

# ON THE RECORD

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HUAWEI EXECUTIVES  
SPEAK TO THE PUBLIC

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## **Heroes are forged, not born.**

During World War II, the famous IL-2 kept flying even after being riddled by anti-aircraft shells and machine-gun fire from other planes. Although badly damaged, it finally made its way back home.

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# Ren Zhengfei and Yuval Noah Harari at Davos

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January 21, 2020  
Davos, Switzerland

01

**Zanny Minton Beddoes, Editor-in-Chief of *The Economist*:** I think both I tried to find things you have in common and I think it is a love of history. One you're obviously a professional historian. Mr. Ren, I would say that you perhaps are an excellent amateur historian. You have focused a lot on the lessons of history. So I think you're both extremely equipped to tell us about what this future is going to look like. And we're going to shake the next half hour by trying to answer three broad questions.

One is what is at stake? How much does it matter to humanity, to the world that we have this tech arms race? Is it a question simply of market dominance, or are there deeper questions about the future of market systems, the future of our democracies, the future of who has global dominance? What is at stake?

Secondly, what are the consequences of the tech arms race? What happens? Do we split into a two ecosystem world? And what does that mean?

And thirdly, what do we do to avoid the worst outcomes? That's a Davos-ian attempt to end on an upbeat note. So I'd like you to tell us exactly how we make sure we get the best outcomes.

So I'm going to start, Professor Yuval, with you. To shape us... What is at stake? And I want to start with

**a quote from one of your books. You said humans, you wrote humans will change more in the next hundred years than in their existence before. AI and biotech could undermine the idea of individual freedom, making free markets and liberal democracy obsolete. Democracy, it went on to stay in its current form, cannot survive the merger of biotech and info tech. So would it be fair to say if you think a huge amount is at stake in this and why?**

**Yuval Noah Harari:** Yeah, very much so. So I mean, on one level, the more shallow level, it would be a repeat of the 19th century industrial revolution when the leaders in industry basically have the power to dominate the entire world economically and politically. And it can happen again with the AI revolution and biotech revolution of the 21st century. And we are already beginning, I understand the current arms race as an imperial arms race, which may leave very soon to the creation of data colonies. You don't need to send the soldiers in if you have all the data for a particular country, but on a much broader and deeper, from a deeper perspective, I think it really is going to shape the future of humanity and the future of life itself, because with the new technologies you are soon giving some corporations and governments the ability to hack human beings.

There is a lot of talk about hacking computers, smartphones, emails, bank accounts, but the really big thing is hacking human beings, to hack human beings. You need a lot of biological knowledge, a lot of computing power, and especially a lot of data. If you have enough data about me and enough computing power in biological knowledge, you can have my body, my brain, my life. You can reach a point when you know me better than I know myself. And once you reach that point and we are very close to that point, then democracy, the free market as we... actually all political systems, also authoritarian regimes, we have no idea what happens once you pass that point.

**Zanny Minton Beddoes: Do you think that China, which in many ways is further ahead on this in terms of being a surveillance state, is a harbinger of where things are going?**

**Yuval Noah Harari:** I think that at present, we see competition between state surveillance in China and surveillance capitalism in the US. So it's not like the US is free from surveillance. There are also very sophisticated mechanisms of surveillance there. I think in the competition at present, there is no serious third player in this arms race. And the outcome of the arms race is really going to shape how everybody on the planet is going to live in twenty to fifty years: humans, other

animals, new kinds of entities.

**Zanny Minton Beddoes: So Mr. Ren, you heard that. Do you share Professor Harari's assessment of the stakes, that the very future of humanity and political systems is at stake?**

**Ren:** I've read Professor Harari's *A Brief History of Tomorrow and 21 Lessons for the 21st Century*. I agree with many of his views on the rules that govern human society and the conflict between technology and future social structures and changing ideologies.

First, we must understand that technology is good. Technological development is not bad; it's good. Humanity has a long history of development. For thousands of years, technological advancement was very slow, which was very much in sync with biological evolution. So people didn't panic. When textile machines, steam ships, and trains appeared, people had some fears. However, as the industrial society progressed, these fears disappeared.

After we entered the information society, the intervals between technology booms started becoming even shorter. Now, we have made great breakthroughs in electronic technologies. Although Moore's law is still constraining the development of electronics technologies, we are sure that we will be able to scale chipsets down

to two or three nanometers.

Second, due to great improvements in computing power, information technologies are like seeds spreading everywhere. Breakthroughs in biotech, physics, chemistry, neurology, and mathematics, as well as interdisciplinary and cross-domain innovations have built significant momentum for humanity's advancement. When that momentum hits its tipping point, it will lead to an explosion of intelligence. This great technological explosion may scare people. Is such an explosion good or bad? To me, I think it's good.

I think humans have always been able to use new technology to benefit society, rather than destroy it. That's because most people aspire for a good life, rather than a miserable one.

Just after I was born, the atomic bomb exploded in Hiroshima; when I was around seven and eight, I found that people's biggest fear was the atomic bomb. People around the world were afraid of it. However, when we take a long-term view on history, we realize that atomic technology can be used to generate power to the benefit of society. Its applications in radiation therapy and other fields have also benefited mankind. Because of this, there's no need to panic about AI today. While atomic bombs may hurt people, the development of AI today can't cause as much hurt.

Of course, our company is just studying weak AI, which is limited to a closed system, clear rules, and a complete set of information. It still requires certain conditions and the support of data to drive industrial, agricultural, scientific, and medical advancements. That means its application has boundaries. There are boundaries in many applications, including autonomous driving, mining, and pharmaceutical technologies. With the improvement of AI within these boundaries, huge wealth will be created.

Some say, "Many people would lose their jobs in the process of wealth creation." This is a social problem, and creating more wealth is better than creating less. In today's society, even the poor have a greater absolute wealth than what they had a few decades ago. The widening gap between the rich and the poor doesn't mean that the poor are sliding into more severe conditions of absolute poverty. Resolving the conflicts caused by the widening wealth gap is a social issue, not a technological one. How to fairly distribute wealth is a matter of policy and law. It's a challenge for social governance.

**Zanny Minton Beddoes: Thank you. You raised a huge number of really interesting issues. I want to focus on two of them and ask Professor Harari to respond. One is the comparison between the atom bomb and**

**atomic energy broadly. Is that an appropriate analogy? Because I think that is a very interesting analogy in the context of this discussion about the technology arms race. I'm sure everybody in this room, Mr. Ren, would agree that there are huge benefits to be had from technology. I'm sure Professor Harari would agree with that too. But do you think that there is something, and I'm back to asking you again Professor Harari, fundamentally different about the nature of AI and biotech, which means that it is significantly more dangerous than previous technological breakthroughs?**

**Yuval Noah Harari:** Yeah, I mean, the comparison with the atom bomb is important. It teaches us that when humanity recognizes a common threat, then it can unite, even in the midst of a Cold War, to lay down rules and prevent the worst, which is what happened in the Cold War.

The problem with AI compared with atomic weapons is that the danger is not so obvious. And at least for some actors, they see an enormous benefit from using it. With the atom bomb, the great thing was that everybody knows when you use it, it's the end of the world. You can't win a nuclear war, an all-out nuclear war. But many people think, and I think with some good reason, that you can win an AI arms race. And that's very dangerous, because the temptation to win the race

and dominate the world is much bigger.

**Zanny Minton Beddoes: I'm gonna really put you on the spot there. Do you think that is a mindset more in Washington or in Beijing?**

**Yuval Noah Harari:** I would say Beijing and San Francisco. Washington... they don't fully understand the implications of what is happening. I think at present that the race is really between Beijing and San Francisco, but San Francisco is getting closer to Washington because they need the backing of the government on this. So it's not completely separate. So that was the one question, what was the other?

**02 Zanny Minton Beddoes: The second question was about AI. You've answered it broadly, and I actually want to go back to Mr. Ren to respond to that. Because you're clearly... the target of much American concern... Given what we've just been talking about, do you understand why the Americans are so concerned? Is it a reasonable concern to have that China, an authoritarian regime, should be at the cutting edge of technologies that can, as Professor Harari said, possibly shape future societies and individual freedom? Is it a reasonable concern for them to have?**

**Ren:** Professor Harari said the US government doesn't

really understand AI. I think the Chinese government might not understand it either. If the two countries really want to develop AI, they should invest more in basic education and basic research. China's education is still stuck in an industrial era, and the focus of the education system is on cultivating engineers. Therefore, it is impossible for AI to grow quickly in China. Developing AI takes a lot of mathematicians, physicists, biologists, chemists, etc. It also takes a great deal of supercomputers, super connections, and super storage. China is just a toddler in these areas. So I think the US is worrying a bit too much. It has gotten used to being the reigning champ, and it thinks that it should be the best at everything. If someone else does well in something, it might feel uncomfortable. However, what the US thinks will not change global trends.

I think eventually humanity should make good use of AI and learn how to use it to benefit us all. As Mr. Harari said, rules should be developed to regulate what we can research and what we can't, so that we can control how it develops. There are also ethical problems in technologies. In my opinion, Mr. Harari's idea of electronics infiltrating our minds will not come true in the next 20 to 30 years or even after that. However, AI will first transform production, improve productivity, and create more wealth. As long as there is more wealth, the government can distribute it to ease social conflicts.

In my recent article in *The Economist*, I quoted a sentence, "What would happen if semiconductors integrated with genetics?" But they took it out because it would start a discussion. When they told me it had been deleted, I immediately agreed to it, because I know it is a complicated issue.

**03 Zanny Minton Beddoes: Let me follow up there by asking, the US may not understand, and the US in your view may overrate what it sees the threats from China. But what are the consequences of this current tech arms race? And what are the consequences of the US's blacklisting of Huawei? Are we seeing the world shift into two tech ecosystems? Is that what going to happen?**

**Ren:** Huawei, as a company, used to be a fan of the US. An important reason for Huawei's success today is that we learned most of our management practices from US companies. Since Huawei was founded, we have hired dozens of US consulting firms to teach us how to manage the company. Now our entire management system is very similar to those of US companies. So the US should be proud, as US companies has contributed to our development. We are a model in terms of how successfully the US can export its management practices.

Therefore, from this perspective, I don't think the US needs to worry too much about Huawei's position and growth in the world. Being placed on the US's Entity List last year didn't have much impact on us. We have basically been able to withstand the attacks, as we started to make preparations over 10 years ago. This year, the US may step up its attacks on us. We will be affected, but not significantly. More than a decade ago, Huawei was a very poor company. 20 years ago, I didn't have my own house, and rented a small apartment, which was only about 30 square meters. Where was our money? All of it was invested in Huawei's research and development. If we had felt we were safe with the US, we wouldn't have made our plan B. But we didn't feel this way. That was why we spent hundreds of billions of yuan making preparations. As a result, we withstood the first round of US attacks last year. As to the second round of attacks this year, with the experience we gained and the lessons we learned last year, we are confident that we will be able to withstand these attacks.

Will the world be split into two tech ecosystems? I don't think so. Because science is about truth, and there is only one truth. When any scientist discovers the truth, it will be spread to the whole world. The basic theories of science and technology are unified across the world, whereas there can be a diversity of technological inventions, representing different applications of science.

For example, there are various models of automobiles competing with each other, and this competition is conducive to social progress. So it's not that society must promote only one set of technical standards. Will the world be divided? No, as the foundation of science and technology is unified.

**04 Zanny Minton Beddoes: Professor Harari, what's your take on that? I want to quote back to you something you wrote actually in *The Economist*, indeed. An AI arms race or a biotech arms race almost guarantees the worst outcome. The loser will be humanity itself.**

**Yuval Noah Harari:** Yes, because once you're in an arms race situation, many technological developments and experiments are dangerous, and everybody may recognize that they are dangerous. And you don't want to go in that direction, at least not now. You're thinking this: Well, we don't want to do it; we're the good guys; but we can't trust our rivals not to do it. The Americans must be doing it. The Chinese must be doing it. We can't stay behind. So we have to do it. That's the arms race logic.

And a very very clear example is autonomous weapon systems, which is a real arms race. And you don't need to be a genius to realize this is a very

dangerous development. But everybody's saying the same thing: We can't stay behind. And this is likely to spread to more and more areas. Now, I agree that we are unlikely to see computers and humans merge into cyborgs in the next twenty or thirty years.

I think there are so many things that we can see development in AI in the next two decades. But the most important point to focus on is what I mentioned as hacking human beings. The point when you've got enough data on people and you have enough computing power to get to know people better than they know themselves.

Now I would like to hear what their thoughts are, also for people in the hall. Are we at a point... I'm not a technologist, but the people who really understand, are we close to or at the point when Huawei or Facebook or the government or whoever can systematically hack millions of people, meaning knowing them better than they know themselves. They know more about me than I know about myself, about my medical condition, about my mental weaknesses, about my life history. Once you reach that point, the implication is that they can predict and manipulate my decisions better than me. Not perfect. It's impossible to predict anything perfectly. They just have to do it better than me.

**Zanny Minton Beddoes: Shall we ask Mr. Ren, do you**

**think Huawei is at that stage yet? Do you know people better than they know themselves?**

**Ren:** We are not sure whether the science and technology Mr. Harari is imagining will become a reality or not, but I will not dismiss his imagination. As an enterprise, we must have a deeper understanding of our customers and their data and information. For example, is it possible for mining to rely solely on AI, without any manual labor? I think it's possible. Remote mining from several thousand kilometers away has become a reality. If a mine is located in a frozen or high-altitude region, AI will prove its worth there. In the future, top mines, like those in Brazil, may adopt this remote mining model. However, this requires us to have an in-depth understanding of mines. To better understand mines, tech experts need to work with mining experts. Similarly, telemedicine is only possible when doctors and electronic devices are integrated. Therefore, this understanding of humanity is a gradual process.

Mr. Harari said that embedding electronic devices in humans will make us gods. I don't think we have to worry about that, because we humans may die at 80 and our souls cannot just continue. That's why I don't think humans will ever become gods.

**05 Zanny Minton Beddoes: What about the other subject Professor Harari raised of autonomous weapons? Because that does seem to be one where we are there. Military systems have them. What is your view of that? Do you think that they are as dangerous as Professor Harari says? And how do you stop the logic of mutually assured destruction from autonomous weapons?**

**Ren:** I don't know much about military affairs, nor am I a military expert. But if everyone can create weapons, weapons will no longer be weapons, but will be just like sticks.

**06 Audience: I just want to ask Harari. Why do you think that there's an AI arms race between China and the US? At least one sees that the applications in China are all for civilian use. And there seems no mind for really competing. Is there an arms race?**

**Yuval Noah Harari:** Well, by arms race, I don't mean necessarily developing weapons. Today, to conquer a country, you don't need necessarily weapons.

**Audience: What I meant was, what's the difference between the usual commercial competition versus what's state, you know, the state ...?**

**Yuval Noah Harari:** There is no clear border there. That happened in the 19th century and earlier with European imperialism. There is no border between commercial imperialism and military or political imperialism. Now with data, we see this new phenomenon of data colonialism to control a country, let's say, Africa, South America, or the Middle East. Just imagine this situation 20 years from now when somebody, maybe in Beijing, maybe in Washington or San Francisco, knows the entire personal medical and sexual history of every politician, judge, and journalist in Brazil, or in Egypt. And just imagine the situation. It's not weapons. It's not soldiers. It's not tanks. It's just the entire personal information of the next candidate for the Supreme Court of the US, of somebody who is running for president of Brazil. And they know their mental weaknesses. They know something they did when they were in college, when they were 20. They know all that. Is it still an independent country, or is it a data colony? So that's the arms race...

**07**

**Audience:** I'm a global shaper from the young community of the World Economic Forum. So my question will be for both of you. First of all, I would like to ask, you know worldwide governments and big companies are so powerful that they are actually able

**to shape the life of consumers. What is actually the power that is left to normal people? I'm a technician, so I have my own opinion about information security. But what is the power that is left to normal customers?**

**Ren:** As technical exchanges become easier, humans will get a better understanding of things and will become increasingly smarter. Actually, this is what is already happening. For example, we may not understand the textbooks of today's elementary school students. Why do they learn these things? Courses we used to take in our universities are now being taken in middle school. This means we have made progress in the information age. However, we still need to master new knowledge. Different people may have varying degrees of knowledge, and may therefore have different jobs. People will still take the initiative, rather than being enslaved.

**Zanny Minton Beddoes: So you would say that technology is giving individual people more agency and more power.**

**Ren:** Yes.

**Yuval Noah Harari:** I think that technology can work both ways, both to limit and to enhance individual abilities or agency. And what individuals can do, especially technicians and engineers, is to design a

different technology. For instance, now a lot of effort is about building surveillance tools that surveil individuals in the service of corporations and governments. But some of us can decide to just build an opposite kind of technology. The technology is neutral on this. You can design a tool that surveils the government and big corporations in the service of individuals. They like surveillance so much that they wouldn't mind if the citizens surveil them. For instance, you're an engineer. Build an AI tool that surveils government corruption. Or you build an anti-virus for the computer. You can build an anti-virus for the mind that alerts you when somebody is trying to hack you or to manipulate you. So that's up to you.

**Zanny Minton Beddoes: We've run out of time. I apologize. But that is an appropriately upbeat place to end on: Create tools that can empower the individual in this. Thank you both very much for fascinating points.**

# Ren Zhengfei's Interview with South China Morning Post

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March 24, 2020

**01**

**Tammy Tam, Editor-in-Chief, *South China Morning Post*: Good afternoon, Mr. Ren. We are from South China Morning Post, based in Hong Kong. Thank you so much for taking our interview today. As the saying goes, there are two sides to every coin. We finally made a go at interviewing you, but the flip side is that we can't meet in person due to the COVID-19 outbreak. But with advanced communications technology, we can try it this way. We really appreciate it!**

**Today, COVID-19 is spreading rapidly around the world. Luckily, the Chinese mainland has contained it. Speaking of the epidemic, can you talk about its impact on Huawei's production? How has Huawei responded to this epidemic? Can you tell us what's going on in your company?**

**Ren:** There is definitely some impact, but as we live in an ever-changing world, we must adapt to changes. This change has had some impact on us. Our growth isn't as fast as before, but over 90% of our production and R&D activities are back to normal.

Even during the Spring Festival, we had over 20,000 scientists, experts, and engineers work overtime. Why? We are working against the clock on production continuity, since the US may increase its sanctions against us.

