The social value of an enterprise is the total value and contribution it makes in the course of fulfilling stakeholder requirements through its business activities. Upstream and downstream players across a value chain in the digital economy are highly interdependent. In addition, with digital technologies becoming an increasingly integral part of everyday work and life, a company's business activities are increasingly interlinked with its community, the economy, and the environment. At Huawei, we believe that businesses should not solely pursue business value, as such a model is simply not sustainable. Social value should be a key consideration when companies take their business decisions. As businesses contribute social value, they are likely to encounter new business opportunities, which means that they can strike the right balance between business value and social value.

Creating Shared Value and Driving Sustainable Development

In addition to creating business value for its customers, Huawei recognizes the importance of the requirements of all stakeholders, including governments, regulators, industry partners, and academic associations. As part of our commitment to sustainable development, we work with these stakeholders to ensure that our business operations align with broader economic, social, and environmental goals. Huawei's social value framework rests on two pillars:

Creating shared value: Through our own business activities or by working with partners, we help to address societal needs and challenges related to economic growth, employment, the upgrading of industries, supporting SMEs, and industry ecosystems.

Corporate sustainable development (CSD): Our CSD strategy consists of four components – Digital Inclusion, Security and Trustworthiness, Environmental Protection, and Healthy and Harmonious Ecosystem.

Key Initiatives and Progress in 2020

2020 was an incredibly challenging year, marred by a global pandemic, struggling economies, and climate change. Over the past year, Huawei worked ceaselessly to create social value through technological innovations and business activities across the globe. This includes boosting the development of the digital economy and creating jobs; promoting the adoption of new technologies for social good; digital upskilling and contributions to a thriving industry ecosystem; saving energy and cutting emissions; and supporting the fight against COVID-19 with ICT technologies. Huawei believes deeply in the power of technology to provide fresh solutions to the problems facing humanity and achieve sustainability goals.

Boosting economy and employment: Committed to its "Glocalization" strategy, Huawei works tirelessly to boost employment and the economies of the countries and regions where we operate. This includes efforts such as local hiring, local investment, local procurement, and establishing local research facilities. An Oxford Economics report, *The Economic Impact of Huawei in Europe* (November 2020), found that, in 2019 alone, Huawei contributed EUR16.4 billion to Europe's GDP, sustained 224,300 jobs, and drove EUR6.6 billion in tax revenue. In early 2020, we announced a EUR200 million investment in a new plant for wireless products in France, which is expected to directly create 500 jobs.

Delivering both economic and social benefits: ICT technologies directly create value, and also drive immense indirect value by transforming other industries. As they are widely adopted in the industrial,

agricultural, financial, and transportation sectors, among others, new ICT technologies can help to improve organizational and social productivity, which leads to even greater social benefits. Huawei is already exploring applications of 5G in over 20 industries. 5G allows mine companies to achieve safer operations, improve working environments, and boost productivity. In steel factories, 5G-enabled remote control systems free workers from hot and noisy working environments, and drive higher efficiency. In precision manufacturing, 5G can be applied in various scenarios, including machine vision and AR-assisted maintenance. It makes factories more automated and intelligent and enables flexible manufacturing and more efficient production.

Supporting local industry ecosystems and SMEs: Huawei is committed to open collaboration and innovation for a thriving industry ecosystem. We provide open platforms for local partners, SMEs, and individual developers, which helps to incubate local ICT industries and digital economies. Huawei has over 30,000 partners in the enterprise market; more than 120,000 apps are available through our HMS ecosystem. Over 2.3 million developers worldwide have joined the ecosystem. HUAWEI CLOUD is currently working with over 19,000 partners and 1.6 million developers. In addition, more than 250,000 developers are engaging at some level with the full Kunpeng stack, from hardware and software to applications. Another 180,000 developers are producing and sharing new operators, models, and applications using Ascend.

Supporting SMEs: Entrepreneurs and tech experts during an online panel discussion at the launch of the Huawei Spark Malaysia program

Ongoing participation in and contributions to industry organizations and academic associations: Huawei is an active player in industry and academic associations, where we work with stakeholders to advance basic research, develop standards, encourage industry-wide collaboration, and explore solutions to challenges facing industries. We hold over 400 key positions in more than 600 standards organizations, industry alliances, open source communities, and academic associations worldwide. We have submitted over 65,000 standards contributions, and participated in more than 30 industry alliance projects. In addition, we are stepping up our commitment to open source for innovation in basic software. We are a heavyweight and consistent contributor to major open source communities. We have also published more than 590 papers, making us an active player in the world of academic research.

Driving sustainability: Huawei supports the UN's Sustainable Development Goals through ongoing efforts in areas such as digital upskilling, environmental protection, and the fight against COVID-19. The company's flagship CSR program Seeds for the Future equips young people with cutting-edge ICT insights, and has benefited nearly 9,000 top students across 130 countries and regions since its launch. In addition, more than 60,000 teachers and students from over 200 schools have benefited from our digital inclusion initiatives. We are also committed to reducing carbon emissions, promoting renewable energy, and contributing to a circular economy. In 2020, Huawei recycled over 4,500 tons of electronic waste. Throughout the pandemic period, we have worked side-by-side with local communities to support relief efforts in nearly 90 countries while supporting secure and stable network operations.

Sustainable Development

Introduction

2020 was a year for the history books. The sudden outbreak of COVID-19 put the health of everyone around the world in jeopardy, and it impacted our work, our lives, our communities, and the entire global economy. In the midst of the crisis, technology dramatically changed the way we live. ICT, in particular, played an irreplaceable role in fighting the pandemic, reenergizing economies, and ensuring the continuity of essential services.

As a leading global provider of ICT infrastructure and smart devices, Huawei's vision and mission is to bring digital to every person, home and organization for a fully connected, intelligent world. We believe that ICT technologies can support global economic development while improving people's lives. In 2020, Huawei actively aligned its sustainability efforts with the UN's Sustainable Development Goals (SDGs) as it continued to focus on its own four sustainability strategies: Digital Inclusion, Security and Trustworthiness, Environmental Protection, and Healthy and Harmonious Ecosystem. To support the implementation of these strategies, we have established systematic management systems and appointed a Corporate Sustainable Development (CSD) Committee at the Group level. The committee is responsible for guiding Huawei's business units in setting sustainability goals and steadily working towards them.

Overview of Huawei's Sustainability Strategies and Initiatives in 2020

Digital Inclusion

Leaving no one behind in the digital world: Huawei launched its TECH4ALL initiative to promote digital inclusion for all. We focus on equity in education and conservation of nature, and are making technology more inclusive by investing in technology, applications, and skills. The goal of the initiative is to bring digital technology to every person, home, and organization. In 2020, we:

- Rolled out TECH4ALL projects that benefited more than 60,000 teachers and students from over 200 schools around the world.
- Used digital technologies to help 22 protected areas in 18 countries manage natural resources and protect biodiversity more efficiently.
- Forged partnerships with more than 1,500 colleges around the world through the Huawei ICT Academy, with close to 57,000 students having received Huawei certification.
- Added 15 accessibility functions to Huawei smartphones, so that all users in need can benefit.

Security and Trustworthiness

Taking responsibility to build trust: Cyber security and privacy protection are our top priorities, and we continue to invest and remain transparent in both areas. We have improved our software engineering capabilities and practices, built resilient networks, developed trustworthy and high-quality products, and supported stable network operations and business continuity. In 2020, we:

- Assessed, tracked, and managed the cyber security risks of more than 4,000 suppliers worldwide.
- Signed data processing agreements (DPAs) with more than 5,000 suppliers and performed extensive due diligence to ensure compliance.
- Opened six Cyber Security and Privacy Protection Transparency Centers to strengthen communication with stakeholders.
- Guaranteed network availability during more than 200 emergencies and major events.

Environmental Protection

Contributing to a clean, efficient, low-carbon, and circular economy: We are committed to minimizing our environmental impact in manufacturing, operations, and over the entire lifecycles of our products and services. Huawei's innovative products and solutions help industries reduce their energy consumption and emissions, and contribute to the circular economy. We actively work with all our industry partners to shrink our carbon footprint. In 2020, we:

- Urged 93 of our top 100 suppliers to set a carbon emission reduction target.
- Generated 12.6 million kWh of electricity through PV power plants on Huawei campuses.
- Used 1.55 billion kWh of clean energy, reducing carbon emissions by more than 620,000 tons.
- Expanded our device recycling program to cover 48 countries and regions, and recycled more than 4,500 tons of electronic waste.

Healthy and Harmonious Ecosystem

Collaborating for the common good: We operate with integrity and in compliance with all applicable laws and regulations, and continue to enhance sustainability risk management. We work to ensure that our employees can develop and realize their personal value. We conduct due diligence on our global supply chain to ensure its sustainability. We actively contribute to the communities we operate in. We also work with all industry partners to build a healthy and harmonious industry ecosystem. In 2020, we:

- Invested about CNY11.9 billion in employee benefits.
- Made more than 3,400 local hires in our offices outside China, and delivered training for local employees with total attendance of over 30,000.
- Saw more than 700 engineering service suppliers obtain OHSAS 18001/ISO 45001 certification.
- Ran our Seeds for the Future program online for the first time, attended by more than 3,000 students from over 100 countries and regions.

Sustainability Honors and Awards

Honor/Award Name	Issued by
Climate A List	CDP
Top Employer Europe 2020	Top Employers Institute
2020 Best Practice Award in recognition of Huawei's progress towards SDGs	Global Compact China Network
Huawei PowerStar, a 3-level energy saving solution: Best Mobile Innovation for Climate Action at the 2020 Global Mobile (GLOMO) Awards	GSMA
"Piagam Apresiasi" award of KAMI (information security)	National Cyber and Encryption Agency of Indonesia
Nigeria Award for Outstanding Contributions to Digital Technology and Cyber Security	Cyber Security Committee under the Senate of Nigeria
Best Cyber Security Ecosystem for Digital Transformation	Romanian Digital Transformation Commission
Top Employer and Best Contribution to EHS	Egyptian Ministry of Manpower
Golden Taxpayer	Income and Sales Tax Department and Ministry of Finance of Jordan
Prime Minister Award: Digital International Corporation of the Year	Prime Minister's Office of Thailand
2020 China Investor of the Year Award	China-Britain Business Council

Digital Inclusion

In the wake of the COVID-19 outbreak, the way we study, work, and live was completely redefined; cloud offices, online education, and contactless shopping became the new normal. During this process, connectivity has been driving sustainable development in ways we never saw before. The pandemic highlighted the digital divide that exists between different parts of the world, showing that digital inclusion is more necessary and urgent than ever.

To leave no one behind in the digital world, Huawei has continued with its TECH4ALL initiative. Over the past two years, we have worked with global partners such as UN agencies, NGOs, research institutes, governments, and customers to promote digital inclusion, focusing on four high-impact domains: equity and quality in education, environmental protection, inclusion and equity in health, and balanced development.

As of the end of 2020, Huawei had worked with more than 20 partners, such as UNESCO, the International Union for Conservation of Nature, and Rainforest Connection, and has made solid progress in areas such as education, nature conservation, and health.

Moving forward, we hope that more individuals and organizations will join the TECH4ALL initiative to drive progress towards the UN's SDGs.

Technology for Equity and Quality in Education

Education is the root of progress, and universal education is a defining feature of modernity. Human civilization took a great step forward when education became a right for every person, and when every person began to enjoy its benefits.

However, economic and institutional inequalities mean that access to educational resources in certain regions is still far below the level enjoyed in the developed world. Unfortunately, the COVID-19 pandemic has only exacerbated this gap, undermining education equity. To address this challenge, Huawei is working with its partners like UNESCO to provide people in different regions with equal access to high-quality education. In 2020, we rolled out our Skills on Wheels and Connecting Schools programs in more than 200 schools around the world, benefiting more than 60,000 teachers and students.

Bridging the Education Gap in Bangladesh

An estimated one billion children have had their schooling interrupted in some way since the start of the COVID-19 pandemic. With a relative lack of access to digital technologies compounding the effects of the shutdown, Bangladesh's education system faces enormous challenges, with more than one million children affected.