First, the company started working back on February 1. Since then, our production capacity went from 70% to 80%, then to 90%, to over 90%. However, we rely on many companies along the global supply chain for our materials. So we are facing some difficulties. Many small companies and factories in China are not well-equipped to defend against the virus, so they have difficulties returning to work. We are helping them address their lack of protective materials like masks along with hygienic conditions and other problems. We're also encouraging local governments to let them return to work, so that they can pick up the pace in supplying components to us.

Second, we provide decent incentives for truck drivers transporting our goods. Today, it is not easy for them to get food on their route, so we prepare snack boxes for them. What's in the snack box? A thermos of hot coffee or tea, yogurt, sandwiches, and masks. We have also set up tents in places where they unload goods. They can eat there. This way, these drivers have the initiative to transport goods for us.

Third, air freight is costly, up three to five times, because many flights have been canceled. We must cover these additional fees to address customer needs and continue supplying them. So the entire supply chain has had some impact on us, but the impact is limited, so

we can still guarantee our supply.

We also have a lot of maintenance personnel. To guarantee smooth communications, we can't always have them at home. They need to go to different sites to maintain networks around the world. The more severe the pandemic is, the more people need network services. So they can't just stay put. We worked to provide better hygiene and protection for them and also better incentives. This helps them better protect themselves while serving customers.

Besides Hubei, there have been very few confirmed cases in our company. There hasn't even been one case on our Bantian or Songshan Lake campuses. Even for those confirmed cases, mostly in Wuhan, our employees have recovered very quickly.

**Tammy Tam: You've put invaluable efforts into this. Just now, you said that you are racing against time, since you need to develop something new before the US tightens its sanctions. Can you tell me what this new thing is? Which one has had a greater impact on Huawei's future, the US sanctions or the COVID-19 pandemic?**

**Ren:** The US sanctions have had some impact on us, but not much. The pandemic also has had some impact on us, but not much either. The impact is very limited, so

we can survive both of them.

**Tammy Tam: So what's the new thing you mentioned?**

**Ren:** There is no problem for us to survive as a company. But the question is whether or not we can maintain global leadership. Anyway, the US is the leader in many aspects. They have the world's most advanced science, technologies, and education system, as well as the most educated talent. But if we don't have access to these elements to fuel our development, we may lose our global leadership. So we really need to get all these elements done ourselves in the next three to five years. Otherwise, we won't be able to lead the world any longer. So we're investing even more in these areas.

**02 Eugene Tang, Business Editor, South China Morning Post: Just now you spoke about racing against time to restore productivity. Has this pandemic had any impact on Huawei's sales or customer demand for equipment? Recently, the situation has calmed down in China, but things outside China are getting rapidly worse. This is the second wave of the pandemic. For international companies like Huawei, how will you cope with this second wave?**

**Ren:** First, when the situation in China becomes more stable, our development may even speed up. People

have already seen the role new technologies play in preventing the spread of the virus. Telemedicine, distance education, teleconferencing, and telecommuting all show us how important networks are. People are eager to improve their networks, and so we need to meet their actual connecting needs. Second, Western countries are starting to feel the impact of the pandemic, but quite a few of our projects are about capacity expansion or capability improvement. They don't necessarily need to be completed in the field; they can be completed in an equipment room. This means the pandemic hasn't significantly affected our customer services or development. Of course, there is some impact, but we can handle it.

**03 Eugene Tang: You also mentioned the US sanctions just now. Over the course of your personal career, you have learned from many US companies and even drawn wisdom from US politics. However, during the past two years, the friction between the US and China has intensified, and the US seems to be determined to take Huawei out. Ultimately, do you think the US is an enemy or a friend?**

**Ren:** If we want to survive, we have to learn from the best. Even if they fight against us, we still have to learn from them. How else would we become advanced? If a

technology company is not advanced, it's bound to die. So if we don't want to die, we have to study hard.

The US sanctions were enacted by a relatively small number of people. They don't represent the American people or US companies. We have worked earnestly with US companies, and we sincerely want to work more closely with the US's science and technology communities, as well as US companies. There are many science and technology research papers available online. Those papers are openly accessible to the whole world. We also read them. We can't be narrow-minded. We must learn from the US, because they are the most powerful.

**Eugene Tang: Your open-mindedness is admirable. From a long-term perspective, the friction between China and the US is inevitable. Do you think Huawei is a pawn in this game between the two countries?**

**Ren:** First, I don't know much about the conflicts between China and the US. What they are fighting over is a bit unclear to me. What we focus on is how Huawei can survive. The only way for Huawei to survive is to learn from the best. As Confucius said: "When three walk together, there must be one who can be my teacher". Even if there are less than three people, at least one of them can be my teacher, and so we should learn from them. This is the only way we will have the chance to

improve. Narrow-minded populism and nationalism will only leave us behind.

Huawei has over 200,000 employees. Even today, you cannot hear any anti-American slogan from top to bottom in this company. Everyone is learning from the US. We recently even posted some articles on our Intranet released by the US Department of Defense, such as The 5G Ecosystem: Risks & Opportunities for DoD, and another one about Mattis' order on troop deployment. We think they're very well written. They know how to launch an effective campaign against us. Based on their deep insight, we can learn how to further improve ourselves.

**Eugene Tang: In the early days when you started your business, you went to the US to learn from their business experience, their politics, and the US Constitution. You say you have a lot to learn from them. In the past two or three decades, from your own experience, what events or periods do you think contributed to the vicious circle we now see between Huawei and the US?**

**Ren:** There was no specific period that caused this, because we've always viewed the US as a powerful country. We've been looking at how companies in Silicon Valley have succeeded. We've worked hard the entire time. The US's legal system is sound, so we learnt from

it to standardize our operations. The US's system for separation of powers is also great. For our company, we also avoid centralizing authority in the hands of any one person. All these have laid a solid foundation for our steady development today. There were no milestone events in this development process. We are confused about how we stumbled into this situation, and we will probably move forward in a similarly confused manner.

In short though, we have never shied away from self-improvement or self-reflection. Self-reflection is our company's greatest strength. If you ask a Huawei employee what he thinks he does well, he likely wouldn't be able to answer. If you ask him what he doesn't do well though, he'll talk your ear off. In our company, if a management team keep bragging about themselves, they will be booed off stage; if they talk about what they don't do well, everyone understands them. The more people reflect on themselves, the more outstanding they can become. People who know where they don't do well make changes. This is the "self-reflection" that is part of Huawei's corporate culture.

The US is a good example of self-reflection. In American movies, the US government is often set to be the loser. As the impeachment against Trump continues, he keeps working as usual. This is a self-correction mechanism. We should learn from this mechanism and

avoid letting any one person have all the say. Otherwise, the company would be in great danger. We learn from whatever the US does well, regardless of the conflict between us. That doesn't matter in the end.

**04 Tammy Tam: What you said about learning from the US is very interesting. Could you share how you've planted good things from the US in the Chinese soil? Many people say there are certain things in the West that just wouldn't work in China. But Huawei has set a different example. You have learned from American culture, ideas like the separation of powers, and aspects of the legal system. I was wondering how you cultivated a company like Huawei in China. Was there any struggle during this process?**

**Ren:** No, no struggle within the company. Before we launched this corporate-level transformation, consultants from IBM warned us that it would diminish the authority of our top leadership. They made it very clear at the very outset that this transformation would place all authority in our business processes. That means authority would be vested in the processes, rather than top leadership. What top leadership could do was setting rules. The ultimate goal was to make me a puppet, because the more I became a puppet, the more successful this transformation would be.

Every link in a process has a certain scope of authority. We learned this from the West. If we want to intervene in matters beyond the scope of our authority, we would have to change rules. We have the authority to change rules, but rules cannot be changed overnight. There must be discussions, just like the legislative process in the US, which can take years, but a legislative proposal will become clearer and more practical through debate. It may be impossible to make things that are too idealistic a practical reality. However, it's often the case that the things that we have come to agree on through debate do gradually become a reality.

Therefore, the higher the leadership at Huawei, the less authority they have, because all the authority has been delegated to lower levels. That's what we have achieved through our transformations.

Though the model of process-based authority originated from Western countries, companies in the West still give too much authority to their CEOs. Their CEOs have the final say in almost everything. What if a CEO is asleep at the wheel? What if a CEO fails to answer an important phone call?

Many things at Huawei could run their course without the CEO even noticing them. There are different kinds of cycles in business, big, medium-sized, and small, which run their course and improve on their own.

They may require different kinds of authority allocation and different oversight mechanisms. We have learned methodically from the world's leading management practices.

**Eugene Tang: Just now, you mentioned the concept of taking foreign things and making them work in China. Huawei's ownership structure is really unique. It's a structure seldom seen in businesses anywhere in the world, with the exception of John Lewis Partnership, a long-standing department store in the UK. Why did you choose this structure when you founded Huawei? Could you share your thoughts with us?**

**Ren:** First, Huawei is different from, for example, a real estate company. At Huawei, it's the brains of our employees that create wealth. I cannot put these brains in my pocket. They are independent individuals. The company relies on the brains of our employees to create wealth. Some employees might create more wealth than others, and we reward them based on how much they contribute to the company.

Second, tech companies thrive on the foundations they built in the past. Employees' past achievements can continuously create value for the company. Even if we immediately awarded bonuses to employees for the achievements they made in the past, it would be unfair if we use them for free today.

That's why we have adopted a Contribute and Share system where employees share in the benefits of their past hard work. We distribute shares to employees in recognition of their past contributions. This way, they can continue to benefit from the contributions they made in the past, as these still create value for the company today.

I didn't come up with this structure at the very beginning; it took shape gradually. In a word, we need to recognize the contributions employees made in the past and give them rewards, but the proportions of the rewards need to be assessed according to the actual contributions of our employees. This approach can help bring our employees together.

**Eugene Tang: As an employee-owned enterprise, you'll never need to go public, right?**

**Ren:** Maybe someday. We haven't given it any thought.

**Eugene Tang: You have three rotating chairs, each of whom is in office for six months at a time. People outside the company don't really know how the rotating chair system works, or how the position is handed over every six months. As you just said, a company can collapse if its CEO is asleep at the wheel. Under this structure, how do you downplay the role of personality of each rotating chair and ensure**

## **consistency throughout the management team?**

**Ren:** While in office, the rotating chair serves as the foremost leader of the company. The other two non-acting rotating chairs provide assistance and serve as a constraint. The Executive Committee of the Board of Directors (BOD) and the BOD also serve as a constraint on the rotating chair in office. The BOD Chairman presides over the Representatives' Commission, and has the authority to remove incompetent executives. Rotating chairs cannot simply do whatever they want while in office, as there are constraints on their authority. At Huawei, authority is locked up in a cage, which is to say that authority is constrained by rules and collective decision making.

The rotating chair in office works in accordance with the company's rules and regulations. The other two rotating chairs also need to fulfill their due responsibilities; they're not left idle. It's just that they do not make the final decisions. They actually need to prepare themselves to further advance the company's transformations once their terms start. They don't just manage transformation projects once they take office. They conduct sufficient surveys, prepare transformation solutions and related documents well in advance, and will present many documents for discussions once they are in office. If a rotating chair doesn't prepare in

advance, he will run out of time, as his term will end even before he gets all these documents prepared. So he must get prepared before he takes office.

All rotating chairs fulfill their due responsibilities, either in the short-term or long-term. Each rotating chair needs to oversee the implementation of a transformation project that they might launch when they take office. The rotating chair in office doesn't have the final say in a transformation project; instead, it is determined through collective decision making. This way, this won't affect the consistency across the company that much.

This rotating chair system is mainly designed to protect our managers. When an executive is in office, you don't see their whole clique of managers rising with them. Say the rotating chair currently in office doesn't like a manager, he cannot remove this manager on his own. Instead, the rotating chair must discuss it with the other two rotating chairs, four executive directors, the BOD Chairman, and other BOD directors. Together, they decide how managers are deployed. That's why we don't have a high attrition rate of senior managers or experts.

We have strong talent succession plans and have very stable managerial teams. Managers are not afraid of their upper-level leadership. They feel it doesn't matter whether their leadership likes them or not, as

their leadership might step down in just a few months. For managers, all they need to do is to prove their capabilities with the results of their work.

Our rotating chair system enables the company to stay fresh and ensures the stability of our managerial team. When a rotating chair is not in office, they are busy making preparations for their next term. They travel around the world to provide guidance. Their guidance is valuable as they remain part of the senior leadership. They talk with representatives from different departments, so that they can develop well-thought-out plan for how they will advance transformations when they take office, and get fully prepared for this.

When in office, they take prompt actions to deal with the issues that come up. When not in office, they need to recharge their batteries, because they won't have much time to do so while they are in office. This can help create a reasonable cycle. This rotating chair system has been successful so far.

We've also implemented a tenure system for members of the BOD Executive Committee. All seats on the committee come up for election every five years. Some members might not be re-elected next time. Even if a member is excellent and elected again, they can only serve a maximum of three terms. There is an exit mechanism for senior managers. If they serve lifelong

tenures, there won't be opportunities for young people to grow and shine.

When a rotating chair is in office, they work with many other BOD directors and executives. They are actually cultivating the next generation of leaders. We are still figuring things out, so we cannot say for sure that we're doing everything well.

**05 Eugene Tang: Huawei is not a listed company, but it still publishes its annual report in the way a listed company does. This is a bit unusual. I assume that at the beginning, there must have been opposition within the company to the idea of sharing its business data and sensitive information with the world. How did you come up with this idea? Why did you decide to do this?**

**Ren:** We bid for thousands, maybe even tens of thousands of international contracts every year, and each time we bid, we need to submit an audit report. If we don't, we are not qualified to bid. So we turned to the most authoritative companies and asked them to perform audits. Right now KPMG is our external auditor. They audit all of our businesses across more than 170 countries, and produce an audit report in March every year.

We make our audit reports publicly available so that

our customers can trust us. When we submit a bid, the customer's board of directors often check our reports. An audit covers more than financial statements; it also covers many other details. If we don't have strict management systems, there will be chaos. Then how will international carriers and customers trust us?

We aren't just publishing our financial statements. We are showing the world that we are open. In addition to financial statements, we also publish many other things. This is something we need to do. We are not a listed company, but it doesn't mean we have more freedom or can relax our management. To be accountable to our customers around the world, we first need to make things openly available, because every bid requires audit reports and the contracts may need to be approved by the customers' boards of directors. From this point of view, we are not forced by anyone to publish our financial statements; it's just something we feel we need to do.

Moreover, there was never really any opposition within the company. Everyone understands we need to make these things public.

**06**

**Eugene Tang: Huawei has a unique corporate culture. Some employees criticized this corporate culture,**

**calling it a "wolf culture". They say that while China's wider technology sector has the 996 work schedule, Huawei has a 007 schedule, where employees work from zero hundred hours on day one to zero hundred hours on day two, for seven days a week, without rest. What's your opinion on the work-life balance in China's business world?**

**Ren:** First, Huawei doesn't have a 996 schedule – I don't know which company first used this phrase – and we definitely don't have a 007 schedule. The standards we use for our employment contracts are high, higher than what is legally required in China, because we are also subject to EU audits. We cannot work too much overtime, because workers in the EU are restricted in this regard. Our junior employees are not allowed to work too much overtime even if they want to, and our regulations do not allow for overtime pay past a maximum number of hours. For some scientists and high-end talent, they may spend more time on their work because they are driven by a sense of mission, but they don't do this all the time. Sometimes they attend meetings and brainstorming sessions for several days, but that is normally at nice scenic spots like parks with cherry blossoms in Japan or the countryside with lavender fields in France, where they can sit and discuss and chat. This lets them work and rest as they need. This is flexible. We don't have a 996 or a 007 schedule.

Regarding the "wolf culture", we believe wolves have three characteristics: They are highly sensitive; they work as a team; and they persevere. One of the most notable characteristics of wolves is their acute sense of smell. Similarly, we need to be highly sensitive so that we can identify customer needs and technological trends for the next 10 to 20 years. This sense of smell is important to wolves because it helps them find food, even on the frozen tundra. Similarly, we need to be sensitive to market needs, customer needs, and new technologies.

Second, wolves don't work alone; they work together. For us, that means teamwork. We need this kind of teamwork. Google does this very well, and they have an "Army of PhDs". We have learned from Google in this area, even if we also reposted an article revealing the other side of the coin. We advocate for the strengths of this model while also analyzing its weaknesses as we form our own. No individual in the world can succeed just on their own. Currently we are trying out our "Tu Dandan model". Tu Dandan is a young lady who works as a team leader at Huawei. She proposed a model where teams would be made up of three PhD degree holders and two master's degree holders. We later added two engineers and an administrative assistant or clerk to this model. Administrative work can then be handled by the clerk, and the engineers can help with the experiments. The engineers are not necessarily very

experienced or have high academic degrees, but they can learn and grow under the guidance of the top talent in their team and may even outperform them one day. This is the type of teamwork we want to promote.

Third, wolves are persevering, and won't stop until they get the job done. We don't want managers to run away whenever they encounter difficulties. Transferring them to other positions or even demoting them takes promotion opportunities away from young people. Instead, we say if we must die, let's die on the battlefield. Even if we can't handle the main fight, we can still cook for the team. You will be rewarded when the team succeeds, no matter what role you play. You may be a team leader at one point and then later on work in a supporting role, such as serving as a "cook", providing logistics assurance, improving work environment, analyzing different scenarios, or supporting other team members. Right now, I personally play a supporting role. I talk with employees to help them identify their problems and coordinate with others to solve them. Therefore, we don't let managers switch their positions arbitrarily, because this gets in the way of young people in other teams. You should try your best to overcome difficulties on your own battlefield, or provide support at the rear. There, you may have more time to learn and thus get back to the front line one day. You should always stay with your team.

The term "wolf culture" may be misunderstood by people outside Huawei. For us, it represents high sensitivity, teamwork, and perseverance. We don't have a 996 or a 007 schedule.

**07 Eugene Tang: When the Belt and Road Initiative was rolled out, Huawei had already been exploring emerging markets in Africa, Southeast Asia, and Latin America for over a decade. Why didn't Huawei start with high-end markets or more profitable markets when it started going global?**

**Ren:** Back then, there weren't many good opportunities out there for us in the Chinese market. In order to survive, we had to turn to the global market. When we decided to go global, we started with the war-torn Africa. Many Western companies had evacuated, but Africa still needed communications networks. Many parts of Africa were at war when I visited there. We currently have the highest market share in Africa, which came out of our long-term efforts starting right then and there.

Only when we became more advanced were we able to enter high-end markets. When we just started our internationalization efforts, we were not advanced at all. We were not an advanced company even in the Chinese market. In our early days of development, the Chinese

market was 100% dominated by Western companies. We could only make some simple products and serve in niche markets. That way we grew little by little.

When China just started reforming and opening up, it was highly underdeveloped. Western equipment was in high demand and highly coveted in China. Western companies didn't need to promote their equipment because many Chinese companies lined up to buy their equipment. Western equipment was quite popular in China because their technology was mature and advanced. Many of the employees Western companies sent to China were familiar with Chinese culture and spoke fluent Chinese and English. They were good-looking and had good manners. They got their business done by drinking wine, talking about philosophy, and playing golf with their customers. They didn't have the "wolf culture" and didn't have to work very hard, so we had the opportunity to gradually catch up. We didn't take over their market; instead, they lost it themselves. With persistence and decades of hard work, we have gradually come out on top.

Second, Huawei is not a listed company, so we invest heavily into the future. When we assess managers, an important indicator we look at is soil fertility. We don't just look at how many crops they have harvested, but also how fertile their soil is. We want to make sure the

soil is fertile enough to support our growth next year, the year after that, and even 10 or 20 years down the road. During a test, senior executives were asked: What is the "manure" in our soil? Our Rotating Chairman Eric Xu gave the right answer: Invest in scientists, experts, and engineers so that they can research advanced elements of the future. The investment into the future largely relies on scientists and top business leaders. The biggest merit of scientists is that they spend money generously. How can they do scientific research and apply their findings without enough money? That's why we have always poured a lot of money into scientific research. This year, that amount will exceed 20 billion US dollars. Last year, it was over 15 billion US dollars. We increased this year's budget by 5.8 billion, so it should be over 20 billion. We take this kind of investment seriously.

We are not a listed company, so we don't need to maintain high profitability to get as much money as possible out of investors. We know that the fertilizer we put in the soil will help our crops grow the next year. Then why don't we invest boldly now? A consensus within the company is that we must increase soil fertility. We cannot overburden the soil by harvesting all the crops in one or two years. What if no crops grow the next year?

**Eugene Tang: Huawei's business footprints now span**

**the globe. You have personally visited every emerging market across the seven continents and five oceans. Which market makes you proudest or gives you the greatest sense of accomplishment? Which market gives you the biggest sense of frustration?**

**Ren:** Of course, the Chinese market is the largest, but outside China, the European market gives me the greatest sense of accomplishment. Almost all European countries like us.

Our rise in Europe is also the result of our own transformation efforts. There are many old buildings in Europe, and the streets there are narrow. We can't put up a lot of towers because these old buildings couldn't bear the weight of the equipment. What was the solution then? SingleRAN. It is our light, compact, and powerful wireless system, which helped us make inroads into Europe and go further and further. Today, our 5G base stations are also the lightest in the world. They can be lifted with one hand and installed on a wall, in a drain, or on a pole. It's that simple. Why do so many people in Europe like our products? Because we solve their problems.

We've never had a sense of frustration. There have been difficulties, but difficulties are not setbacks. We also have business in some underdeveloped countries like South Sudan. In these places, we make sure our

employees have living standards as high as wealthy Swiss and provide them with a pleasant working environment that is up to European standards. Our culture of dedication doesn't mean our employees must live difficult lives.

Our goal is to serve humanity. We don't just go after lucrative markets. We also do business in markets where we don't make money.

**Tammy Tam: Under China's Belt and Road Initiative, what can Huawei do for the countries involved? Does Huawei face any difficulties in bringing its technology to those countries?**

**Ren:** The Belt and Road Initiative is mainly about infrastructure construction, which involves huge investments. Our contracts are usually for short-term projects and involve much smaller sums of money.

Our customers are very wealthy and make more money than us, so they can buy our products without taking huge loans from banks. We sign small contracts with our customers, and compared to the infrastructure construction of the Belt and Road Initiative, the investment required for our projects is much smaller. Therefore, we have no connection with the initiative.

We are doing our utmost to serve our customers in all countries, whether they are involved in the Belt and

Road Initiative or not.

08

**Tammy Tam: I'd like to ask something about your life and personality. Previously, you were quite mysterious, but you have appeared a lot in the public over the past 18 months. I recently read a story about Huawei's 5G rollout in the Huoshenshan and Leishenshan hospitals in Wuhan, when the epidemic in China was at its peak. As there had been no publicity from Huawei, people essentially learned about it by accident. Is Huawei's corporate culture of keeping a low profile directly affected by your personal style? Why did you choose to keep a low profile until recently?**

**Ren:** I don't know what it means to be high profile and why we need to keep a high profile. In this case, I can say that we weren't deliberately trying to keep a low profile. I didn't even know about the Huoshenshan project myself throughout. No one reported it to me, and I learned about it on the news, just like you did.

The company has an emergency rescue system and management regulations in place. When the earthquake and nuclear leaks occurred in Japan, our employees rushed to the disaster area with network equipment. Emergency rescue would not have been possible if base stations had not been restored.

We installed base stations, and restored communications by connecting them to satellites. This provided wireless communications to the local rescue forces. Otherwise, how could the military on the mountains coordinate the rescue efforts? On the day two dammed lakes were exploded, it was raining, so our employees had to hold umbrellas for the equipment, and took six hours a day to carry diesel oil up the mountain. The rescue efforts were truly demanding.

As a communications company, we have the responsibility to do our part in emergency rescue worldwide. When there are emergencies, we are not a company, but a firefighter squad whose first aim is to solve problems. It doesn't matter whether we get paid or not.

**09**

**Tammy Tam: You mentioned just now that, during emergency rescue, your company is like a firefighter squad. In the past year and a half, during which time Huawei was sanctioned by the US, and your daughter was arrested by Canadian authorities, did you feel then that you were like the leader of the firefighter squad? The number of interviews you gave in the past 18 months exceeded all the interviews you gave in the previous 30 years combined. As both a father and the founder of Huawei, how did you handle the crisis?**

## **What role did you play?**

**Ren:** You can call me a firefighter squad leader if you like, but my major contributions have been related to scientific research and production continuity. Meeting the media was only part of my job. Survival is not just about talking. It concerns a great many issues, so I paid a lot of my attention to internal affairs. My major contributions have been to help maintain the company's strength during hard times. This is the most important part of my job.

10

**Tammy Tam: Do you think you are a good father? Your daughter has been in Canada for a long time and COVID-19 is now spreading there. Do you worry about her? When was your last call with Meng Wanzhou?**

**Ren:** Before the Spring Festival.

**Tammy Tam: Do you worry about her?**

**Ren:** Her husband and mother are with her in Canada, so I don't worry about her. I am not a good father or a good family member. I devote too much of my time to the company. It's one of my greatest regrets. My children are all grown-up now. I wasn't with them when they wanted to play games like hide-and-seek or when they wanted me to read them stories, so it's normal that we are not very close. The same happened with my wife

and me. It's understandable that we are not that close, as I don't spend much time with her. This is also a regret. This often happens with scientists. They may look like a fool in life, but are very bright when it comes to research. I have focused too much on my work, and I neglected my family, so I am not a good family member.

**Tammy Tam: How is your relationship with Meng Wanzhou? How do you feel about your relationship with her?**

**Ren:** When I said that my children and I are not very close, I mean I am sorry towards them because I didn't give them much support when they were growing up. They had to rely on themselves. That doesn't mean we have a bad relationship. I just feel sorry towards my family as a father and a family member.

**Tammy Tam: Her case is still pending. Have you thought about the worst-case scenarios? As her father and the founder of Huawei, how will you help your daughter get justice? What's the next step?**

**Ren:** We trust that the Canadian judicial system is open, fair, and just. This case will be resolved through the efforts of lawyers and the courts.

**Tammy Tam: You talked with Meng Wanzhou on the phone during the Spring Festival, as you just mentioned. Could you tell us what you talked about?**

**Ren:** We just chatted.

**Tammy Tam: Are you prepared for the worst possible result? How would you deal with that?**

**Ren:** I don't think the worst possible result could ever happen, because there are very few companies, even in the West, that are as well-behaved as us. Backed by the power of their whole state, the US intelligence system spent over a decade scrutinizing Huawei but still found no evidence of any wrongdoing.

**Tammy Tam: To be frank, you were dashing along when you talked about Huawei, but your answers to questions about your daughter Meng Wanzhou were fairly short. It feels like you are not good at expressing personal feelings, including your feelings towards your children. Do you think that's true? Do you miss Meng Wanzhou? Do you just not know how to say that you miss her?**

**Ren:** Of course I miss her. We're family. But missing her can't help. There's still a legal process we have to get through, step by step.

11

**Tammy Tam: I'd like to ask you a follow-up question. You were once a soldier. Did that have a big impact on your character? Does that have anything to do with**

**the regret you feel towards your family members, including your daughter? Is that impact big?**

**Ren:** When I was young, joining the army was the best option for me. I was very lucky to have been given the opportunity to work in the Liao Yang Chemical Fiber Factory. Looking back now, we were like migrant workers. When the country decided to build that factory, no work unit wanted to be stationed there. The conditions there were tough and the Cultural Revolution made many things chaotic. No one wanted to work, so the army was dispatched instead. There weren't many technicians in the army, so soldiers like me who weren't really experts were sent to work on this factory instead. That was how we got the chance to work there. I think we were lucky because the factory introduced that super-advanced French chemical fiber equipment. This was a huge opportunity for us, so we poured ourselves into work, and didn't care enough for our families. I was thousands of miles away from them. What could I do? We didn't have mobile phones or WeChat back in those days. It was really difficult to call home. Sometimes, even when the call connected, we still couldn't hear each other, even if we shouted. So I could only write them letters that said simple things. Do I regret that? I do. Everyone has regrets in life.

12

**Tammy Tam: When you mentioned Huawei's culture, you said Huawei would avoid the practice of "every new sovereign bringing his own courtiers". As the founder of Huawei, how do you view yourself? Do you think of yourself as Huawei's spiritual leader? What is your role at Huawei? People outside the company think of you as the symbol of Huawei, a spiritual leader. Would you ever consider retiring completely, or will you just keep working for Huawei?**

**Ren:** There will be a day when I will retire. All people eventually pass; no one can live forever. When will I retire though? That is something that will have to be decided when the time is right. I'm not Huawei's spiritual leader. I'm a puppet leader. With our rotating chairs, the Executive Committee of the Board of Directors, and all the other governance bodies we've put in place, I'm like a puppet here. I only play a symbolic role, like a clay idol in a temple. Without it, the temple would look empty, but in truth, the idol doesn't really do anything. I don't manage any specific things. I'm not even involved in management appointments. Whether or not I'm at Huawei has no real impact. I've been a puppet for a while, and I'll continue to be one in the future. I'm just a clay idol, getting smaller and smaller every day. One day, I'll disappear.

**Tammy Tam: You are still the spiritual leader, not just a**

**clay idol.**

**Ren:** I'm telling the truth. Really.

13

**Tammy Tam:** I have a question about your personal life, personality, and work style. You made Huawei a global tech leader. What is your biggest concern going forward? How worried are you that Huawei might lose its leadership position? Are you more concerned with your daughter or with Huawei's position? No matter whether you are a clay idol or a spiritual leader at Huawei, is there anything that keeps you up at night?

**Ren:** What's most important to us is that we need the right external environment if we want to advance into a new domain. It's impossible for us to enter a domain and lead the way by ourselves. China needs to place more emphasis on basic education, especially in rural areas. Throughout the history of China, many leaders were born or grew up in rural areas. This means rural areas are also a cradle for talent, so it's important to promote basic education in these areas. Basic education paves the way for basic research, which in turn leads to basic theories and then to breakthroughs. It is unlikely for us to be a leader without making breakthroughs.

China has made great progress in education and culture over the past 70 years. But if we look at the

international environment and the role China plays, the country has a long way to go in basic education. Basic education will help turn the sparks of technological advancements into something really great. Over the years, Huawei has partnered with countless scientists and hundreds of universities worldwide, which has enabled our development. Hopefully, in the coming years, China will become a country with all the necessary elements, not only in manufacturing and engineering, but also in coming up with new theories and all other elements. I hope China will develop further in basic education and provide the right environment for many companies to lead the world. If you are not a leader in the information industry, chances are your products or services won't sell.

**Tammy Tam: When you step down, how would you like others to see you? As an entrepreneur or a thinker? A good father or a somewhat bad father?**

**Ren:** I hope that I am "the forgotten one". People should forget me and spend their time learning science and technology or making contributions to society. I'm just an old man. What's the point of remembering me? People should think more about the future and the world. Young people should not have to bear extra weight on their shoulders. Huawei doesn't relish in its history and has seldom documented what it has been through.

We have implemented sunset provisions for our corporate files. We learned this from Trump, who requires that for every regulation added, at least two be repealed. Huawei sunsets a corporate file five years after its release, otherwise so many files would drag the company down.

I think young people should move ahead on light feet. I don't want anyone to remember me. My biggest wish is to drink coffee in a café unnoticed.

During the COVID-19 outbreak, I went to many parks in Shenzhen, where there was no one else around. I also went to cafés and empty shopping malls. Shenzhen is a nice place to live, but I wasn't able to enjoy all its beauty because I'm a net celebrity and I get recognized everywhere I go. People took photos of me and posted them online. It would be sublime if nobody noticed me in a café when I'm old, with a hat on, a walking stick in my hand, and wrinkles all over my face. I wish to see, with my own eyes, the splendor of my country. People should forget me, and I will be "the forgotten one".

**14**

**Tammy Tam: I don't think your dream will come true. You will always be recognized no matter where you go. Just now you brought up Trump. What's your opinion about him? Do you have anything to say about him?**

## **Why did he sanction Huawei?**

**Ren:** The US sanctions and our sunset provisions are two different things. Trump requires that for every regulation added, at least two be repealed. This has inspired us. Over the course of three decades, Huawei has developed an excessive number of corporate files that have never been repealed. When all our files are still in effect, we have to follow them all. This problem has made operations a nightmare. The sunset requirement of Trump reminded us that we must have our own sunset provisions. At first, we called it "Trump Sunset Provisions", which was shortened during internal reporting. This is Trump's creation. Before that, we had no idea about how to get rid of legacy procedures. Later we learned about this and took off the extra weight of the legacy procedures. Our company has become more nimble, and our HQ workforce has shrunk.

15

**Eugene Tang: Here's a question about cyber security. Could all countries in the world reach a consensus on global cyber security standards?**

**Ren:** Survival is everyone's ultimate goal, and security comes next. Everyone in the world agrees on that. Europe was the first to set cyber security standards, including the General Data Protection Regulation

(GDPR). This is a very good initiative. When everyone abides by the GDPR, sooner or later cyber security won't be an issue.

Huawei supports European standards and has been investing heavily in R&D to reconstruct our networks. As Huawei has gone from a small company into what it is today, our network architecture has been built up along the way, but it's unclear whether this architecture will be able to adapt to the future framework. That's why we are bringing in many talented people who will help us reconstruct our networks. If we can completely meet Europe's high standards and simplify our networks over the next few years, then our ability to serve humankind will increase significantly. We believe the global community will reach a consensus on cyber security and privacy protection.

**Eugene Tang: You often say that Huawei's network equipment is secure and has no alleged backdoors for the Chinese Ministry of State Security. How do you convince your customers of this, especially your customers in Europe, which you said is the most important market for Huawei?**

**Ren:** To begin with, our network equipment is secure. We don't have any malicious intentions. But can we meet the European standards in terms of technological capabilities? We will continue to work on that. Our

European customers have worked with us for over 10 years, and some for even 20 years. They have gained a deep understanding of Huawei through years of cooperation, and know that we have no security issues. Over the past 30 years, our network equipment has served three billion people in more than 170 countries and regions, without causing any cyber security or privacy protection issues. This proves that we have no cyber security issues in traditional networks.

Second, our future network architecture needs to adapt to new social developments such as cloudification, massive amounts of traffic, and AI. Cyber security and privacy protection will remain our top priorities; otherwise, no one will dare to use our network equipment.

**16 Eugene Tang: As the US is now pressing Apple to develop network equipment, will there be two different 5G standards in the world in the future?**

**Ren:** The US is a technology powerhouse, and is fully capable of doing so. Some US companies have a cash reserve of hundreds of billions of US dollars. We believe they are fully capable of developing network equipment. However, I still think there will be only one 5G standard worldwide. If there were two standards, how could you enter markets that used the other standard? If you

limited yourself within your own market, could you ensure companies that use the other standard would not break into your market and take your place? The US used to dominate the world market. If the US decided against joining a unified world standard, it would put restrictions on itself. This would be a pity. Therefore, we believe that the US is technologically capable of leading the world and creating new products. But there should be only one standard worldwide, because we all need to interconnect with each other, and products that fail to enable this will be of no value.

17

**Eugene Tang: After Huawei was added to the Entity List by the US Department of Commerce, you have made many adjustments to your supply chain in terms of the OS and components. Is Huawei able to eliminate all US elements from its supply chain?**

**Ren:** This isn't going to happen, because US companies need to survive. They can still sell and supply components to us as long as they meet certain standards. We are now continuing to buy these components in large quantities. However, if the US government further increases these standards, US companies will be unable to sell some of their components to us. Therefore, we need to find alternatives to these components. Currently, most US chip makers are still selling to us.

**Eugene Tang: So it's not necessary to totally eliminate US elements?**

**Ren:** We are living in a globalized world, and any missing links will cause problems. For example, we were incredibly nervous about component supply when production was suspended for two days in the Philippines due to the COVID-19 pandemic. We put a lot of effort into helping them, offering our own experience in fighting the pandemic. It made us nervous when the Philippines suspended production for only two days, let alone if this happened in the US.

**Tammy Tam: Do you mean that US companies are still supplying you with some chips and components?**

**Ren:** US companies can apply to the US Department of Commerce (DOC) for licenses under the DOC's jurisdiction. After these applications are approved, they can supply licensed products to us. The DOC has set a threshold, and any exports above the threshold are banned, while sales below the threshold are allowed. It's not a complete ban.

**Eugene Tang: The core of any communications equipment lies in chips. Does Huawei have a complete set of alternative chips?**

**Ren:** Yes, we can achieve self-sufficiency, but we are still buying chips from Qualcomm. I don't know how

many chips we will buy this year. In the past, we bought tens of millions of chipsets every year. As long as the US does not stop us, we will continue buying large quantities of chips from Intel, Qualcomm, and many other companies. Why not? These companies have been our friends for decades. We can certainly make chips by ourselves, but we still buy from other companies, as this is the foundation of our survival. We cannot stop buying from others just because our own chips are cheaper. Otherwise, if we found ourselves in trouble one day, other companies would be reluctant to sell to us, and we would collapse. Therefore, we will keep buying even if we have our own chips, so that we always have a Plan B.