Huawei has operated in Bangladesh for more than 20 years and is committed to advancing digital development in the country. To reduce the impact of school closures, Huawei teamed up with local company Bijoy Digital and UNESCO in July 2020 to launch a two-year education project, with the goal of ensuring that Bangladeshi children can continue learning from home during the pandemic.

Huawei has provided tablets preloaded with Bijoy Digital education apps. With animated graphics, the apps are designed to be fun to keep students interested and engaged. With these apps, children can study in the comfort and safety of their own homes. Teachers benefit too from being able to offer remote help and ensure that children stay on track with their studies. The initiative has had a positive impact on students and teachers. We plan to expand the program to cover more schools and benefit more students and teachers.

Bangladeshi child Ariyan Dihan studying at home during the pandemic

Learning Never Stops at Senegal DigiSchool

COVID-19 changed education everywhere. To ensure that students keep learning, UNESCO launched the Global Coalition for Education in March 2020.

As a member of the Coalition, Huawei launched the DigiSchool project in August 2020, in partnership with Senegal's Ministry of National Education, the UNESCO Regional Office for West Africa, and the local carrier Sonatel. The project aims to provide remote training to local teachers to ensure that learning never stops – even during the pandemic. The project aims to benefit 20,000 teachers and 100,000 students in 200 schools. By the end of December 2020, more than 200 teachers had received training in the digital skills required for distance education, which helped 15,000 students in over 60 schools.

A teacher learning distance education skills

Technology for Nature Conservation

The natural environment that sustains life on Earth is deteriorating. Problems like climate change and rising sea levels threaten the survival and well-being of every living thing. Governments and the public around the world are eager to take action.

Conventional methods of energy conservation, emissions reduction, and carbon fixation are already past their peak effectiveness, but nature-based solutions (NbS) offer a new approach. These solutions protect animal habitats like forests and wetlands, which helps not only to absorb carbon dioxide from the atmosphere, but also to maintain biodiversity. Together with environmental organizations and other partners, Huawei is actively exploring how to apply its ICT technologies to protecting our environment.

"Guardians": Protecting Forests and Oceans

Huawei and Rainforest Connection (RFCx) are working together to use HUAWEI CLOUD AI and secondhand Huawei mobile phones to identify sounds of illegal logging through a solar-powered sound monitoring system deployed in the rainforest. Nicknamed the "Guardian", the system collects sound data and uploads it to a cloud server. It can run 24/7 even in the extreme temperature, humidity, and rainfall. Whenever it detects the sounds of illegal logging, such as chainsaws and trucks, it immediately sends the location to forest rangers so that they can quickly intervene.

Today, Guardians are no longer just used to detect sounds of logging in rainforests. In 2020, RFCx and Huawei worked together to apply the Guardians in new domains. In Greece, we used Guardians to monitor sounds of gunshots in nature reserves to protect wild antelopes from poachers. In Ireland, Guardians are used to identify calls of whales and dolphins so that approaching ships can redirect their course to avoid disturbing or harming these marine species. In Chile, we use Guardians to prevent illegal poaching in Nahuelbuta National Park and to protect the endangered Darwin's foxes.

By the end of 2020, Guardians were deployed in 18 countries across five continents. They have collected 84 years' worth of audio, helping local rangers and conservationists protect nature and biodiversity.

Huawei, RFCx, and a local organization working to end the poaching of Balkan Chamois in Greece's Northern Pindos National Park

Technology Protects the Northeastern China Tiger and Leopard National Park

The International Union for Conservation of Nature (IUCN) categorizes Amur tigers as "endangered" and Amur leopards as "critically endangered" on its Red List. In a field study of these animals in China, a research team from Beijing Normal University uncovered invaluable information: From 2012 to 2014, there were at least 27 Amur tigers and 42 Amur leopards active in China.

However, all of their work was done manually, and slow data collection made conservation efforts extremely inefficient. To address this issue, the Amur Tiger and Amur Leopard Monitoring and Research Center, part of the National Forestry and Grassland Administration of China, developed a sky-to-earth system that covers the entire park. This system is the first of its kind in the world, and monitors, assesses, and manages natural resources in real time.

Powered by a 700 MHz LTE network built by Huawei and Jishi Media, the system can stream real-time HD video captured by infrared camera traps, ecological data, and footage from road checkpoints and fire safety cameras. The system also supports video calls and the tracking of ranger patrols, so that conservationists have remote access to real-time data to support their research.

By the end of 2020, the LTE network almost covered the entire 14,600-square-kilometer national park. Over the past year and a half, the monitoring system has captured over one million traces of wild animals and human activities. Conservationists have discovered new litters of cubs in the tiger and leopard populations every year, offering hope for those who work to protect the future of these majestic animals.

An LTE base station in the Northeastern China Tiger and Leopard National Park that reuses existing fire towers

Technology for Inclusion and Equity in Health

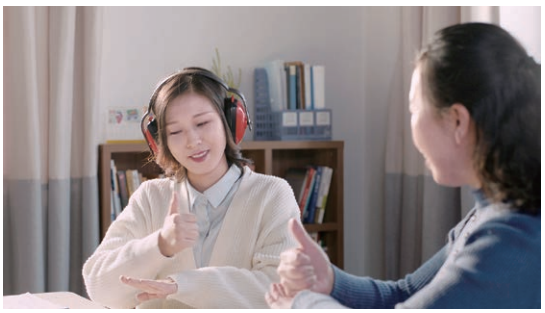
Health is a basic human right. Our shared goal is to make healthcare easier to access for more people, so that diseases can be prevented and treated early on, and all of humankind can enjoy the benefits of good health. Huawei is actively seeking out partners in three areas: access to healthcare, telemedicine, and medical research. With innovative ICT technologies, we can help offer equal access to high-quality healthcare resources to everyone, wherever and whoever they might be.

Easier Communication for the Deaf and Hard of Hearing

In China, more than 27 million people are deaf or hard of hearing. However, there is a severe shortage of accessibility support and sign language services.