**Eugene Tang: Do Huawei's chips include software design?**

**Ren:** Of course.

**Eugene Tang: Can the chips made in China fully meet Huawei's requirements?**

**Ren:** Chinese chip makers are now capable of producing low-end and mid-range chips, but are not fully capable of producing high-end chips. All chip makers need time to develop.

18

**Eugene Tang: Huawei is facing pressure from the US. In addition, COVID-19 is affecting the production**

**of smartphones worldwide, as well as sales and demand. Would you please share your forecasts for your business results in the networking and consumer segments this year?**

**Ren:** I don't think COVID-19 will have any huge impact on our annual plan. Sales at the retail stores of our Consumer BG may be affected a little. However, the surging demand for equipment required for online learning and telecommuting has made up for the declining sales of other products. Our overall sales have grown significantly recently, and there are no signs of decline.

19

**Eugene Tang: During our visit to Huawei, we saw a lot of advanced equipment and learned about your vision for 5G. Mr. Ren, how do you see the future of 5G, big data, the Internet of Things, and AI? How do you think these technologies will change China?**

**Ren:** I don't think these new technologies will just change China. I think they will change humanity. For example, our 5G technology has been used to build campus networks for Huawei's facilities in Songshan Lake, Dongguan, and oil fields in Saudi Arabia. 5G will not just support massive amounts of traffic, and 5G would be a failure if it only served this purpose. 5G has

many other functions, for example, supporting high bandwidth and enabling low latency, which can be used for industrial controls and manufacturing. Currently, about half of all manufacturing factories, such as aircraft factories, could use 5G to enable automated and AI-powered management. However, 5G still can't support some high-precision manufacturing work, so we need to work on that.

Businesses' adoption of 5G technology is part of the B2B market while consumers' use of 5G is part of the B2C market. We believe that 5G will create tremendous value in the B2B market. Businesses can use 5G to create cutting-edge things.

For example, 5G can help automate surface mining in Brazil, eliminating the need for manual operations. It can also enable autonomous driving on large farms, allowing tractors to work 24/7. People would only need to fuel these tractors. If agricultural machinery is able to work 24/7 in some of the more challenging areas in Africa, we could see real miracles.

New technologies can serve a wide array of purposes. 5G is still in its infancy, and its functions still need to be improved. Take the anti-jitter function as an example. We need to conduct more mathematical and other theoretical research to ensure the stability of 5G networks for millisecond-level jitter, so that 5G can play

a vital role in high-precision manufacturing.

5G development has just begun, and it has brilliant prospects. We believe that the US has some great ideas and approaches that they can use to overtake us. Huawei cannot serve all businesses and all people, so we need to work with more partners.

**20 Eugene Tang: Do you think COVID-19 is an opportunity or crisis for Huawei?**

**Ren:** We sincerely hope the pandemic will be over soon. Throughout history, humanity survived numerous plagues, and the COVID-19 pandemic will be over eventually. Modern medical technology is very advanced, and we are more capable of containing epidemics than ever before.

In ancient China, emperors fought epidemics by hanging moxa sticks on their doors during the Dragon Boat Festival. Guangdong apparently cured more than 90% of the confirmed cases with traditional Chinese medicine, although I'm no expert and just saw this on the news. I believe that through concerted efforts, humanity will eventually overcome COVID-19.

**21 Tammy Tam: Many people see Huawei as a victim of the US-China trade and tech war. How do you**

**view Huawei's future development? You just said that Huawei is racing against time for fear of being overtaken by the US. Do you think Huawei will be overtaken by the US? How far ahead of the US are you? Do you feel a sense of urgency?**

**Ren:** Playing catch-up is the norm in our society, and no one can stay ahead for ever. If someone is chasing us, it will drive us to run faster so we are not surpassed. Those who are left behind also need to run fast in order to catch up with those in front of them. So I believe playing catch-up is a good thing for companies, as it drives companies to move forward.

**22 Tammy Tam: Do you have anything to say to President Trump?**

**Ren:** We should all work together to serve humanity. That's the ultimate goal of any company.

**23 Tammy Tam: Finally, I would like to ask you, Mr. Ren, a question on another topic. As Huawei is under attack from the US, many people from the Chinese mainland have said that Huawei represents Chinese enterprises. This has become a kind of populism. However, you yourself are using Apple's products. What do you think of people considering Huawei as a symbol of China?**

**Ren:** Huawei itself is a global company, with a high proportion of non-Chinese scientists. We currently have 40,000 non-Chinese employees, who are mainly middle- to high-end talent. Therefore, our success can be attributed to our global operations.

I just hope that China can place more emphasis on education, become on par with the US and Europe in this regard, and boost the creativity of Chinese children. Only by doing this can China contribute to basic theories over the next several decades.

Don't think that we must overtake the US or Europe in basic theories. This thought is wrong. Any basic theory will ultimately benefit all of humanity, and China needs to contribute to humanity in this regard. China cannot simply take without giving back, and should contribute much to basic theories, which sometimes take decades to bear fruit.

Qualcomm's channel coding schemes for 5G long message transmission were developed based on a paper of a US mathematician in the 1960s. Our channel coding schemes for 5G short message transmission were based on a mathematics paper written by a Turkish professor over a decade ago. Generations pass before theories are applied to society. We just hope China can contribute more to humanity in the future. These contributions will be theoretical breakthroughs.

**24 Tammy Tam: As the US has been trying to impede Huawei's development, President Trump says that they can directly work on 6G. Has Huawei considered working on 6G as of today?**

**Ren:** We have always worked on 6G in sync with 5G. However, there haven't been any breakthroughs in theories or any other aspects of 6G. Therefore, 6G could only be used about a decade from now.

**25 Tammy Tam: Some time ago, there was chaos in Hong Kong. Some Huawei stores there were smashed by demonstrators. Do you have anything to say to young people in Hong Kong? Do you have any expectations of them?**

**Ren:** Similar things have happened throughout history. The UK now has the world's most developed textile industry, but around 200 years ago, workers in the UK would smash the textile machines. However, society continued to move forward. Smashing things does not create new opportunities. The textile workers back then were afraid that textile machines might leave them behind. However, even today, the UK is still the world leader when it comes to high-end shell fabric. Other countries still cannot produce fabric as delicate as that made in the UK. The UK is a developed country with

high salaries and good social welfare, but it still produces fabric. I think we must learn from advanced human civilizations.

If a phone is smashed, it means one more can be made. The more that are smashed, the more that are sold.

**Tammy Tam: Thank you very much, Mr. Ren, for spending so much of your precious time talking with us today. I hope that while you continue to work hard, you and all other Huawei employees will stay safe and sound during the COVID-19 crisis.**

**Ren:** We will work around the clock.

# Ren Zhengfei's Interview with The Wall Street Journal

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March 25, 2020

01

**Neil Western, Asia Business Editor, *The Wall Street Journal*:** Thank you for taking the time to talk with us again. We really appreciate it. Unfortunately, we can't be there. The coronavirus is keeping a lot of people working from home and quarantined. I hope you are doing well, and we'll start. Can you tell us a little bit about how the coronavirus has affected your operations?

**Ren:** The COVID-19 outbreak has had some impact on our production, sales, and delivery. Our company resumed operations on February 1, so our business operations have not been impacted. Initially, about 70% of our employees returned to work, and that percentage has gradually increased to 80%, and then 90%. However, some cities in China are still under lockdown, so not all employees are back in the office yet, but more than 90% of our employees are now working in the office.

The COVID-19 outbreak has also affected the production capacity of our suppliers. Some of them are small factories that didn't meet the sanitary requirements for resuming operations, and were banned from doing so by the local governments. So we helped meet the sanitary requirements, and persuade the local governments to allow our suppliers to resume operations under the precondition of ensuring the health of their employees.

We have also seen some impact on our international logistics. The number of international flights has been cut significantly, and air freight is costly, up three to five times. This has had some impact on us, and we may reduce the numbers we set in our business plan for Q1, but I don't think our annual plan will be affected.

**Dan Strumpf, technology reporter based in Hong Kong, *The Wall Street Journal*: Thanks a lot, Mr. Ren, for that background. When you say you have reduced your numbers, you said your revenue numbers or your financial numbers? Could you be more specific about that?**

**Ren:** I mean our revenue numbers for Q1.

**Dan Strumpf: By how much have you reduced that target? Can you give us some specifics as to what the effects are?**

**Ren:** The specific numbers will not be available until mid-April, but overall it will be a very small adjustment to our targets. The supply of some components and customs clearance in some countries have been affected by the pandemic. In addition, our project delivery may be affected as some people are being quarantined and isolated at home. However, the overall impact on our company is not significant.

**Dan Strumpf: Now, that's interesting that you mentioned**

**the issues with quarantines, isolations, and customs and crossing borders, and because obviously Huawei is a global company, crossing international borders has become so much more difficult right now given what's going on. How are you able to compete around the world in a situation like this where there are so many travel bans in place? And I'm just curious too, how has it affected your personal routines and management style at Huawei?**

**Ren:** Look at this remote interview we're having now; we've adopted a similar approach when it comes to managing the company during the COVID-19 crisis. Employees can work from home, and use teleconferencing for meetings. In addition, we have taken measures to reduce the amount of international travel required for our employees. The vast majority of employees only move around locally.

Many of our international contracts are about network expansion, and there's no need to send people to the field to fulfill them. Instead, we can simply fulfill the contracts from our equipment rooms, carrying out software upgrades remotely. So our contract sales can continue to grow.

**Dan Strumpf: Mr. Ren, have you changed your habits, your routines at Huawei? What have you been doing differently as a result of this new world?**

**Ren:** I don't see much change in our habits. For executives at Huawei, our work is to have meetings, revise corporate documents, and then get these documents published so that employees can act upon them. That's how we did things in the past and that's the same today. There hasn't been much change.

Now we have meetings over video, so the pandemic basically has no impact on us. Maybe in the past we had to take flights to meet face to face, but now we don't need to. Because even if we fly somewhere, we would still have to go through quarantine, and we would end up meeting over video as well. What's the point of taking the flight?

**Dan Strumpf: Do you think that whenever it is that things return to normal, if those changes will stay in place, that there will be more remote meetings and, perhaps, less international travel? Do you think that those changes will stay?**

**Ren:** I think humanity is entering an information society. IBM calls this the "Global Village". With planes, of course, we can travel anywhere quickly. This is a characteristic of the Global Village. In the past, you would have traveled by ship, which would have taken months. If we look even further back into history, our ancestors had to cross entire oceans with wooden sailboats.

Now, with advanced communications networks, we can chat over video as if we were sitting next to each other. However, we can't have a cup of coffee online together, because we can't drink through the screen. So barring these kinds of physical experiences, we will see more online information exchanges in the future. For example, during this pandemic, hundreds of millions of Chinese children have started taking online courses at home. There are also many students in the US and in Europe taking international courses online. Once people get used to this approach, it won't be easy to get rid of it. The number of users or how often they access the service may decrease, but this new approach isn't going to go away any time soon. As an equipment vendor, we strive to meet customer needs in this regard.

**Neil Western: Mr. Ren, I know you always find yourself traveling around the world to meet grassroots employees firsthand. How are you able to keep communicating and getting advice from them?**

**Ren:** That's because I've already traveled to almost all those least developed countries, to learn about how our employees work and what their lives look like. Today we can communicate over video and collect feedback from our employees through our internal BBS instead. This way, we can understand how they work and live in other countries. Then, we will know how to improve

the environment and situation to support their work. That's how our past travel experiences have helped. If we don't travel around the world, we don't develop an accurate sense of it. So even though we're now isolated in different places around the world, our engagement and communication with each other is uninterrupted.

**02 Neil Western: Can we turn, Mr. Ren, to the difficulties you have had with the US administration over the past 18 months? First of all, when we last met, we spoke about your daughter. Have you been in touch with her lately? How are you communicating? What kind of conversations are you having?**

**Ren:** We talk to each other over the phone. We usually talk about how everything is going in our lives. Her mother and her husband are currently in Canada keeping her company, so she's not alone there.

**Neil Western: How is she doing with regards to the criminal case, and what are you doing personally on that front?**

**Ren:** We have committed no criminal offence, and we have already made our case to the US court. We are still pursuing these matters with the US District Court for the Eastern District of New York.

**Neil Western: Do you believe that the Canadian government should play a role, in your point of view?**

**Ren:** Canada is a country ruled by law. That means its legal system should be open, fair, just, and transparent. We believe that the legal system of Canada will arrive at the right conclusion in the end.

**Neil Western: So you have not lobbied the Canadian government directly?**

**Ren:** There's no need.

03

**Dan Strumpf: Just on the subject of the US criminal case, if I may. Mr. Ren, as you are aware, the recent indictment by the US was extended to include a number of new charges against Huawei, including racketeering charges. These are very serious charges. A racketeering charge is accusing Huawei of basically being a criminal enterprise. I was just wondering if you want to respond directly to those charges that the US has made.**

**Ren:** We certainly will defend ourselves against these charges in the courts. It's not the US Department of Justice that has the final say.

**Dan Strumpf: I want to ask you about your strategy that you have taken with regards to Huawei in the last**

**year. Last year, you met with us – which we're grateful for – and you have met with a number of other newspapers and television stations. Of course, you have filed a number of lawsuits against the US and just took a much more aggressive approach to Washington, much more so than in the past. I was wondering if you think that approach was effective, given that it seems as though the US remains as aggressive as ever against Huawei. One of your lawsuits was thrown out, and there was a new indictment filed. So, do you think your strategy last year was effective?**

**Ren:** As I said, it's not the US government that has the final say. In the end, we still need to follow the court rulings. It's up to the judicial system of the US to handle these cases in a fair, just, and open manner.

**Neil Western: So, Mr. Ren, you trust the US courts to give you a fair trial. What would be your strategy in defending against these charges?**

**Ren:** We are still communicating with the US courts through our lawyers in the US.

**04 Neil Western: In the last 15 months, Mr. Ren, you have taken a higher profile in terms of the media and the legal strategy against the US and in many countries around the world, arguing very strongly against US**

**efforts to dissuade foreign governments from using Huawei equipment. Do you feel that strategy is working and can you give examples of how it's working if you think it is?**

**Ren:** It must be working. At first, it felt like the sky was covered by dark clouds, and all we heard was what the US was saying. The US is a powerful country and has a powerful government, so people generally trust what they say. As time goes by though, more and more facts are coming to light, and the sky is changing from pitch black to a dark grey, to a more neutral grey, and hopefully soon to a light grey. We want people to know more about Huawei and increase their trust in us. We are still doing business with companies in Western countries, including the US's allies. Because we have been working with these companies for decades, the trust that has been built between us is precious. They won't give up on Huawei just because of a little pressure.

We will release our 2019 audited financial statements in just a few days. Last year, our sales revenue increased by nearly 20%, and we also saw a significant rise in our profits. This shows that customer trust was not affected by US attacks against us.

As for this year, we expect some growth over what we saw last year. We also plan to spend 5.8 billion US dollars more on R&D. In 2019, we spent around 15

billion US dollars on R&D, and this year's spending is expected to exceed 20 billion. We are becoming more capable of overcoming difficulties, and the difficulties and challenges we face will become less and less. So we are confident that we will achieve our sales and profit goals this year.

After the pandemic, people will better understand the value of advanced information technologies for fighting against the pandemic. It's likely that network rollout around the world will speed up. We're actually concerned that we may not be able to produce enough equipment to meet these needs. This proves our efforts over the past 10-plus months were effective.

**Neil Western: I'll come to R&D at any second, but I just wanted to follow up. So you're saying that from your experience, the countries you're talking to no longer trust what the Trump administration is saying about Huawei, but they do trust your assurances?**

**Ren:** I don't know why they no longer trust Trump. Isn't Trump very popular among US voters? I think the American people are very smart.

05

**Dan Strumpf: I want to follow up on something you just said. You said the difficulties that you will run into this year will become less and less. I'm just wondering**

**why you feel that way. What will become easier for Huawei? And you said that you're still confident in reaching your financial goals this year. Can you share with us what those are?**

**Ren:** First, we have invested very heavily into R&D. Second, we have cut back on some low-performing product lines and moved outstanding engineers to our major product lines. This way, we will come up with even better products and services this year.

Our financial performance ultimately depends on product quality, service quality, and customer trust. All of the employees at Huawei are working hard to achieve our goals, so we believe our goals can be achieved. I would gladly welcome another interview with The Wall Street Journal in January next year. By then, I will be telling you about our survival.

**Neil Western: We would happily take that interview, of course. Could you explain the extra 5.8 billion that you're going to spend on R&D? Exactly what products are you going to invest that money into? And what are your most prospective lines of business?**

**Ren:** The areas of investment haven't changed. We will continue investing in the same products as we have in the past, but now with more intensity.

06

**Neil Western: Looking back over 2019, what do you view as your biggest success for Huawei? Do you see it as the decision by the UK to allow you in their 5G network? What role, if any, did you play in that decision?**

**Ren:** We were very successful in 2019, and we must first thank Mr. Trump for that. He's such an influential figure in the world, and yet he pays so much attention to Huawei. Many people did not know about Huawei or were skeptical about us before. Even in China, some people didn't have much faith in us and thought we might be tricking them. After Trump hit us with a big stick, people began to think: "There must be something really good about Huawei. We should buy Huawei equipment before it's too late." So Mr. Trump did us a huge favor. We need to thank him for that.

Before the US campaign, the company actually became somewhat complacent. We have nearly 200,000 employees around the world, and it's difficult to have them all work as one. Our Strategy Department came up with a new vision and mission: Bring digital to every person, home and organization for a fully connected, intelligent world. The aim was to align our employees' thinking. But in reality, our employees didn't necessarily buy into such slogans and were not motivated by them. However, when Trump began to attack us,

our employees became vigilant. Survival became an issue, and they knew that if they didn't work hard, the company would collapse. Everyone was on their toes. In fact, they are working a little too hard like a runaway train. I always feel the need to step on the brake to prevent the company from breaking into pieces. So, at the lower level our employees are working flat out, but at the top, we keep a cool head. This lays the foundation for our success.

**Neil Western: Do you believe that people in other countries, in Europe, Australia, and New Zealand, feel similarly about the Trump campaign and they're now more aware of Huawei and see it as a technology power more than they did before President Trump's campaign?**

**Ren:** I would say there has been some impact on other countries. Countries like Australia, New Zealand, and the US don't trust us, and their carriers may be affected. It is also a game for them. Some of our customers still trust and understand us though, so we remain confident in our steady growth.

07

**Dan Strumpf: Mr. Ren, I want to just ask you a very specific question about the lawsuits that you filed in the US last year. I came to the Huawei campus to cover**

**those lawsuits, and I watched and wrote extensively about them. I followed them closely. I'm wondering, was it your decision specifically to file those lawsuits? I'm just wondering, as I'm aware of some disagreement internally within Huawei over the decision, specifically within the US, to file those lawsuits. How do you deal with that sort of disagreement within Huawei over the decisions you make?**

**Ren:** We have been forced to stand up and defend ourselves in the US, rather than picking a fight there. The US is waving a stick at us, and after taking a blow from the left, we can't just wait for the next one to come at us from the right. Therefore, we are simply defending ourselves in court. As to this question, I would suggest you talk to our lawyers, and they will tell you the answer. There is no disagreement within the company, and we are very much aligned on this issue.

The lawsuits have nothing to do with our ordinary employees, whose responsibilities are to harvest more crops and increase soil fertility. Public relations and legal issues should be handled by specialized departments. I don't know exactly what ordinary employees have on their minds, and there is no need for me to know that. They should focus on their own work. We have no disagreement within the company that needs to be coordinated.

If the US government drops their lawsuits against us, then we can drop ours against them. But as we are seeing no sign of the US moving in that direction, we are actively preparing for other sticks the US may wave at us. If we are caught unprepared, the US may begin waving a stick at our head, and we may get wiped out. Therefore, we have to protect ourselves and prepare for defense.

08

**Neil Western: Mr. Ren, can I ask about your operating system and the app ecosystem you're building in the absence of Google's Android? Can you say how far you feel you have succeeded in that and the prospects for that business?**

**Ren:** Our HarmonyOS has gone open source, and the HMS will enter the market with our P40 series phones. Though our operating system (OS) lags behind established brands like Apple and Google, it has unique features. That's why we have decided to put the OS on the market.

We were forced to do so because we didn't feel secure using the operating systems of others. If supply was cut off again, what would we do? The previous supply cut forced us to find a way of our own. We must spare no effort to fill our gaps. If we hadn't done this, we would have been unable to keep our foothold in the market.

**Neil Western: Have you recently spoken with Google directly?**

**Ren:** I don't know.

**Dan Strumpf: Mr. Ren, how are your smartphone sales this year in and outside China?**

**Ren:** Our sales are still growing, but I don't know about the specific numbers. I just know that we sell about 450,000 smartphones in China every day. Our sales in international markets are declining. However, we expect to see new growth in April and sell more than 20 million smartphones every month worldwide. Because of the pandemic, sales of our tablets, laptops, and other devices have also gone up five or six times. Some of those products already have HMS built in.

**Dan Strumpf: So to what do you attribute the decline in smartphone sales in foreign markets? How can you reverse that decline?**

**Ren:** We haven't found a way to increase our sales in overseas markets yet. We are still working to address the problem.

09

**Dan Strumpf: Mr. Ren, I'd like to just pivot slightly. I have read a lot of essays that you have written over the years at Huawei and you have written a lot about**

**your past and your travels throughout the US. Who do you count as your biggest inspiration among American tech entrepreneurs? I know you have written a lot about IBM, for example, Louis Gerstner, and you traveled and visited a lot of these companies. Who do you see as your inspiration or mentor?**

**Ren:** The whole tech circle in the US is inspiring, especially sleepless Silicon Valley. Their dedication has inspired us. Business leaders like Steven Jobs, Bill Gates, and Louis Gerstner have also motivated us greatly. We don't just learn from big companies like Google, Facebook, and Amazon though. We also look to the spirit of innovation found in American SMEs. All of this together has tremendously inspired us. The soil for innovation in the US is still very fertile. The US will continue to shoulder the heaviest responsibility in the rapidly developing information society. The US has strong capabilities and many renowned universities that provide high-quality education. This lays a solid foundation for the US's revitalization.

The US attaches great importance to education. A young man helped found Harvard University with a small fortune. A US railway tycoon founded Stanford University. It is the open-mindedness of Stanford University that made Silicon Valley a reality. I think we will always learn from the US's dedication and down-to-

earth spirit in technological innovation.

**10 Neil Western: I know when you started Huawei, you were concerned about how badly China lagged behind the world in innovation. At what level do you put China now in terms of innovation against the US and the world?**

**Ren:** 70 years ago, most Chinese people were illiterate. But today, you seldom find any illiterate people in this country, and education has been very instrumental in this process. That said, China's education system still follows the old model of the industrial age, failing to encourage children to let their creativity blossom. In kindergartens, naughty kids are always scolded, and their mothers always try to make them behave. The sheer number of exams stifles their naivety.

Children are more creative than the rest of us, and their imaginations are limitless. If their growth is narrowly confined, their drive to innovate will be inhibited, even though the route they take gets clearer with time. In China, what defines a good student is how well they do on an exam. The great Chinese mathematician Hua Luogeng probably wouldn't be able to get into university if he were alive today. China's education system should be more like the US's, which

advocates diversity, academic freedom, and free thinking. Only a system like that is going to encourage students to explore different directions and make breakthroughs.

In the US, there are different types of schools with different teaching methods. Students in leading universities have heavy workloads. If you can get to bed by 2:00, your homework might be easy. And it's not unusual for them to go to bed at 4:00 or 5:00 in the morning if they have algorithm courses. For students in ordinary universities, a very important part of their education is about legal and regulatory compliance, and on top of that, they need to study courses that are essential to their future livelihood. They learn boating, horseback riding, golfing, and skiing – hobbies that are vital to social engagements with business people or friends. Of course, these students still have to learn basic courses, but not as many as the students in leading universities like the Ivy League schools do.

Students applying to the Ivy League schools are asked if they helped at orphanages or the lonely elderly. Leaders are supposed to serve and give back to society. Leading US universities focus on fostering leaders in politics, business, science, and many other domains. These people assume significant responsibilities, so they must give back to society. The higher a university's rank, the more important it is they don't create selfish

individuals. This is how a society can thrive. Generally speaking, the US's education system is more advanced than China's. Why else would so many young Chinese people study in the West?

**11 Neil Western: The China-US relationship is a relationship that directly impacts Huawei, so presumably you do keep an eye on the level of tensions between the two countries as you steer your business.**

**Ren:** The road of development is inherently bumpy. We can dream about all land on earth being flat, but it never will be true. An ideal world should be made up of hills, where even if there are barriers, we are still able to climb over. However, the mountain we are currently climbing is very high and imposes great resistance. But it is not as high as the Himalayas, so we are still communicating with the world. We hope these barriers can gradually be removed and the situation can improve, so as to facilitate production and increase wealth worldwide. Only in this way can conflicts be resolved.

**12 Neil Western: I just want to ask how you see the next few years of Huawei and yourself, your role**

**at Huawei in the next few years. Obviously a lot of people speculate about succession plans. What are you thinking?**

**Ren:** Compared with 2019 and 2020, Huawei will only see better developments in the next few years. This is because we now know where our pain points are and where we should improve, so we believe we will be healthier over the next few years. Having learned these lessons, Huawei will slowly move upwards, as if it were climbing up a slope. While our company is climbing upwards, I will be on the way down due to my physical condition, and will not be able to continue climbing with the company. We are seeking a balance, and in the end the world will be increasingly close to being flat.

If Huawei is still operating then, you are welcome to visit us again!

# Catherine Chen's Interview with Business Insider Japan

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March 27, 2020

01

**Sanae Uragami:** Currently, there are several lawsuits involving Huawei in US courts. Personally, I think Trump is quite anti-China, so Huawei's chances of winning seem small. Why did you decide to file these lawsuits? Can Huawei actually win them?

**Catherine Chen:** The US government has brought some litigation against Huawei, and we have also filed some cases against them. We believe in the openness, fairness, and justice of the US judicial system, particularly in its procedural justice. We hope to share the progress of this process with you all in an open and transparent manner.

02

**Sanae Uragami:** Do you have the latest figures about the 5G contracts you have won? In how many countries and regions does Huawei have a 5G presence? What are these countries and regions?

**Catherine Chen:** We have just announced that Huawei has won over 90 5G contracts. As per industry convention, as well as the specific terms of our contracts, these kinds of partnerships are normally announced by carriers. Therefore, we cannot discuss the details of any 5G partnerships before our customers announce them.

When it comes to 5G, rapid deployment has already been announced in South Korea and several countries in

the Middle East. Europe also started 5G construction in 2020. 5G rollout in China was slightly postponed for the first half of 2020 due to the COVID-19 outbreak but we will soon see accelerated deployment.

**03 Sanae Uragami: Some reports in Japan say that Huawei's business in Europe is going relatively well. For example, you will build a 5G plant in France, and you've got new contracts in the UK. Some people in Japan think Huawei's smooth operations in Europe will irritate the US and further aggravate your relationship, and that the US may introduce new restrictions. What are your views on this?**

**Catherine Chen:** I personally still don't understand why the US government is attacking Huawei this way. They may be doing so because of the charges we are facing, but the truth is that Huawei hasn't done any of the things the US is accusing us of. All of those cases are currently being processed by the courts, and we will wait for their verdicts.

For more than 30 years, Huawei has worked closely with a large number of companies from the US, Japan, Europe, and other countries and regions. We work with over a hundred companies to provide connectivity and telecom services worldwide. We have always had a really

good impression of the US, which remains unchanged. A decade or two ago, we worked with US consulting firms, learning from their experience and improving our management processes in R&D, finance, and HR.

For now, we can't predict what will happen or how the US may react in the future. What we can do is stick to our values and continue providing great services and technologies to customers. We can't foresee how things may go in other areas.

**04 Sanae Uragami: The next question is about smartphones. I'm a user of Huawei smartphones. Your new smartphones don't have Google services preinstalled. This may make consumers less likely to buy your new phones. Can you give us an update on any negotiations between Huawei and Google?**

**Catherine Chen:** This is not an issue that Huawei can solve through negotiations with Google. US companies still want to sell their services, technologies, and products to us. There's nothing new I can tell you about, because the US government still hasn't given approval.

**05 Sanae Uragami: There are media reports saying that the court may announce their decision about Ms.**

**Meng Wanzhou as early as April. How is she doing? Has she talked to Mr. Ren and other colleagues? If Canada turns down the extradition request, will Ms. Meng be able to return to China? If Canada agrees to extradite her, what will happen next?**

**Catherine Chen:** Ms. Meng is still in Vancouver awaiting the court's double criminality ruling. There isn't any new information about this. We are waiting for that decision. If she wins at this stage, the extradition procedures will end and she can return home soon. If she doesn't win this appeal, she will pursue further legal action.

I know Wanzhou very well and she has never done the types of things they are claiming. We believe Canada's judicial system will reach a fair decision.

She has been in Vancouver for over a year now, but we have remained in close contact for both personal and professional reasons. Given the current COVID-19 pandemic, and as her colleague and close friend, I am very concerned about her. I look forward to her returning as soon as possible.

06

**Sanae Urugami:** It was reported that Ms. Meng planned to enroll in a PhD program during her time in Vancouver. This was a hot topic in Japan. Many felt it's remarkable that she still thinks about studying given

**her circumstances. Is she already working on a PhD? Are there any updates in this regard?**

**Catherine Chen:** We are grateful for everyone's concern for her. She's been studying online at home for over a year and has taken quite a few courses. I've never asked whether she is working on a PhD program or which university she is studying with. I only know that she has kept studying and sets aside a certain time every day to study. When we call her, we make sure not to call during those times.

07

**Sanae Uragami:** I want to ask a question about Huawei's PR strategy. Since I've followed Huawei for some time, I noticed that Huawei's PR strategy has changed a lot since December 2018. Specifically, Mr. Ren interacts more with the media now, and we have more opportunities to conduct interviews at your HQ. Catherine, as you are in charge of PR at Huawei, could you talk about these changes to Huawei's PR strategy?

**Catherine Chen:** Huawei's businesses continue to gradually develop and change. Some of the changes in our PR strategy before 2019 were related to such business developments. In the past, we didn't have a mobile phone business and so our customer base was relatively small. At that time, we mainly focused on

direct customer communication and some necessary government communication. We only communicated a little with the media and the public. After we launched the mobile phone business, we needed consumers to better understand Huawei, so we adjusted our branding and PR strategies.

As you just mentioned, the changes at Huawei in 2019 seem huge. Throughout the year, nearly 10,000 journalists and scholars from around the world visited Huawei. We are actively welcoming people to come. This is one of the big changes.

Meanwhile, the US government's accusations and attacks have brought Huawei into the global spotlight and drawn even more attention. Naturally, many people want to take a look at Huawei and learn more about Huawei in person. We are happy to oblige.

From the media's perspective, we have seen great interest in talking with Huawei's founder Mr. Ren, so he has given the most interviews out of our executives. We expect this will continue. As long as the media is interested in Huawei, we will remain open and transparent.

**08**

**Sanae Uragami: Mr. Ren had previously kept a low profile, with little public exposure. Since last year**

**though, he has frequently been meeting the press. Was it his own decision to speak up or was he asked to do so by his colleagues at Huawei like yourself?**

**Catherine Chen:** I think he was a little shy in the past, which is part of his personality. He prefers to talk to people through his many internal speeches and writings. He used to think he could just communicate through writing. However, the situation in 2019 prompted him to step up and start talking to the media. He was not forced to do so. We proposed the idea to him, and he immediately agreed.

**09 Sanae Uragami: Going from a person with little media exposure to one frequently taking media interviews, has he ever become tired or even exhausted? Has the shift in Huawei's PR strategy worked in real terms?**

**Catherine Chen:** I haven't noticed him being particularly tired or exhausted by this. In fact, the way he talks to the media is very similar to the way he normally talks to Huawei employees. He didn't have any specialized training for this before the interviews, despite what some people may think. That's why he doesn't feel tired even though he is talking a lot these days.

From the feedback I've received, many journalists really enjoyed talking to Mr. Ren and said that they could

feel his sincerity. He doesn't do PR, and so we aren't aim for PR from him. Our only goal is to clear up any doubts people may have about us and answer their questions, so that you know more about the real Huawei.

**10 Sanae Uragami: Recently, we journalists have seen some changes in Mr. Ren's clothing. It seems he is wearing more formal and more brightly colored clothes. Has anyone given him any suggestions in this regard?**

**Catherine Chen:** I don't know when this change started, but I know that his wife picked out what he recently wore. I'm not sure if his wife has input on everything he wears. I have never asked him about this.

**Sanae Uragami: When the media is looking for new photos of Mr. Ren, we often look to the photos taken by Reuters. And this is when we noticed that Mr. Ren seemed to be wearing many new clothes. So basically, these were chosen by Mr. Ren himself or his family, rather than by someone who gave him advice, like a consultant?**

**Catherine Chen:** It's not just Mr. Ren who does this. Our other executives also choose their own clothes. No one gives them advice on this.

11

**Sanae Uragami:** Most interviews are currently being conducted remotely, and there are both pros and cons to this. Given the current situation with COVID-19, have there been any adjustments to Huawei's PR strategy?

**Catherine Chen:** We can't say really there have been any adjustments. But the pandemic has certainly made it inconvenient to talk face to face. Remote interviews are the best solution at the moment. I also wanted to know how you feel about these interviews. Compared with coming to Huawei to talk face to face, how do you feel? Do you find this method to be acceptable?

**Sanae Uragami:** From a journalist's point of view, it's certainly a pity that we cannot meet face to face today. I think remote interviews are fine for one-on-one communication, but they may be a problem for press conferences. Normally you get to feel a lively atmosphere onsite, but now that's unfortunately missing. This is where the inconvenience lies. Some reporters who only ever reported on press conferences onsite may need to learn some new skills. Otherwise, it's going to be more difficult for them to handle future work. As an interviewee, how do you feel about it, Madam Chen?

**Catherine Chen:** I feel fine with these kinds of interviews. After all, I can still see you on the screen, and

there's no latency because of our current technology. However, for something like an online product launch, it's true that there is less atmosphere, and it's also very challenging for the speaker. Because there is no physical audience, the speakers may lose enthusiasm. However, we cannot postpone product launches. Some activities can be postponed, but some must be communicated in person. For example, the Huawei Global Analyst Summit, an event where hundreds of people come together exchange ideas, was supposed to be held in April. However, we have been forced to postpone it to May or possibly even later.

Due to the pandemic, we are also looking for ways to give people better online experiences, and we want to introduce some new technologies. We are still thinking about this, and we'll invite you again once we have decided upon the details.

**12 Sanae Uragami: What measures has Huawei taken to fight COVID-19 and prevent the spread of the virus? In Japan, it has been reported that telemedicine systems and 5G equipment were deployed in Wuhan, but there are not many reports on this. So I'm wondering what Huawei has done to fight the pandemic. Have you deployed any applications related to AI, 5G, or blockchain? Could you give a detailed introduction of**

## **what you have done in both China and abroad?**

**Catherine Chen:** The first thing that comes to my mind related to COVID-19 is that the Japanese people donated many masks and other medical supplies to China when we were going through our most difficult time. Classical Chinese poetry was printed on the paper boxes, and Chinese netizens were warmed by this when they saw it on the Internet. It inspired them to trace the poetry back to its roots. As a Chinese citizen, I'd like to thank the Japanese people for everything they have done.

Medical workers and volunteers have made the most important contributions in the fight against the coronavirus. Meanwhile, technology supports them and can even take on some of their workload, allowing them to work more efficiently.

5G does not currently cover all of China. 5G equipment is now up and running at two new hospitals in Wuhan, and we spared no efforts to make this possible. 5G is used to enable mobile solutions, such as mobile ward rounds and remote consultations. At the start of the outbreak, the virus was new to everyone and the conditions of patients were very complex, so these technologies were critical to helping medical workers increase efficiency.

The technology we are using for today's interview, called WeLink, has been in use at Huawei for over three years. We recently started offering WeLink to some medical institutions, companies, and individuals for free. The technology allows us to continue working effectively despite current difficulties.

AI has also played a role in China's fight against the coronavirus. Previously, it took doctors a long time to check images and complete diagnoses, but AI can now help with screening, greatly speeding up the process. China is currently developing new drugs and vaccines and studying the virus's genome, and AI is supporting this process. Of course, AI will never replace a doctor or researcher, but good technology can greatly improve their efficiency.