To ensure that these people are not left behind in the digital world, one of our partners has developed the Trouble-free Hearing app. Powered by HUAWEI CLOUD AI, this app is designed to make online learning and entertainment more accessible, and to enable easier communication in everyday scenarios. The app can also help deaf people communicate in more challenging situations, like talking to doctors, legal consultations, and at service windows.

This app can generate subtitles for videos played on mobile phones, providing access to a wider range of content. The app also provides face-to-face sign language interpretation services via remote video conferencing for more complex situations. By the end of 2020, more than 15,000 people were using the Trouble-free Hearing app.



A developer of the Trouble-free Hearing app learning sign language

Security and Trustworthiness

In the globalized digital era, security and trustworthiness are the cornerstone of a fully connected, intelligent world. Huawei is committed to providing secure and trustworthy digital products and services. We place cyber security and privacy protection at the top of our agenda. We continue to invest in these fields while remaining open and transparent. We also continue to improve our software engineering capabilities and practices, build resilient networks, and develop trustworthy and high-quality products. We have a well-established customer network assurance system and a business continuity management system. These systems help us ensure smooth communication in every circumstance and supply continuity during major events, and deliver products and services required by customers in a timely manner.

Cyber Security and Privacy Protection

The COVID-19 pandemic has changed the way we live and how organizations operate. Many activities have gone online, and telecommuting, video conferencing, distance education, and telemedicine have become the new normal. As digital transformation continues to pick up speed, we are aware of our increased responsibilities around cyber security and privacy protection. Huawei has continuously optimized our end-to-end systems, making sure that each domain is continuously updated with the latest advances in cyber security and privacy. In 2020, we took important actions in areas like process transformation, solutions, security technologies and standards, independent verification, supply chain, and personnel management. These actions included a transformation program for better software engineering, technological innovations to help customers cope with security risks, and enhanced cyber security risk management in our supply chain, including capacity building for our partners.

(More on cyber security and privacy protection on pages 66 to 70)

Openness and Transparency

Cyber security is a challenge we all face. Huawei looks forward to communicating and cooperating with stakeholders in an open, transparent, and responsible manner. We aim to jointly address cyber security and privacy protection challenges through technological innovation, standards/certifications, and improved governance. We are committed to protecting people's cyber security and personal privacy while they enjoy the benefits of technological advances. As a platform for communication and cooperation, Huawei has opened six Cyber Security and Privacy Protection Transparency Centers around the world. We welcome all stakeholders to use the centers to strengthen communication and cooperation in security standards, testing and verification, and technological innovation. We look forward to continuing to improve capabilities and share value in order to confront the challenges of cyber security and privacy protection together.

Supporting Network Stability

Supporting the stability of telecom networks and services is our top social responsibility as a company.

We strive to make sure that everyone has reliable access to ICT services anytime, anywhere. To this end, we have established comprehensive systems to support customer networks, including our organizational structures, personnel, processes, and IT tools. We have also developed contingency plans to ensure service continuity in the event of emergencies like earthquakes, floods, conflicts, and epidemics.

More than 5,000 Huawei engineers support customer networks 24 hours a day from our two global and ten regional technical assistance centers. The COVID-19 crisis in 2020 posed huge challenges for customer network maintenance, yet despite the difficulties, our team stood by our customers. We guaranteed uninterrupted communications for more than three billion people, supported more than 1,500 customer networks in more than 170 countries and regions, and ensured network availability during more than 200 emergencies and major events.

Restoring Networks After a Major Earthquake in Turkey

On January 24, 2020, a magnitude-6.8 earthquake struck the Turkish province of Elazig, followed by more than 200 aftershocks. Buildings collapsed, and many people were left without homes and in urgent need of rescue. Communication was critical. Every second of service downtime brought added stress.

The Huawei Turkey Rep Office activated its network assurance plan immediately after the earthquake struck and quickly assembled a team from our Global Technical Assistance Center and R&D departments. We finalized the network recovery plan with our customers within just 20 minutes, and a short time later, seven emergency communications trucks were on their way to the site. Two hours after the earthquake, a network repair team of 21 Huawei employees set off to the earthquake zone with two trucks full of necessary supplies, including wireless equipment, microwave equipment, and power generators. In the cold night, our engineers climbed the towers to repair equipment, test communication links, and set up emergency sites.

Huawei and its customers raced against the clock, and completely repaired all of the severely damaged sites in just three days so that people could get back to their normal lives.

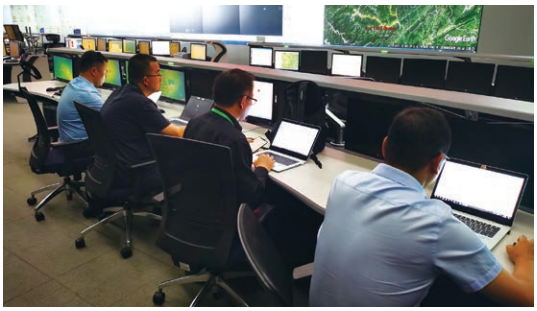
Huawei's network assurance team in Turkey assisting customers set up emergency base stations

Restoring Networks During a Major Flood in Gansu, China

In mid-August 2020, Longnan, in China's Gansu Province, was hit by a major flood and mudslides. Power was knocked out, and optical cables snapped. Communications were interrupted in many counties; Wen County was hit the hardest.

The Huawei Gansu Rep Office immediately initiated its level-1 emergency response plan and set up an emergency team to provide support around the clock. On August 17, Huawei and our customers agreed on the emergency network recovery plan, and dispatched more than 20 engineers to Longnan to repair the networks. The roads to Wen County were blocked by mudslides, meaning our engineers had to carry the optical cables 70 kilometers to the affected sites and ensure that communication services were restored in time. By August 20, the backbone network was back up and running.

After one month of hard work, all communication services in affected areas were restored. The Longnan government thanked the Huawei team for fulfilling the company's responsibilities to the community.



Huawei's network troubleshooting team

Business Continuity

In today's highly globalized and highly specialized world, Huawei relies on many third parties to help us in procurement, manufacturing, logistics, and global technical services. This makes business continuity management critical. Through years of sustained investment, Huawei has established a business continuity management system that covers our processes end-to-end, from suppliers to Huawei and on to our customers, to ensure that the risks within our everyday business activities are managed properly.

(More on business continuity on pages 59 to 60)

Environmental Protection

There were frequent environmental crises in 2020: bushfires in Australia, thawing permafrost in Siberia, and rising temperatures at the North and South Poles. These problems are ringing alarm bells and forcing us to reassess our relationship with the environment.

Huawei believes that technology plays a critical role in addressing environmental challenges. We have spent decades working to protect the planet with innovative technology and to contribute to a sustainable world. Specifically, we focus on three areas:

Reducing carbon emissions: We take managerial and technical measures to reduce the carbon footprint of our products. We also work with our upstream and downstream partners to help them reduce their environmental impact and to build a greener supply chain. Our innovative ICT technologies can also help industries reduce their carbon emissions. We believe it is our responsibility to take every step we can to cut carbon emissions.

Promoting renewable energy: Using new technologies like photovoltaics and AI, we are introducing more renewable energy and making the fullest possible use of it, providing green power for the intelligent world.

Contributing to a circular economy: We are using more eco-friendly materials and less raw materials, making our products more durable and easier to disassemble, and improving our product recycling program. We hope to make the world a better place by using less resources.

Reducing Carbon Emissions

Huawei provides a wide range of products, from smart devices to wireless access, fixed access, data communications, optical transmission, and intelligent computing. We assess the carbon footprints of our own equipment using the lifecycle assessment (LCA) methodology. We pay attention to the carbon emissions at each stage of the lifecycle of our products to minimize energy consumption. And our ICT technologies, delivered with our partners, help customers in many different industries cut their energy consumption and emissions.

Huawei's Optical Network Solution at Dubai Creek Harbour

Dubai Creek Harbour, a 60,000-square-kilometer mega-development by Emaar Properties, deployed Huawei's optical campus solution to help create a green and sustainable residential and commercial community. Unlike conventional aggregation networks, Huawei's passive optical network (PON) technology is not limited by the 100-meter rule for copper cabling, so it does not require multiple weak-current equipment rooms. This means 80% savings in equipment room floor space. In addition, the simplified network architecture has helped cut Emaar Properties' power consumption by 30% – about 130,000 kWh every year. That reduces carbon emissions by about 62 tons, equivalent to planting more than 2,700 trees.

Huawei's green optical network helps Dubai Creek Harbour perfectly coexist with its natural environment

Promoting Renewable Energy

To combat climate change, more countries, regions, and organizations are now interested in acquiring and using renewable energy. Huawei wants to play an active role in the transition to renewable energy. We use renewable energy in our operations wherever possible and are building more PV plants across our campuses. These plants generated 12.6 million kWh of electricity in 2020. We also integrate ICT into photovoltaic technologies so that the solar systems can generate more electricity. We are working to extract more electricity out of every joule of sunlight, bringing green power to many more households. In addition, our smart PV plants for agriculture and fisheries are perfect examples of mixed land use, opening up new possibilities for integrating energy systems into local environments, industries, and economies.

Smart PV Plant for Agriculture in Ningxia, China

The Binhe New District on the eastern banks of the Yellow River in Ningxia used to be a harsh desert environment.

In 2014, Baofeng Group began managing this desertified patch of 107 square kilometers by planting alfalfa and goji to improve the soil.

Since 2016, Huawei and Baofeng Group have jointly built PV power plants with a total capacity of 640 MW over the goji plantations. The solar panels have cut evaporation from the soil by 30–40% and increased vegetation coverage by 86% in just a few years, which has significantly improved the local environment. The desert has turned into an oasis, creating a rich field of ruby-red berries topped by an azure sea of solar cells. As of the end of 2020, these PV power plants had generated 4.31 billion kWh of electricity, displacing 2.047 million tons of carbon dioxide emissions, which is equivalent to planting 89.01 million trees.

A farmer picking goji berries at the Baofeng Group PV plant in Ningxia

Contributing to a Circular Economy

In a linear economy, we acquire materials from natural resources and bury or incinerate them when they are no longer needed. Under this model, we are consuming resources that are already very limited, and burdening our environment. Huawei is committed to exploring how to contribute more to the circular economy, reducing our reliance on natural resources, and providing customers with more environmentally friendly products. To reduce the pressure on our environment, Huawei continues to improve its product designs, reduce the weight and size of product packaging, and use fiber-based packaging instead of plastic packaging, so that the packaging materials can be more easily disposed of. We have also established a global recycling program to extract residual value from electronic waste, which will help us reduce our consumption of resources, and contribute to the circular economy.

E-waste Recycling

According to the UN's *Global E-waste Monitor 2020*, e-waste has become the world's fastest-growing domestic waste stream. It is part of Huawei's social responsibility to recycle as much electronic waste as possible and reduce the impact of our products on the environment. We have built a global recycling program for device products and scaled up our product trade-in program. Over the course of 2020, Huawei recycled more than 4,500 tons of e-waste through its nearly 2,000 recycling stations in 48 countries and regions around the world.

When we receive e-waste, we first categorize the products so that we can most efficiently recycle them and recoup their full value. Electronics that can be refurbished are handed to our partners for resale through official sales channels. Since 2015, we have resold nearly 500,000 devices. Waste that must be scrapped is given to qualified third parties who can disassemble and dispose of them in an environmentally friendly manner, to minimize environmental pollution.

Huawei's four-step trade-in process

Healthy and Harmonious Ecosystem

For more than 30 years, we have worked closely with our customers and partners to bring communications technologies out of ivory towers and labs and put them to practical use in cities and remote regions the world over. By doing this, we are bridging the digital divide and contributing to the advancement of human civilization. Today we find ourselves in a business environment full of uncertainty. We are working more closely with our ecosystem partners to contribute more value to society. Our dedicated employees are the foundation we rely on, and we are very concerned with their health and safety and personal growth. We conduct business with integrity and adhere to standard business ethics. We believe that legal compliance is a bulwark against the uncertainties of international politics. We have made sustainability a key part of our procurement strategy and work with our partners across the supply chain to build a healthy and harmonious business ecosystem. Huawei is an active, productive member of the communities where we operate. We actively fulfill our community responsibilities and help local communities to advance.