My colleagues told me that China even live streamed the entire construction process of the Huoshenshan and Leishenshan hospitals. 20 to 30 million viewers logged in to watch.

**13**

**Sanae Uragami: In addition to Huoshenshan Hospital and Leishenshan Hospital, many other makeshift hospitals also adopted Huawei's 5G technologies. Is that true?**

**Catherine Chen:** 5G has been deployed in most part

of Wuhan, and most of the equipment was provided by Huawei, but not all.

**14**

**Sanae Uragami: Huawei is a global company. Given the spread of COVID-19 from China to Europe, we believe it will affect Huawei's business. Huawei may need to check the situation in countries around the world every day. What impact is the pandemic having on Huawei's overall business? Is business travel still allowed? Do you have some specific policies?**

**Catherine Chen:** It has definitely impacted us. The outbreak started in China, and is spreading to more and more countries. Every country has its own recommendations and measures related to dealing with the pandemic. In every country where we operate, we are doing everything we can to protect the health and safety of our employees both at work and at home based on local healthcare authorities' recommendations and guidelines.

In some regions, our employees are working remotely, while business travel has been banned in a number of regions. We have reduced the number of meetings we hold, and canceled any that we deem to be unnecessary. Currently, the company is heavily relying on WeLink, with almost 200,000 employees in at least 1,000 locations

around the world using the system.

Although we have been heavily impacted, our operations are basically continuing as usual. Within China, our own production and supply capacities as well as that of our partners have returned to normal. We are now focusing on areas outside China. Our supply centers have taken effective measures to protect our employees and provide assurance for our customers and production systems.

**15 Sanae Uragami: The last question. You just mentioned that China is recovering from the epidemic. However, it's currently difficult to tell how the situation in Japan will develop in the future, because things have changed dramatically over the past few days. Tokyo has started banning people from going out. How does Huawei HQ see Japan's current situation? Huawei Tokyo Office Director Mr. Wang Jianfeng said that you donated some masks to Japan's medical system. Do you have other plans to aid Japan?**

**Catherine Chen:** I have only read about Japan's situation on the Internet, so I do not have the best understanding of it. Instead, I'd like to talk about what Huawei is doing overall to battle the pandemic.

We all know that when the epidemic first swept

across China, the country was a bit of a mess. We ran out of masks and really didn't know what the right thing to do was. We were scared. But gradually, things were sorted out and returned to normal. One to two weeks ago, we began offering help to countries and regions outside of China, and have been sending the necessary protective equipment and medicines to Huawei's offices around the world. We will continue to do so moving forward.

Meanwhile, we have been closely working with our customers and partners to guarantee network operations. As long as we can purchase medical supplies in China, we will continue providing them to other countries. Over the past few days, we have been discussing the possibility of sourcing more medical resources in China, so that we can offer immediate support if countries run out of medical supplies and our employees are infected.

We have also provided medical supplies to dozens of countries and regions outside of China. We are willing to do anything within our power to help, and will do our utmost to serve the needs of every country, and their hospitals in particular.

I believe that as long as we help and work with each other, we will overcome the challenges ahead and pull through this crisis.

**Sanae Uragami: Thank you for your help! Japan donated masks to China in January and February. And in return, Huawei recently donated masks to Japan, as Mr. Wang mentioned. I certainly appreciate all the help and support you have offered Japan.**

**Catherine Chen:** Japan offered China a lot of support to battle the epidemic, and was highly praised on the Internet for doing so. It was heartwarming to see quotes from ancient Chinese poems on the donation packages from Japan, like "Are you not battle-dressed? Let's share a coat and vest" and "Though we're oceans apart, a shared moon connects our hearts". We believe that not only Huawei, but also many Chinese people are more than happy to help Japan.

Unfortunately, even though we planned last year to enjoy cherry blossoms in Japan this year, it now seems that won't be possible.

**Sanae Uragami: You are welcome to come and enjoy the cherry blossoms in Japan next year.**

**Catherine Chen:** Thank you!

# **Eric Xu's Q&A Session at the Huawei 2019 Annual Report Press Conference**

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March 31, 2020  
Shenzhen, China

01

***China Business News:* Today, COVID-19 is still spreading around the world. Will the pandemic impact Huawei's overall business throughout this year, particularly your supply chain? What countermeasures have you taken?**

**Eric Xu:** It is our hope that the pandemic ends as soon as possible. We also hope that every patient around the world can be treated and cured as quickly as possible. The outbreak of COVID-19 is another reminder that we live in a world of shared future. In order to address common challenges such as this one, we need to be united, because a virus knows no borders and may target anyone, regardless of their race, skin color, or wealth.

As a company, Huawei's top priority in responding to the pandemic has been ensuring the health and safety of our employees. Since all this began, we have implemented a whole series of measures to protect our employees. On top of that, we are also working to satisfy the requirements of customers and governments around the world as they fight the pandemic.

As of today, we have fully resumed all production activities in China, so in the short term, we can continue supplying our customers and partners around the world.

But outside China, COVID-19 continues to spread and the curve is not yet flattened. Our supply chain

department is providing daily updates about how our suppliers around the globe have been doing, so that our company can do what we can to help partners along the supply chain combat the pandemic and continue production. We can't say for sure how the pandemic will evolve. If the measures being taken to combat the virus are not effective, and if some of our suppliers couldn't continue supplying us, then we will face challenges to our supply continuity. We definitely don't want to see this happen and we will work hard to ensure our supply continuity.

**02**

**CNN: Eric, I heard you when you said that China is trying to get back to normal and Huawei is trying to get back to normal, but as the pandemic is spreading globally, it really feels like we're sort of entering a stage of before coronavirus and after coronavirus. So how do you see Huawei's business being fundamentally changed because of the coronavirus pandemic? Do you see changes in how you approach the supply chain or changes in how you approach HR? I have heard you are now giving virtual tools to carrier clients, for example. How do you view some of the things you have rolled out because of the coronavirus pandemic? You know, they were emergency measures, but will you continue them in the future?**

**Eric Xu:** I don't know whether the pandemic will end up being the turning point between two eras, but the impact of what is happening will undoubtedly stay with many families and individuals for the rest of their lives.

As for Huawei, we don't have the time or energy to think about what new improvements we should make in our business operations. Our priority right now is helping customers and governments around the world fight the pandemic while guaranteeing the health and safety of our employees.

In light of the current situation, people around the world are spending a lot of time shopping, entertaining, and meeting online. This has caused a dramatic increase in network traffic, presenting significant challenges in ensuring stable and secure network operations. Huawei supplies networks to more than 170 countries and regions. We have been working closely with our customers and local governments to ensure networks remain stable and secure, and the rapidly growing demand for networks is well supported.

Over the course of the pandemic, we have also identified some areas for improvement in our business operations, which we will take measures to address once the pandemic is over. For example, we've learned that we don't have to sit face-to-face to have a successful meeting, and today we've even learned that we don't all

need to be in the same room to have a press conference. This unprecedented situation has certainly created new perspectives on networks, especially 5G networks.

**03 Reuters: How much of Huawei's revenue last year came from 5G equipment sales outside of China and what sort of impact did US pressure have on those sales?**

**Eric Xu:** Last year, our revenue from 5G was just over 3 billion US dollars. It made up a very small percentage of our carrier business revenue or our total revenue. 5G deployment was only just starting to kick off worldwide in 2019, and we have not yet seen large-scale 5G rollout. And yet, 5G has been a heated global topic of discussion. Never before in history have we seen a technology so extensively discussed that everyone, regardless of their age group, has heard of it. This has saved our industry quite a lot in terms of market education that would have been needed to get consumers to accept 5G.

Regarding the US campaign against Huawei, it has had quite an impact. At the very least, it has created a lot of extra work. For example, we had to spend a lot of time explaining the situation to our customers, partners, and government regulators. A few of our customers who had used Huawei equipment to build their 2G, 3G, and

4G networks did not choose Huawei's 5G technology at all or in some regions due to a variety of reasons. Examples include Optus and VHA in Australia, TDC in Denmark, and Telia in Norway.

04

***The Global Times*: Recently, there have been US media reports claiming that the White House is considering new export control restrictions, which may ban chip manufacturers, such as TSMC, from supplying Huawei. How will Huawei deal with this issue?**

**Eric Xu:** I have seen the report from Reuters, and another report from *China Daily* that was published on March 29. *China Daily* said that if the US imposes these new measures, the Chinese government will have no choice but to do the same for some US companies. The Chinese government would not just stand by and watch Huawei be slaughtered on the chopping board. I believe they will take some countermeasures. Why wouldn't it be possible to prohibit the use in China of 5G chips made by US companies, as well as the base stations, smartphones, and all other smart devices powered by these 5G chips, citing the same cyber security concerns?

Even if the US were to take such measures, we could still buy chips from Samsung in South Korea, MediaTek in Taiwan, and Spreadtrum on China's mainland. Even if

we couldn't make these chips ourselves in the long run, I believe that many chip companies in China will grow, and we could then make our products using chips from these companies, as well as those from South Korea, Japan, China's Taiwan, and Europe.

If the US government arbitrarily changed its *Foreign Direct Product Rule*, it would disrupt the global technology ecosystem. If China were to fight back, what would happen to the industry? The disruption would have an enormous domino effect.

If "Pandora's box" is opened, there could be a catastrophic domino effect across the global industry ecosystem, and Huawei would not be the only victim.

In that context, we hope there will be more collaboration across the global industry. Everyone can come together to look at the real challenges faced by the industry and customers, and provide trustworthy products for customers and the best possible products and services for consumers.

Therefore, I hope what you have mentioned will not become a reality; otherwise, it would cause enormous damage to the entire value chain, and none of the US players in that chain would be immune from the damage.

05

**CGTN: 2019 was a tough year for Huawei due to the FCC litigation and the Entity List. Last year, we saw Huawei invite a lot of media personnel to come and visit the headquarters in Shenzhen, and have a lot of interviews with Ren Zhengfei. Going forward this year, what more does Huawei want to do in terms of transparency? How does Huawei want to better showcase who they are to deflect the claims that the company has connections with the government?**

**Eric Xu:** We will continue to move forward in the same way we did in 2019.

06

**Bloomberg: You mentioned just now the US ban has had a substantial impact on Huawei's business. Can you share your outlook for Huawei's business in 2020? Can you predict the sales of 5G smartphones outside China?**

**Eric Xu:** 2019 had been the most challenging year for Huawei. However, we enjoyed nearly half a year of fast growth before May 16, and we had substantial inventory to respond to customer needs. I think 2020 will be the most difficult year for Huawei, because we will be subject to the Entity List throughout the whole year, and as some people in the industry predicted, we would be running out of inventory shortly. Therefore the year

2020 is going to be a crucial test of whether our supply continuity measures are effective.

The coronavirus outbreak brings new challenges such as global economic decline, financial turmoil, and diminished market demand, which we didn't see coming. As the pandemic around the world is still developing quickly, our current priority is to ensure the safety of our employees and respond to the needs of customers and governments as they fight the pandemic. At this point of time, it's difficult to make any prediction about our performance in 2020.

We will try our best to survive so that we can still release our annual report this time next year.

Regarding the sales of 5G smartphones outside China, any new smartphones we launched after May 16, 2019 can't have Google Mobile Services (GMS) preinstalled. To protect the interests of our smartphone users worldwide and ensure a quality user experience, we've launched Huawei Mobile Services (HMS) and AppGallery. We'd like to see Google apps available on Huawei's AppGallery, just like they are available on Apple's App Store. This can help deliver more varied and better apps to consumers. We want all of our 5G smartphone users outside China to be able to use Google's apps. We hope our 5G smartphone sales will grow in markets outside China. But right now, we

can't make an accurate forecast. It depends on the development of the HMS ecosystem.

**07** *China Daily:* **Currently, Europe is one of the regions worst hit by the coronavirus. How do you see its impact on 5G network rollout in Europe? After the situation in China was brought under control, China has accelerated 5G deployment. How do you see 5G opportunities this year?**

**Eric Xu:** 5G deployment in Europe will certainly be delayed, and the longer this pandemic lasts, the longer the delay. After the situation was put under control, China has accelerated its 5G deployment. Currently, the three major carriers in China are inviting tenders. I believe the three carriers will complete or even slightly outdo the 5G deployment plans they made earlier this year. It all boils down to our ability to supply, the speed of deployment to make up for the time lost due to the pandemic, and their budgets.

**08** *The Wall Street Journal:* **What do you attribute the slowdown in profit growth last year to? And why your share of overseas revenue declined last year? What do you attribute that to? Is it to the US restrictions or did you see other factors at play?**

**Eric Xu:** After the US Bureau of Industry and Security (BIS) put Huawei on the Entity List on May 16, 2019, we had to invest more into R&D to patch up the "holes". All of a sudden, many of our suppliers could no longer supply us, which forced us to rebuild our supply chain. In this context, it was not realistic to strive for a net profit growth rate like we'd had in the two previous years. We had to survive first.

As for the lower share of overseas revenue in the total revenue mix, a major reason was that our new phones launched after May 16 could not use GMS. Our consumer business outside China had grown very fast up until May 16, but then declined sharply afterwards. It only started to bounce back slightly in the fourth quarter of last year. As a result, our consumer business revenue in markets outside China was short by at least ten billion US dollars. That's why the proportion of overseas revenue as part of the total was lower.

09

***South China Morning Post:*** Huawei smartphones have a very big market share within China but are not doing as well in markets outside China. We also noticed that many Chinese phone vendors are starting to penetrate the premium segment outside China. So how would Huawei balance its domestic and international smartphone business, especially in light of the current

## **pandemic?**

**Eric Xu:** In China, we're committed to implementing a Seamless AI Life strategy that we call "1 + 8 + N". We are also working to build out the HMS ecosystem so that we can continue selling smartphones in markets outside China. We certainly hope we can continue using GMS, but that decision is not up to us. What we can do is develop the HMS ecosystem and the AppGallery.

It will be hard, but we're left with no other choice. We do not position ourselves as a domestic player for smart devices. We're aiming for the global market.

10

**Brussels journalist:** European governments are taking measures to restrict the role of high-risk vendors. Many European governments count Huawei as being part of that group of high-risk vendors. First of all, I just want to ask again, whether you can break down the impact of the measures being taken across Europe right now – on the carrier business figures in Europe specifically.

Second, I was wondering if Huawei considers measures taken in countries like France, the UK, and perhaps other European countries, as being discriminatory or unfair in any way. Does it consider taking any steps or actions to address discrimination or unfair competition?

**Eric Xu:** At least from public reports, I haven't seen or heard about any European Union member labeling Huawei as a high-risk vendor. As you know, the UK is no longer part of the European Union. I think European countries base their decisions on facts, and they are well-versed in what cyber security actually means. We have been engaging and communicating with various European governments. I am not in a position to comment on things that have not come out yet.



**Japanese journalist: Japanese mobile companies were cooperating with you on 5G technology, but you are being regulated by the government. Please tell me your strategy about 5G in Japan.**

**Eric Xu:** From the various public sources available, I haven't seen anything that said Huawei was banned from participating in Japan's 5G deployment. We have been communicating with our customers and regulators.

We didn't have any collaboration with NTT DOCOMO or KDDI in the mobile domain. We've only worked with SoftBank in mobile, and our current collaboration is mainly focused on 4G. SoftBank has not deployed a lot of 5G base stations. And we hope that our partnership with them can extend from 4G to 5G. But this is up to them.

12

**Guancha.cn:** You said that if the US tightens restrictions on Huawei, it would lead to systemic risk across the industry. But what if the US government was determined to do this? What would be the impact on the semiconductor industry in the US? What setbacks will US companies face?

**Eric Xu:** I refer you to a BCG report commissioned by the US Semiconductor Industry Association. It's "How Restricting Trade with China Could End US Semiconductor Leadership." This report provides clear answers to the question you just raised.

13

**Journalist:** How do you believe that the multi-vendor OpenRAN and TIP will challenge Huawei's business over the next five years?

**Eric Xu:** I think the impact on our business would be negligible. Let me talk a bit about OpenRAN.

OpenRAN is not an "alternative" 5G standard. It is an implementation architecture and method for base stations. Base stations built on OpenRAN architecture and techniques still have to comply with 5G standards and meet carrier requirements regarding power consumption, performance, and cost effectiveness.

OpenRAN advocates openness and open source.

It's just one method that can be used to build 5G base stations, and possibly future 6G base stations. Historically, we already saw a transformation in the way base stations were implemented back in the 3G era. That was made possible with the distributed base station (DBS) that Huawei invented. Before DBS was launched, baseband units (BBUs) and remote radio units (RRUs) were collocated and installed in air-conditioned equipment rooms. With DBS, it's possible to install an RRU separately on towers. That substantially increased base station performance and coverage, and DBS subsequently became the implementation architecture of 4G and 5G base stations. It is now a de facto implementation standard, but not a 4G or 5G technology standard.

From 2G all the way through to 5G, 3GPP has focused on interoperability when developing standards, to ensure mobile phones, base stations, and core networks across different vendors can all interwork with each other and support global roaming. 3GPP has never focused on base station implementation methods or architecture.

From a carrier perspective, how base stations are built isn't really an area of interest either. Different vendors have often had different implementation methods. Carriers care more about the performance, quality, and cost effectiveness of base stations.

You've heard about SingleRAN, and now you are hearing about OpenRAN. Both of them must meet 5G standards and ensure interoperability between mobile phones and base stations, between different base stations, and between base stations and core networks from different vendors.

I'd like to compare SingleRAN to special-purpose computing, and OpenRAN to general-purpose computing. There has always been a race between general-purpose computing and special-purpose computing. Companies that work on general-purpose computing have been trying to replace special-purpose computing. But today, we are seeing more and more scenarios for special-purpose computing, especially with the increasing adoption of AI.

Former Intel CEO Brian Krzanich once told me that he wanted Huawei to use Intel's x86 CPUs for its base stations. I told him that Huawei would love to use Intel's general-purpose processors as long as they could deliver the same performance as Huawei's in-house special-purpose processors for the same cost. If we could have used their products directly, why would we bother to develop our own? OpenRAN runs on general-purpose computing, and it also needs to resolve the issues surrounding power consumption, cost effectiveness, and performance in order to satisfy customer demand.

But that may still need to take a lot more work, so in the short term, I don't think OpenRAN will have much impact on Huawei's business.

You may have noticed that the most critical mobile communications technologies are all wireless technologies. It doesn't matter if a solution uses OpenRAN or SingleRAN; you must have RRU or AAU anyway and you must meet customer needs with high performance and cost effectiveness.

#### **14 McGill University in Canada: Can you give any further information about the New IP strategy raised by Huawei?**

**Eric Xu:** I came up with the name New IP myself. Why did I choose this name? It was when Huawei was doing research on 5G New Radio. To me, the future mission of IP is similar to that of 5G. So I thought, why not call it New IP just as we call 5G New Radio?

IP technology was first invented in 1969 and the protocol was finalized in 1978. It's been over fifty years since then, and IP has achieved great success. In the beginning, IP was designed to connect computers around the world. It was mainly intended for office networks, and was later extended to mobile Internet to connect mobile phones. However, for all these years, IP

technology has not kept up with the needs of industrial Internet, particularly in terms of low latency and security. The promise of 5G has already expanded from meeting consumers' increasing needs for mobile broadband, to delivering low latency and massive connections required for industrial and IoT applications. It should be the same for New IP. Apart from mobile Internet and office networks, it will also need to meet the needs of the industrial Internet, like low latency and security.

The New IP still remains a research topic today. Huawei's IP experts are working on it together with scientists and engineers from around the world. Currently, IP experts from many countries, including Italy, the UK, Canada, Germany, Belgium, and Spain, are freely participating in the research and innovation, with the hope to better prepare IP networks for the future. The idea is to ensure the New IP will meet traditional needs for IP as well as new needs of the industrial Internet.

The New IP is a purely technical topic. *The Financial Times* should not get it politicized from the very beginning. Technical experts do not have ulterior motives. They simply come together to discuss and explore how IP networks can address future needs. These activities are not as complicated or politically-motivated as some people think. Technical topics under research should not get politicized.

# Guo Ping's Keynote Speech at HAS 2020

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May 18, 2020  
Online

Good afternoon to all of our friends here with us today. We would like to thank analysts, media representatives, and everyone joining us online for your support. Welcome to HAS 2020. I would like to take this opportunity to share what we have learnt and seen over the past year. I will also brief you about how we see the future.

Over the past year, many technologies became unavailable to us. Despite this, Huawei continued to abide by all applicable laws and regulations and fulfill its contractual obligations to customers and suppliers. We struggled to survive the past year and is striving to move forward.

A year ago, on May 16, 2019, Huawei was added to the US Entity List. When this was first announced, we quickly reached out to our customers and partners to make them aware of what was going on, and we put great effort into ensuring supply continuity. Through such communication, which continues to today, we have managed to build an understanding with most of our customers and partners. A couple of months ago we released our 2019 annual report. Our total revenue for the past year reached 858.8 billion yuan. As you can see here, we significantly increased our R&D spend and inventory in order to reduce the impact of the Entity List. The good news is that we made it through the past year.

"Patching up holes" became the theme of our work during the past year. Our records show that we invested around 15,000 man-years to ensure the continuity of our ICT business, rewriting 60 million lines of code, and developing more than 1,800 new boards. Our procurement staff also reviewed more than 16,000 part numbers, and the list goes on. This extraordinary effort has enabled us to survive despite the impact of the Entity List. Thanks to the support of our customers and partners, we have maintained business continuity, including the continuity of goods supply, partnerships, and customer services. On behalf of Huawei, I would like to thank each of our customers and partners for this support. Two days ago, the US Department of Commerce made changes to the Foreign Direct Product Rule against Huawei. It is likely that our business will be affected to some extent. However, the experience we have gained over the past year made us confident that we will find a solution as soon as possible.

In fact, I don't understand why the US government is being so persistent in targeting a company like Huawei. How will this benefit the world? Since it was founded, Huawei has been committed to bringing digital to more people, homes, and organizations, in order to move the world forward.

In the past 30-plus years, Huawei has brought

digital technology out of the ivory tower, speeding up its adoption around the world. We have deployed over 1,500 networks in more than 170 countries and regions, serving over 3 billion people worldwide. We also provide smart devices to 600 million consumers.

Huawei is also committed to building a diverse and prosperous industry ecosystem. We aim to expand the industry, achieve win-win outcomes, and share value across the ecosystem. We intend to work with our customers and partners to create new value for the industry and society at large.

For example, our remote labs, technical training, and innovation funds have benefited 3 million developers. In addition, we have continuously contributed to industry organizations, as well as industry and business alliances to promote prosperity across the industry chain.

Over the years, Huawei has actively participated in standards organizations, making its due contributions to standardization. In the connectivity domain, we advocate unified global standards. In cloud and computing, we call on international organizations to be more open and inclusive. Huawei continues contributing to the industry by submitting standards proposals and open-sourcing its operating systems and databases. As of today, Huawei has been granted over 85,000 patents. However, we won't collect excessive patent fees. More importantly, we

will never weaponize our patents.

A company like Huawei has a responsibility to create new industries through technological innovation. Take "Naked-Eye 3D" as an example. If this technology becomes a reality, it will revolutionize user experiences and become widely used in our daily life, in areas like entertainment, healthcare, and education. Naked-Eye 3D has the potential to become a several-hundred-billion-dollar market, helping the industry grow by leaps and bounds. We have chosen several areas of focus, and we will partner with universities and scientific research institutions on our medium- and long-term explorations. We hope this model will enable us to jointly resolve the key issues that hinder industry development, and create new industries through technological innovation.

Changes to the industry over the past year have clearly shown that fragmented standards and supply chains benefit no one, and further fragmentation will severely impact the entire industry. Next, I would like to share some of our observations, our strategies, and our calls to the industry.

Unified standards have a far-reaching impact on industry development and value creation. Let's take a look at examples from the US and Europe. Since the 2G era, major US carriers have adopted different standards. Working to meet the needs of these differentiated

standards has caused the decline of previously leading US equipment vendors. Today, no US equipment vendors outperform Huawei. In contrast, Europe has adopted unified standards since the 2G era, from GSM and UMTS to LTE. This has enabled several major European carriers to stay ahead in terms of global operations, which has helped European equipment vendors remain competitive. This has taught us that unified standards are critical to industry development.

What has happened to Huawei over the past year has made more enterprises and countries realize the risks of having a single supply system. By the end of 2019, the US had placed more than 1,000 entities on the Entity List, many of which are tech companies. As a result, numerous enterprises and countries have become increasingly concerned about ICT supplier selection. While I spoke with one head of state last year, he told me that he was planning to build two clouds from two different countries. Therefore, as long as the two countries didn't cause trouble at the same time, his country would be in good shape. Many customers have similar concerns. It is probable that more enterprises will implement a diverse global supply strategy to ensure business continuity.

It has also come to our attention that the foundations of trust for global collaboration are fracturing. For

example, in an interview with *The Economist*, French President Emmanuel Macron openly expressed his concerns about data processing in Europe. Globalized collaboration is also being impacted. In the long term, persistent US actions taken against leading companies from other countries will weaken confidence in using US technologies, escalate conflict between suppliers around the world, and harm the interests of the US.

Despite US actions against us, we will never close ourselves off or become isolated. Instead, we will continue embracing globalization. Over the past seven years, the compound annual growth rate (CAGR) of our procurement reached 27%, meaning Huawei has grown rapidly with its suppliers. Our strategy for globalization and supply diversity will remain unchanged. Last year, our procurement from the US totaled 18.7 billion dollars. If the US government permits, we will continue purchasing goods from US companies. We will also show more care to other suppliers, working to cultivate them and innovate and grow with them, as we strive to build the world's most competitive supply chain.

Today, the world is an integrated collaborative system. This system shouldn't and will not likely be reversed. Standing at the threshold of the intelligent world, we can see more opportunities for collaboration than for competition in the ICT industry. Huawei will work with

all other industry players to strengthen IPR protection, safeguard fair competition, protect unified global standards, and promote a collaborative global supply chain.

We believe that humanity will enter a new, intelligent world over the next 30 years, where all things can sense, all things will be connected, and all things will be intelligent. ICT infrastructure is the foundation of the intelligent world, where emerging technologies like AI, the Internet of Things, and 5G will be widely applied. These technologies will promote sustainable social development, serve as new engines for economic growth, enhance consumer experiences, help build smart cities, and drive the digital transformation of industries. We predict that by 2025, the digital economy will represent an industry worth 23 trillion US dollars. We remain confident in the prospects of the ICT industry.

Looking ahead, Huawei will continue investing and innovating in three domains: connectivity, computing, and smart devices. We will work with customers, partners, and standards organizations in domains like supply chain, standards, and talent cultivation, to encourage open collaboration, promote inclusive industry development, and explore the future together. Across the next two days and beyond, we will continue holding deep-dive discussions with analysts and media

representatives on industry insights, tech trends, and global collaboration.

Our CEO Mr. Ren often says that Huawei is like a bullet-riddled aircraft. "Patching up holes" became the theme of our work in the past year, and this experience has simply made us stronger than ever. With the support of our customers and partners, we believe that this aircraft of ours will continue flying. We will forge ahead against all odds and never give up! Thank you!

# **Continuous Innovation Will Drive Sustainable Development**

Catherine Chen's Keynote Speech at the  
Sustainability and Resilience Webinar

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May 27, 2020

To everyone joining us online,

Good afternoon.

First, I hope everyone here today, and your family, are safe and healthy.

This is an unusual time. The pandemic is keeping us apart. But thanks to technology, we can still communicate with each other "face to face". Distance can't stop cooperation.

In early 2020, the world was hit by COVID-19. Many people here in China find this situation familiar. 17 years ago, SARS heavily affected the lives of many Chinese people. Over the past 17 years, we have made some technological progress. However, when it comes to battling major disasters like this, we still have a long way to go.

It is true that technological progress has helped us respond to such global crises more efficiently. In 2003, it took the world nearly four months to finish sequencing the SARS genome. This year, it took only a week to decode COVID-19's genome. This is thanks to high-throughput DNA sequencing technologies. Using a wide range of advanced medicines and technologies, like ECMO, has also made treating patients more effective.

In addition, new technologies have helped better

protect healthcare workers and make their work more effective. These technologies include 5G, big data, and AI, with new approaches such as remote consultation, mobile ward rounds, and infrared body-temperature monitoring.

This year, Huawei and its customers were able to get a 5G network up and running in just three days at Huoshenshan Hospital in Wuhan. This ultra-fast "5G setup" is not simply the result of hard work. It was also made possible by the simplified design of our 5G products and solutions. Our 5G micro base stations can be deployed almost anywhere, like on lamp poles. 5G AAU has made many things such as connecting cables super easy.

Technological progress may not be able to help us defeat the virus in one move. However, it does help us run faster in this race against the virus.

Still, we need to be clear that technology alone is not advanced enough to take on COVID-19 and its accompanying challenges. We must dig deeper into the healthcare domain, by exploring things like new drugs and vaccines. In the modern world, we have fantastic communications network coverage. But even now, the pandemic is exposing many weaknesses.

As demand for network connections and speed

surged in many areas, media platforms like Netflix and YouTube were forced to lower video bit rates. Some countries even suggested that their citizens limit what times they access the Internet to ease network pressure. In some rural areas of China, we even saw students climbing up mountains to get a strong enough signal for online classes.

While we enjoy the convenience new technologies bring, like cloud offices, online education, and contactless retail services, we must remember that nearly half of the world's population is still not connected, and some one billion people have no mobile broadband coverage. 5G has played an important role in China's fight against the virus. But how many people actually enjoy 5G services right now? Only tens of millions.

The unexpected outbreak has shown us that our technology is not as developed as we thought. The same is true for the speed of innovation. There are still many, many theoretical and technological problems left for the world to tackle, so we must constantly innovate to drive sustainable development.

A virus needs no passport to enter a country. Only by working together on scientific innovation can we overcome it around the world.

In the face of this disaster, we may often feel small,

but we are not fragile.

I would like to end this speech with a few photos. These photos show dancers from the Shanghai Ballet practicing. Work may have stopped during the pandemic, but they continue practicing, waiting for the day they can return to the stage. In these photos, we can see their optimism and persistence.

A seed that survives the storm will sprout and blossom. Since Huawei's founding 33 years ago, we have always been working with our customers and partners to explore a better future, to make Tech for All and Tech for Good, and bring a sense of warmth and beauty to the world.

Let's join hands, light the path ahead, and look forward to the day when the hustle bustle, the hugs, and the kisses can return to our lives.

# Driving Equity and Quality in Education with Technology

Ken Hu's Keynote Speech at TECH4ALL  
Global Education Webinar

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June 23, 2020

Thanks to everyone for joining us.

Today I would like to talk about the digital divide in education. We all know that digital technology has a huge impact on education. But not everyone has equal access to these benefits. The pandemic has made this very clear. School closures have disrupted the education of more than 1.57 billion students worldwide. Some communities were able to react quickly: Using strong digital infrastructure and affordable devices to keep children safe and in class. These communities are fortunate.

However, 50% of the world's population still has no internet access. Devices are not affordable in many countries. And even if people have devices, they don't have the digital skills to use those devices. The fact is: We have a lack of digital inclusion in education. And the gap is increasing because technology is changing so fast. So what can we do?

To be honest, promoting equal access to good education is a big problem, but it is not impossible. We have the tools and resources we need, but we have to put them to work. As a technology company, Huawei wants to help with connectivity, applications and skills. Last year we launched an initiative called TECH4ALL. The goal of this initiative is to make sure that every person can benefit from digital technology, and that

every person has a place in the digital world.

Education is one of the four focuses of this program. We want to help make quality education available everywhere, any time, and to everyone. We focus on two areas: Developing digital skills and connecting schools.

To develop digital skills, we mostly work with young adults in remote communities to create better opportunities. We do this in several ways. For instance, in Kenya, we run a mobile learning truck called DigiTruck. Working with local partners, we drive the truck around to different villages, where we teach basic digital skills, like searching for information on the internet. They were never taught this before, and we hope that these new skills can help them find new opportunities in life. We are going to expand this program to five more countries over the next two years, including France and the Philippines.

We're also working to connect schools. This includes providing internet connectivity, digital devices, educational content, and digital training for teachers and students in remote communities. Let me tell you why.

Back in February I visited a primary school in Johannesburg. The kids are very bright and eager to learn. And the teachers are passionate about their work. But the school has very limited resources. They have a

computer lab, but it's basically a storage closet. They don't use any of it. Not because they don't want to, but because they don't have anyone to teach computer classes, and they don't have internet access.

These children will grow up unconnected from the digital world, which will have a huge impact on their lives. There are many schools like this in many countries around the world, and we can make a big difference with some simple steps. In South Africa, we started a project called DigiSchool. We partnered with a local telecom carrier, Rain, and a local non-profit organization called the Click Foundation. This is how we do it:

- Huawei provides networking equipment, smart tablets and operational support.
- Rain provides free network services
- Click Foundation provides content and teaching resources

Very soon, the kids in this school will be set up for eLearning, starting with English classes. Over the next year, our goal is to connect 100 primary schools in South Africa. We're working with 12 right now. If we reach our goal, we can bring new opportunities to more than 50,000 incredible young kids. And that's only one project in one country.

The world is hurting right now, but this pandemic is

also a good opportunity to push for change. We can't solve all education challenges overnight, but if we work together, we can do more. Platforms like the UNESCO Global Education Coalition and Huawei's TECH4ALL are a great way to coordinate efforts and resources around the globe. Everyone brings a unique skill or resource to the table.

I hope today's discussion can help us explore these topics more.

Thank you.

# Catherine Chen's Interview with France Digitale

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June 24, 2020

01

**People say data is the new oil. What do you think the biggest change will be as we go from industrial to digital?**

**Catherine Chen:** When we say data is the new oil, we mean that data can generate tremendous value and drive economic development. The biggest difference between data and oil is that oil is a limited resource, while data can be replicated and shared. It can grow infinitely, so there will always be an abundant supply.

Let's look back over history. In an agrarian society, land and labor were the main factors of production. In an industrial society, injections of capital became a new driving force for the economy. Changes in how we approach the economy and production incubated new value distribution systems. So an investment- and trade-based wealth creation model and a market-driven value distribution model took shape during the Industrial Age. These resulted in our current international trade system, the Bretton Woods system, and the World Trade Organization.

Now with the digital economy, data interconnection and application are new factors of production on top of traditional drivers like physical goods. Significant value is now created by how we use information and data. Data can be replicated and shared. It can grow infinitely, so there will always be an abundant supply. This breaks

down the economic constraints that limited natural resources had on growth. The current growth of our talent markets and shared knowledge, and of our data transfers, storage equipment, and capital, all will likely not be able to keep pace with the growth of data. The way we have created value since the Industrial Age will change because of this.

Value creation models have already begun to rapidly evolve in the Digital Age. Shouldn't we then also change the value distribution model we use for the digital economy? While industry is already rapidly developing and using data resources, we are also seeing a swell of issues related to data ownership, openness, transfers, and trading. Disputes related to personal data property rights and the ownership of the data already flowing around the world are particularly urgent. How we distribute value created by the digital economy is an issue that deserves a lot more discussion.

**02** **So we're talking about the same kind of change in production factors as we saw in the previous shift, in terms of a changing age. We went from agricultural to industrial, and are now going into digital. And you've been very clear about the data. We'll come back to data. What are the challenges these changes are going to bring? You described some of the changes. How are**

**these going to impact society from a European point of view? You have a good outsider's view of Europe. Your vision is not tainted by being a part of it, and it's always fantastic to get an outsider's view. What do you think is going to change for Europe?**

**Catherine Chen:** I often read the reports of what European politicians and companies are saying regarding the challenges Europe faces in the Digital Age. They are worried and even feel some anxiety about the competitiveness of European industries. For example, they say 90% of Europe's data is now stored in the US and none of the world's top 10 Internet companies come from Europe. They are very worried that Europe will be at a disadvantage when it comes to value creation and distribution in the future digital economy. That's something that I often hear about and I can fully understand.

However, I don't think this is a challenge unique to Europe; I think it's a global challenge. I fully understand these concerns, but I think we should try viewing them from a different perspective. I don't think the country where technologies or companies come from is the most important thing.

I think there are two bigger challenges. The first is that digital governance laws and regulations are lagging behind technological development. The second

challenge is that we need to better understand and accept the value creation and distribution models for the digital economy. This will be a difficult process, but I believe we will eventually reach a consensus.

### 03 **You say we will get there. Does this mean you envision global convergence of governance?**

**Catherine Chen:** Different countries may continue to have their own regulations and approaches to governance. But if Europe is willing to take the lead in setting global standards and rules, which the US is clearly reluctant to do, then it will be just like when they took the lead in developing GDPR. It will then be possible to see a general convergence of digital governance around the world. But different countries and regions will still have their own specific requirements.