Caring for Employees

We rely on our dedicated employees to support our sustainable growth. We have a positive, diverse, and open approach to managing people. We fast-track outstanding employees and offer them a stage on which they can maximize their value. We ensure that all kinds of people find the roles that best suit them, maximize their contributions while in their prime, and get the rewards they deserve. We attach equal importance to monetary and non-monetary incentives. We are working to create a warm, relaxed, and efficient workplace.

Offering Employees a Choice of Career Paths

We offer clear career development opportunities, with two distinct career paths for our employees to follow: the technical expert path and the manager path. If an employee wants to be an expert, they can follow a ladder that goes from senior professional to expert and then to leader of a technical field. If an employee is looking to become a manager, they can start as a first-line manager, then move on to project leader or functional leader, and finally a business leader. These two paths can also overlap, depending on the company's business needs and the employee's career plan. Whichever path an employee takes, manager or expert, they can contribute their unique value and become an integral part of the company.

As our employees climb the career ladder, they are given plenty of opportunities for training and promotion so they can hone their skills and realize their potential. In 2020, we offered about 11,000 face-to-face training courses that were attended by more than 128,000 employees, including more than 14,000 local employees.

More than 200,000 people, including 20,000 local hires, took our online courses. After the outbreak of COVID-19, Huawei invested more in online training for new employees outside China. In 2020, we provided high-quality online orientation training and rich online learning resources for more than 3,400 new employees in 13 regions. Other training programs, like hands-on training, practice in real projects, training in specialized skills, and mentorship programs, have continued to increase the expertise of our local hires outside China.

Huawei employees at a training session

Ensuring Employee Health and Safety During the COVID-19 Pandemic

COVID-19 posed a serious threat to people's physical and mental health. To ensure the health and safety of our employees, Huawei took swift action after the outbreak of COVID-19. We developed solutions for our subsidiaries in the countries and regions hit the hardest by the pandemic. Our efforts included:

- Set up a dedicated team and developed preventive measures for day-to-day activities.
- Quickly reserved sufficient supplies of protective equipment and shipped more than 620 batches of supplies to Huawei subsidiaries in over 120 countries and regions.
- Gave medical insurance for COVID-19 to family members accompanying our expatriate employees; increased the sum insured for employees affected by work-related or infectious diseases, and introduced more health insurance suppliers to ensure high quality employee insurance services.
- Developed a comprehensive treatment program to handle COVID-19 cases 24/7 that includes local medical resources, online platforms, and support from Chinese experts.

To minimize the fear caused by the pandemic, we coordinated internal and external resources and organized more than 30 lectures on preventive health measures. More than 100,000 staff members from over 130 countries and regions attended these lectures. We also provided counseling for over 3,500 employees who suffered from COVID-19-related anxiety.

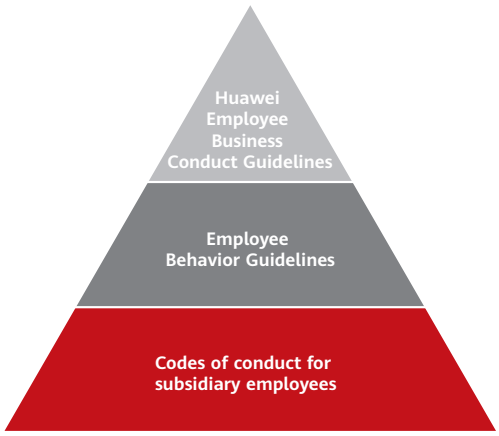
Huawei employees receiving COVID-19 tests

Business Ethics

We conduct business with integrity, adhere to standard business ethics, and observe all applicable laws and regulations in the countries and regions in which we operate. This is a guiding principle for our management team. For years, we have worked hard to build a compliance management system that aligns with industry best practices and embeds compliance management into every link of our business activities and processes. These efforts continue to this day. We also require every employee to stay compliant in everything they do. Huawei values and works hard to create a culture of integrity, and requires all employees to comply with its Business Conduct Guidelines (BCGs).

In 2020, Huawei continued to enhance our compliance program across multiple domains, including trade compliance, finance, anti-bribery, intellectual property, trade secrets, cyber security, and privacy protection. We have engaged and collaborated openly and proactively with stakeholders including our customers, partners, and government regulators, to foster mutual understanding and trust. Through ongoing efforts to strengthen compliance, Huawei continues to win the respect and approval of governments and partners around the world.

Huawei Employee Business Conduct Guidelines + Codes of conduct for subsidiary employees: Incorporating compliance requirements into employee behavior



Supply Chain Responsibilities

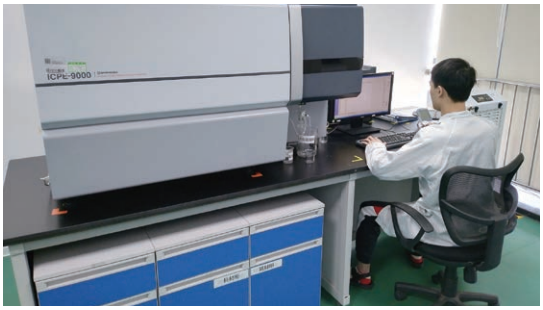
Sustainability plays a vital role in our procurement strategy and is a key part of our supplier management process, from supplier qualification and selection to performance appraisals and day-to-day management. We work closely with customers and industry organizations to push suppliers to keep improving.

In 2020, we assigned risk ratings to more than 1,600 major suppliers, and conducted onsite audits on more than 300 suppliers and new suppliers that posed a medium or high risk. The results of the audits were considered in supplier performance assessments.

We also worked with our customers and industry organizations to create a more transparent and sustainable supply chain. To cope with the COVID-19 pandemic, we incorporated pandemic prevention as part of our corporate social responsibility (CSR) requirements in procurement and helped suppliers purchase necessary supplies.

Helping Suppliers Manage Hazardous Substances Better

Huawei requires all new suppliers to have QC 080000 Hazardous Substance Process Management (HSPM) certification. Every year, we conduct an HSPM risk assessment on suppliers and arrange for internal and external experts to audit high-risk suppliers. In 2020, Huawei organized several training sessions and workshops on hazardous substance management, which were attended by over 880 participants from more than 250 suppliers. Huawei requires its suppliers to ensure that the paint, ink, adhesives, and cleaning agents they use meet the standards for volatile organic compounds, and prohibits the use of cleaning agents, degreasing agents, and release agents that contain hazardous substances like benzene, toluene, xylene, or any of the nine defined classes. Huawei also pushes its suppliers to reduce their use of five other hazardous substances including hydrofluoric acid and nickel acetate.



A Huawei supplier conducting a test for hazardous substances

EHS for Engineering Service Suppliers

Huawei encourages our engineering service suppliers to put in place and optimize their EHS systems and to obtain certification. So far, more than 700 suppliers who work with Huawei have been certified to OHSAS 18001 or ISO 45001. To improve suppliers' EHS awareness and skills, Huawei has launched an EHS development program targeted at our suppliers. This program is enhancing Huawei's EHS leadership, improving our ability to manage processes, running assessments of EHS capabilities, and instituting reward and accountability programs to encourage suppliers to make ongoing improvements. By the end of 2020, the CEOs of more than 2,500 Huawei suppliers had signed the CSR and EHS commitment letter.

To help the fight against COVID-19, Huawei and our partners continued to deploy networks in affected areas as requested by carriers and governments, to provide essential communication services. Huawei's *Guide to Safe Construction and Protection in Affected Areas* encourages partners to take effective preventive measures, to work safely, and to reduce the risk of infection by providing clear instructions to staff on how to work before, during, and after construction, and on how to handle emergencies.

EHS training and protective equipment for our engineering service suppliers

Community Responsibilities

Huawei is committed to creating value for the communities we operate in. We are working to create a positive impact on these communities with our innovative digital technologies. We also work with governments, customers, companies, and non-profit organizations to roll out projects aimed at giving back to local communities. We do what we can to protect the environment and develop a skilled ICT workforce. In addition, we donate to local communities. All these efforts contribute to the development of local communities.

Fighting COVID-19 Together Using Technology

The public health crisis of 2020 was an unprecedented challenge for all of us, and working together to fight the pandemic was a global priority. As a global ICT company, Huawei was concerned about the difficulties people faced around the world. While we continued to ensure the stable operations of networks, we actively used ICT technology to assist the pandemic response in local communities. As part of our commitment to multilateral international cooperation, we worked closely with local governments, community organizations, international organizations, and our customers and partners to protect the health and safety of the people we serve. In Malaysia and Saudi Arabia, we installed telepresence videoconferencing systems so that different organizations responsible for pandemic response could collaborate more seamlessly. This allowed hospitals to share clinical experience more efficiently and governments to issue guidance more effectively. In Ecuador and Italy, we helped hospitals deploy AI-assisted CT scan screening systems to expedite the diagnosis of potential COVID-19 patients and reduce the strain on their healthcare systems. In Namibia and Argentina, we helped install infrared thermometers in crowded places to prevent the spread of the virus. In total, Huawei provided technical assistance to nearly 90 countries, doing our best to support our local communities in this time of great need.

Seeds for the Future Program: Sowing Seeds for the ICT Industry

The Seeds for the Future program provides young people in the countries and regions where Huawei operates with unique opportunities to broaden their horizons and learn about different cultures. With this program, students can put into practice what they learned in their university courses, and meet with senior industry experts. After the program, they can continue to generate new ideas and learn new skills by interacting with other program alumni. The program has pushed local ICT industries forward while sowing the seeds of hope for the ICT industry.

Because of the COVID-19 pandemic in 2020, the Seeds for the Future program was held online for the first time. It attracted over 3,000 students from more than 100 countries. More than 400 stakeholders engaged with the students as part of the program, and spoke highly of it. 2020 was the 12th anniversary of the Seeds for the Future program. More than 2,400 people watched the year-end celebration, which was held online, and left nearly 5,000 messages during the live streaming. The alumni were happy to share their ideas while bidding farewell to 2020 in a positive and enjoyable way.

Participants in the Seeds for the Future program attending online training

An alumnus of the Seeds for the Future program watching the 2020 online year-end celebration

Respecting Human Rights

Huawei adheres to all applicable international and national laws and policies and develops products and services in compliance with international standards and certifications. Huawei respects all basic human rights as promoted by the *Universal Declaration of Human Rights*. We strive to ensure that our business activities will not adversely impact human rights. Huawei has been a member of the United Nations Global Compact (UNGC) since 2004, and is also a member of the Responsible Business Alliance (RBA). In addition, Huawei is committed to the *United Nations Guiding Principles on Business and Human Rights* and standards released by the International Labor Organization (ILO), among others.

Huawei believes that connectivity is a basic right for every human being. We are committed to building better network connectivity and providing convenient and affordable information and communications services to billions of people around the world using our innovative technologies. Ubiquitous broadband and connectivity will create new jobs, promote development, decrease poverty, and improve quality of life. In addition, connectivity will help us respond to global challenges, reduce the human impact on the environment, and provide essential communications services to support rescue and relief efforts during natural disasters.

Key Areas

Building on its existing corporate sustainable development organization, Huawei has strengthened its management of key areas that may have an impact on human rights. This team is responsible for managing and overseeing any adverse impact on human rights that may exist within our business activities and supply chain.

- **Ensure that technology is used to benefit humanity**: Technology should be used to enhance human, social, and environmental well-being. Huawei opposes the misuse of technology that may have an adverse impact on human rights. We carefully evaluate the long-term and potential impact of our new technologies on society in the design, development, and use of our products, and work hard to ensure that our products and services are used in accordance with their commercial purpose. To address the unknown risks that may arise from the widespread use of new technologies, Huawei has expanded its existing processes and governance programs, and we are committed to working with our suppliers, partners, and customers to manage any potential negative impact of technology development.

- **Protecting privacy**: Huawei attaches great importance to privacy protection, and we take our responsibilities seriously. We comply with all applicable privacy laws worldwide, including the EU General Data Protection Regulation (GDPR). Huawei has embedded privacy protection requirements into our corporate governance and every phase of our personal data processing lifecycle. We follow the principles of privacy and security by design and by default and conduct privacy impact assessments before the release of any product or service, especially when they involve sensitive personal data or sensitive usage. Huawei also requires our suppliers to comply with requirements for personal data protection. A total of 473 Huawei privacy professionals have been certified by the International Association of Privacy Experts (IAPP), placing Huawei among the top companies globally.

- **Safeguarding labor rights**: Huawei supports and protects the rights of its employees through detailed, equitable regulations that cover all stages of an employee's relationship with the company, including recruitment, employment, and exit. We are committed to providing equal opportunities for all employees. When it comes to employee recruitment, promotion, and compensation, we do not discriminate against anyone on the basis of race, religion, gender, sexual orientation, nationality, age, or disability. We prohibit the use of forced labor, whether overt or covert, and all use of child labor.

- **Maintaining a responsible supply chain**: Huawei works closely with our suppliers. We comply with our customers' sustainability requirements and any audit requests. In turn, we require that our suppliers respect the rights of their employees, build sustainability systems that conform to industry standards, and comply with legal requirements with regards to environmental protection, health and safety, privacy, and anti-bribery compliance. Huawei has a comprehensive qualification process for all new suppliers, and carries out annual audits on current suppliers. All suppliers are evaluated based on their sustainability performance, the results of onsite audits, and the completion of any corrective actions.

Respecting human rights has been a long-standing focus for Huawei. In compliance with all applicable laws, regulations, and standards, we actively communicate with international organizations, governments, and industry institutions to develop human rights standards and guidelines in the use of new technologies, especially those technologies that are likely to be widely adopted. At the same time, we will redouble efforts to raise awareness of human rights among all of our employees and will optimize management mechanisms to promptly identify, manage, and mitigate any related vulnerabilities or impact within our organization.

Abbreviations, Financial Terminology, and Exchange Rates

Abbreviation	Full Name
3GPP	3rd Generation Partnership Project
AAU	Active Antenna Unit
ACM	Association for Computing Machinery
ADN	Autonomous Driving Network
AEO	Authorized Economic Operator
AI	Artificial Intelligence
AII	Alliance of Industrial Internet
API	Application Programming Interface
AR	Augmented Reality
ARPU	Average Revenue Per User
ASIL	Automotive Safety Integrity Level
BCGs	Business Conduct Guidelines
BCM	Business Continuity Management
BG	Business Group
CAGR	Compound Annual Growth Rate
CANN	Compute Architecture for Neural Networks
CC	Common Criteria
CFO	Chief Financial Officer
CGU	Cash-Generating Unit
CISSP	Certified Information Systems Security Professional
CSR	Corporate Social Responsibility
DPO	Days of Payables Outstanding
DSO	Days of Sales Outstanding
EAL	Evaluation Assurance Level
EHS	Environment, Health, and Safety
EMEA	Europe, the Middle East and Africa
EMT	Executive Management Team
ETC	Electronic Toll Collection
ETSI	European Telecommunications Standards Institute
FC	Finance Committee
FDD	Frequency Division Duplex
FWA	Fixed Wireless Access
GCI	Global Connectivity Index
GDP	Gross Domestic Product
GIO	Global Industry Organizations
GMS	Google Mobile Services
GPO	Global Process Owner

Abbreviation	Full Name
HCIE	Huawei Certified ICT Expert
HD	High Definition
HDR	High Dynamic Range
HMS	Huawei Mobile Services
HPC	High-Performance Computing
HRC	Human Resources Committee
IAPP	International Association of Privacy Professionals
ICT	Information and Communications Technology
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IFRS	International Financial Reporting Standards
IoT	Internet of Things
IP	Internet Protocol
IPD	Integrated Product Development
ISO	International Organization for Standardization
ISP	Internet Service Provider
ITO	Inventory Turnover
ITU	International Telecommunication Union
LTC	Lead to Cash
MAN	Metropolitan Area Network
MEC	Multi-access Edge Computing
MIMO	Multiple-Input Multiple-Output
NAS	Network Attached Storage
NGO	Non-governmental Organization
NPU	Neural Processing Unit
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OPEX	Operating Expense
OS	Operating System
OTN	Optical Transport Network
OXC	Optical Cross-Connect
PC	Personal Computer
POB	Performance Obligation
PUE	Power Usage Effectiveness

Abbreviation	Full Name
PV	Photovoltaics
R&D	Research and Development
RAM	Random Access Memory
RAN	Radio Access Network
RRU	Remote Radio Unit
SA	Standalone
SDG	Sustainable Development Goal
SDK	Software Development Kit
SDN	Software-Defined Networking
SLA	Service Level Agreement

Abbreviation	Full Name
SME	Small- and Medium-sized Enterprise
SoC	System on Chip
TAC	Technical Assistance Center
TCO	Total Cost of Ownership
TUP	Time-based Unit Plan
TWS	True Wireless Stereo
UNESCO	United Nations Educational, Scientific and Cultural Organization
VR	Virtual Reality

Financial Terminology

Operating profit

Gross profit less research and development expenses, selling and administrative expenses, plus other (expenses)/ income, net

Cash and short-term investments

Cash and cash equivalents plus other current investments

Working capital

Current assets less current liabilities

Liability ratio

Total liabilities expressed as a percentage of total assets

Days of sales outstanding (DSO)

Trade receivables plus contract assets at the end of the year divided by revenue, and multiplied by 360 days

Inventory turnover days (ITO)

Inventories at the end of the year divided by cost of sales, and multiplied by 360 days

Days of payables outstanding (DPO)

Trade payables at the end of the year divided by cost of sales, and multiplied by 360 days

Cash flow before change in operating assets and liabilities

Net profit plus depreciation, amortization, exchange loss, interest expense, loss on disposal of property, plant and equipment and intangible assets, and other non-operating expense, less exchange gain, investment income, gain on disposal of property, plant and equipment and intangible assets, and other non-operating income

Exchange Rates

CNY/USD	2020	2019
Average rate	**6.8988**	6.9218
Closing rate	**6.5198**	6.9840

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