We can use GDPR as an example. After Europe released GDPR, China began discussing the enactment of its own personal information protection law. In fact, China continues to draw on Europe's experience in this area to a great extent. But unlike the US's CLOUD Act, Chinese law doesn't allow for unlimited expansion of its extraterritoriality. I believe Europe will be a leader in forming multi-lateral standards and rules for the whole world in the Digital Age.

**04 We mentioned Europe. Let's move and focus on Europe, if we may. We've talked about the issue of digital sovereignty. Is there, perhaps a danger that Europe is going to put itself behind a wall? A new Berlin wall, if you like. With digital sovereignty blocking Europe, inside Europe?**

**Catherine Chen:** I wrote an article in 2019 about digital walls – *The lesson of the Huawei ban: Digital walls can crumble as quickly as they're built.*

I don't think Europe would build such a wall. Even if the US wants to build this kind of digital Berlin Wall, I think this idea is unrealistic.

I have seen that many European leaders have made statements about digital sovereignty. Based on what they said, the digital sovereignty that Europe advocates is by no means a new Berlin Wall.

As Mariya Gabriel, European Commissioner for Digital Economy and Society, once put it, "Europe's place is in the world, not behind the wall."

According to what Margrethe Vestager, Executive Vice-President of the European Commission, said at the European Cyber Security Summer Hub in June, technology sovereignty is not equal to isolationism. Europe is a huge beneficiary of its own open policy. The cross-border flow of goods, services, and innovation has

had a huge impact on our prosperity and development, including the digital field. This will also play a key role in our economic recovery.

An expert group from the European Commission's Strategic Forum also stated, "Industrial leadership and strategic autonomy does not require autarky or closed European value chains... It is not about inward-looking national industrial policies, shielding sectors from market developments nor about hampering free trade. Such inward-looking policies would only hurt Europe."

Finally, the European Commissioner for Trade Phil Hogan has publicly stated that, "Strategic autonomy does not mean that [Europe] should aim for self-sufficiency... given the complexity of supply chains to the European Union, this would be an unattainable goal... [Europe would] have to look at how to build resilience based on how [they] can diversify, not be totally reliant on one geographical entity for supplies of everything."

**05** **You mentioned that Europe could be a global leader. There is no American appetite to tackle this issue. So multi-lateral standards and rules, could you elaborate on this? How could Europe use its strengths to contribute in this way to the global economy?**

**Catherine Chen:** I think Europe, with its extensive

connections, including trade connections, with other economies around the world, should support collaboration and inclusiveness based on global technical standards. Europe should have full confidence in its ability to set and implement these standards. They are in a strong position for this. Rules-based governance and multilateralism can reinforce Europe's position in the Digital Age. Europe will not only see its digital economy prosper, but influence other markets to develop their own industries and economy in a more balanced way. Just now, I use GDPR as an example for law. Next, I'll talk about standards.

Clearly, the most important value of standards is that they make the lives of consumers easier because we can trust a product or service meets certain requirements when it has been certified. This makes more affordable products and services available to any market that adopt these standards. Europe has benefited significantly from unified global standards.

Since the Industrial Revolution, Europe has contributed more to the development of standards than anywhere else. A good example of this are the standards for telecommunications that Huawei currently uses. In the 2G era, Europe focused on the GSM standard, which was used for international roaming. Europe's GSM standard is the world's most widely used standard for

mobile communications.

In the 4G era, China and Europe worked together and focused on the LTE standard, which was more mature technologically than the US's WiMAX standard. In the end, the market didn't want the US standard, so nobody used it. Why wasn't WiMAX popular? Because it is closed off. Products using that standard couldn't connect with traditional cellular networks, so it failed to become a mainstream mobile communications standard.

In the 5G era, there are three leaders: Huawei, Ericsson, and Nokia. I think this shows the importance of standards. When every company follows the same set of standards, they compete with each other over technology, and this kind of healthy competition is good for the market.

Looking at other industries, I can give many more examples. The International Federation of the National Standardizing Associations, or ISA, was established in Germany in 1926. It is the predecessor of ISO. The A4 size for paper we use today is based on Germany's industrial standards. Another example is the German Institute for Standardization (DIN), which covers almost everything, like buildings, mining, metallurgy, chemistry, electrical engineering, security, environmental protection, health services, and firefighting. Many of its standards are EN or ISO standards that have been widely adopted

around the world.

Europe is known for its openness, where everyone is welcome to sit down and discuss things. The discussions are open to everyone, though someone still has to be the leader.

I think Europe is the global leader in governance and rulemaking. GDPR, the Reference Architectural Model Industrie 4.0 (RAMI4.0), and Industrial Data Space (IDS) can facilitate data flow, allow for new interfaces – and new high-value networks – between value chains, and help create value from cross-industry data.

As long as Europe is willing to leverage its competitive advantages in standardization and rulemaking, and continue adopting rules-based approaches, it will play a meaningful role in unifying global standards, such as those for digital asset protection and independent, transparent oversight.

06

**The next part of the question, I suppose, is about building this new Europe, this Europe fit for a Digital Age. We've talked a bit about Europe and the European standards that you think we could see that we might need. How does your company fit into this? What can you do for Europe in general, and perhaps for France in particular?**

**Catherine Chen:** In addition to strengths in standards and rule setting, Europe is also very competitive in terms of basic research, education, and corporate innovation.

Huawei strongly supports Europe because only Europe is willing to lead value creation and distribution in the Digital Age. Why? As I just said, the US now puts America first; it is acting without consideration for other countries.

China also lacks incentives to take the lead here. China is a huge market with a population of 1.4 billion people. Neither Chinese companies nor the Chinese market in general has the motivation to lead a global initiative. Most Chinese companies already do very well in the domestic market, so they don't have that motivation. Other regions around the world may also want to take the lead, but they don't have the required capabilities. Europe has the willingness and so is mostly likely to take the lead.

Europe has a host of companies with advanced technologies and services. What they need is global markets, to not be confined to European markets. Huawei supports Europe in leading value creation and distribution in the Digital Age.

Huawei is very clear about our position in Europe. First, Huawei sees itself as a follower and participant

of Europe's digital rules. We want to operate under reasonable digital governance rules, because it benefits both our customers and our own development. Second, we want to provide the digital infrastructure that will enable value creation in Europe. We want to provide European companies with alternatives when they are looking for partners. On top of that, I think Huawei can work with European countries to explore the global market. To put it another way, we want to work together to create an ecosystem that benefits all.

As for France in particular, I'd like to give you an example. We are already working with many SMEs in France through an organization called France Digitale. It's a great platform which allows companies, large and small, as well as government partners to better understand each other's needs so that together they can find a better way to cooperate.

In terms of open cooperation on the technology front, we are working with French search engine Qwant which will come preloaded in Huawei Mobile Services (HMS). We want to provide European and French people an alternative to Google Mobile Services (GMS). Europe is the most important market for our HMS. Data generated by our services and products is only ever put in European data centers. Our service framework caters to the needs of European users more. And we partner

mostly with European companies on applications such as maps and search engines.

We didn't originally set out to create a new mobile ecosystem. We used to be part of Google's. For obvious reasons, the sanctions imposed by the US have forced us to create our own ecosystem. What I've been wondering is, if the US continues with this "America First" policy and continues to shun cooperation, will this actually create opportunities for Europe, China, and other countries? If so, what will they be? This has forced us to look for opportunities in untapped markets. In the past, we didn't have many incentives to explore such markets, but now we do, and there are many opportunities out there for cooperation.

Another example. European countries, including France, are stressing the importance of a resilient and diversified supply chain. If anything goes wrong, the lack of such a supply chain can be a major cause for concern. Huawei has announced a plan to build a highly-automated, smart 5G factory in France, which will focus on the manufacturing of 4G/5G wireless communications equipment. The products manufactured there will mainly supply the European market. Huawei wants to integrate this factory into our larger value chain in Europe, thus improving the timeliness and reliability of our delivery to European customers.

Many outstanding companies in Europe, French companies in particular, have never entered the Chinese market. China's consumers are trading up though. Previously, Chinese consumers didn't have much money to spend, so they needed more affordable products. Now, Chinese consumers can afford much more expensive products, and they look forward to seeing high-quality, high-end products and services gain more traction in the market. That's why I very much encourage European companies to come to China to find new growth opportunities.

And what can Huawei do to help? For seven consecutive years, Huawei has hosted the Digital InPulse competition for startups in France. Every year, outstanding enterprises from Lyon, Lille, Bordeaux, and Nice are selected through this competition. We work with Business France to send the winners of this competition to China so that they can learn about China's ecosystem and communicate with their Chinese partners and customers. Since we first organized this competition in 2014, 60 companies have benefited from it. Some of them have even gone on to become Huawei's suppliers or partners.

**07**

**Those are interesting. Because the view from Paris is very much that the Chinese people we see in Paris are**

**among the biggest spending and most demanding consumers. It's very interesting that this shift of consumer spending in Paris is expanding beyond luxury, leather goods, and so on, and into the digital economy. Very interesting.**

**Catherine Chen:** Of course, only a small number of Chinese people could afford to travel abroad in the past, and this is still true for many Chinese people today. Even though there is high demand in China today, there are still one billion Chinese citizens that have never been on a plane before. We can only imagine how consumption will increase in the coming years.

08

**Let's talk about the French President. We've talked about the plans to rebuild the economy, post-coronavirus. As part of the discussion, we're talking about how we're going to rebuild the economy, and the President wants a strong, ecological, sovereign, and united economy. And we can see the ecology, the environment is a pretty high priority in the economy recovery plan. So how will your plans for expansion in France and Europe fit into this? How can Huawei's plans align with this goal?**

**Catherine Chen:** I totally agree with this plan. A digital Europe can also be a green and environmentally-

friendly Europe. In fact, the advancement of digital technologies can create new possibilities for the sustainable development of our environment. Huawei expects that by 2025, the average carbon emissions per ICT connection will be reduced by 80%. The ICT industry will save far more energy than it consumes, and greatly reduce its carbon emissions. ICT technologies will be key to a green world, as they will increase global energy saving and emission reductions by about 11 times.

Huawei has also incorporated the concepts of green development and environmental protection into its product design and manufacturing processes. For example, Huawei and China Tower have jointly tested and verified that our 5G Power solution will save 4,130 kWh of electricity per site every year. China plans to build or renovate about 2 million 5G base stations between 2019 and 2022. With Huawei's solution, these sites are expected to save a total of 8.3 billion kWh of electricity annually. In addition, Huawei's joint innovation experiment with its European customers, which is based on 5G Power, has successfully been able to save 51% of energy at a single site.

At ITU Telecom World 2019, hosted by the International Telecommunication Union (ITU), Huawei's 5G Power solution was awarded the Global Industry Awards: Sustainable Impact for its great contribution to

the energy saving and emission reductions of mobile networks

I fully agree with France's attitude towards green development and environmental protection, as you just mentioned. I do not believe these are just empty words. I've seen the French government and EU institutions implementing specific policies and making investments to support such efforts.

I also know that many European and French companies have leading advantages in environmentally-friendly and clean-energy technologies. China does not currently hold such advantages, but China certainly supports Europe's ideas. China also wants to achieve sustainable development, and that will present European companies with new opportunities. Today, Chinese people not only have much stronger purchasing power, as you just mentioned, but are also making purchases across a much wider range of areas.

**09**

**Thank you. Well, we've spoken for almost an hour. I won't take up anymore of your time today. I don't know if there's anything else you want to add perhaps, Madam Chen?**

**Catherine Chen:** I would very much like to reiterate one point. Future economic growth in Europe cannot solely

rely on its own individual market. It will depend more on its ability to harness global drivers of growth, particularly those in emerging markets. I've just used China as an example of an emerging market, but there are many more out there. These growing markets or those that are importing your products are critical to Europe. So I firmly believe that Europe should definitely continue to lead the development of multi-lateral standards and rules.

**Thank you!**

# Guo Ping's Keynote Speech at GSMA Thrive

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May 30, 2020

Thank you for the introduction, Mats, and thanks to GSMA for the invitation. Ladies and gentlemen, it's great to see you all! And greetings to everyone joining us online. I am excited to be here with you on GSMA Thrive. Because of the pandemic, many people can't travel freely. So today, we are meeting through screens. This is one way ICT can help reopen the economy. Although the coronavirus has re-emerged in some places, many countries in Asia and Europe have lived through the most difficult period. I believe that the world will soon beat the virus. Today, I want to take the opportunity to share Huawei's views on the post-pandemic era, especially how the world can use 5G to accelerate digital transformation.

Since the outbreak of COVID-19, GSMA and telecom carriers worldwide have played a vital role in continuously unleashing the power of connectivity, helping people live healthily, and helping industries and society at large continuously recover.

GSMA has released 11 policy recommendations for ensuring connectivity. For example, GSMA recommends distributing more temporary spectrums to reduce network congestion and promoting the use of AI-powered digital applications in the fight against the pandemic.

We are fully aware that global collaboration is critical

to the success in beating the virus, no matter whether it is in the medical or communications sector. Huawei will continuously support open and collaborative standards and industry organizations in their efforts to safeguard a unified global communications industry.

Global vendors, research institutes, and industry associations should all participate in activities related to technologies and standards, and work towards inclusiveness and collaboration, as this will better promote the development of technology standards, industries, and the global economy at large.

GSMA proposed the idea that 5G will become the backbone for economic recovery in some regions. We could not agree more and will work tirelessly to make this a reality.

The social value of ICT applications has been greater than ever during the pandemic. For people confined in pandemic hotspots, a simple phone call or short video call can mean a lot. But for the ICT industry, this is simply a kind of basic connectivity. More importantly, applications developed on the basis of 5G, AI, cloud, and big data have played a significant role during the outbreak, for example, in remote education, telework, and entertainment. Such applications have enabled people to survive the dull quarantine at home. Remote consultation in field hospitals has solved the pain

points of temporary medical resources, and applications like temperature checks and pandemic tracking have effectively helped contain the spread of the virus.

South Korea has done an excellent job in containing the spread of the coronavirus and reopening the economy. The country has set a record of developing one million 5G users within 69 days. I should say ICT infrastructure in South Korea is highly developed, giving the country a solid foundation upon which to fight the pandemic. To a great extent, South Korea's success in containing the virus can be attributed to the efficient use of ICT.

Several years ago, South Korea already summarized its experience in fighting infectious diseases and passed a law that enabled the country to track confirmed cases using positioning and roaming data. This was crucial in helping South Korea efficiently contain the spread of the virus in the early stages.

After the outbreak of COVID-19, the country leveraged its 5G and other ICT infrastructure to rapidly add intelligence to medical care, achieving functions like remote diagnosis and AI-powered nursing. The results have been very impressive.

The South Korean government has also encouraged the use of 5G-based contactless applications like

Untact in a bid to help reopen the economy. Despite the extreme difficulties caused by the pandemic, South Korea saw its Q1 GDP rise by 1.3% YoY. During the process, its mobile industry, especially 5G, developed very rapidly.

During the pandemic, 5G has supported many valuable applications. In my opinion, 5G today is like electricity over 100 years ago.

In 1875, electric lighting was used at a train station for the first time in Paris. In 1879, electricity was transmitted for the first time in San Francisco. Since then, the use of electricity has extended far beyond lighting and it has been widely applied in home appliances and industrial equipment. This brought tremendous changes to industrial production and took humanity forward into the era of electrification.

Over the last three to four decades, the mobile industry has basically solved the problem of connecting people. Today, 5G is developing very rapidly. There are already 81 commercial 5G networks worldwide, supporting 72% of the world's GDP. Like electricity 100 years ago, ICT is extending to every industry, becoming a key enabler of social development. This is ushering in a new era where all industries are benefiting from ICT.

5G adoption has begun in many industries. The

most mature feature of 5G is eMBB. After talking with industries, we have found that this feature alone can meet many of their needs with only slight adaptations.

Take mining as an example. In the Xinyuan coal mine in Shanxi, a 5G network has been deployed in a pit 534 meters below the surface. Circumstances in the pit are rather complicated, so data transmission and downloading are difficult. Due to bandwidth limits in the past, hundreds of sensors in the pit were only used for surveys, rather than for real-time monitoring.

Today, the adoption of explosion-proof 5G equipment makes HD video calls between the surface and the pit possible. Innovative applications like simultaneous multi-channel HD video backhaul and remote control of mining equipment make images of the pit as clear as the ground beneath our feet. In the past, this was simply impossible.

In the future, more innovations will be introduced to mines, like unmanned mining and autonomous driving. These advances will constantly increase mining efficiency and improve the working environment.

In China alone, there are 5,300 coal mines, so there is a huge market space for 5G adoption in the mining sector.

Industries that adopted 5G early on have started

sharing and duplicating successful experiences at scale. Digital ports are great examples. Ningbo Port is the world's largest and also the world's first to adopt 5G technology in its production system. Today, the port is a 5G-powered intelligent port.

Take tire lifting as an example. 5G-powered remote operations have become the new normal, and 90% of the operations are performed by machines. This means drivers just need to do two things: pick up and unload the containers. In the past, one person could only operate one tire crane. Today, however, one person can operate four to six tire cranes. This shows a significant increase in efficiency.

With the adoption of ICT, Ningbo Port is expected to reduce production investment by 2.5 billion yuan over the next 10 years.

Recently, large ports in China, including Xiamen Port, Shanghai Port, Qingdao Port, and Tianjin Port, have started using ICT technologies on a large scale, including unmanned container trailers, intelligent tallying, and drone patrolling.

There are over 4,300 ports worldwide, and over 35,000 tire cranes need to be improved. Therefore, there is a huge space for ICT adoption in ports.

Intelligence has been integrated into manufacturing

for many years. We have gradually seen new benchmark applications emerging in the manufacturing sector. One example is aircraft production, which is the "king" of the manufacturing sector. Aircraft makers in both Europe and China are proactively moving towards intelligent manufacturing.

Here, I would like to talk about a small MV scenario. As we know, many carbon fiber materials are used during aircraft production, with as many as 70 layers of materials superimposed on each other, while the stitching space between layers needs to be less than 2 millimeters. It takes 40 minutes to complete manual quality checks on one layer. If a layer fails the quality checks, that entire layer has to be relaid out. Manual quality checks are time- and energy-consuming, and are often inaccurate. Therefore, it is ultimately a waste of time and energy.

COMAC in Shanghai has used a 5G + AI intelligent eye for quality checks, reducing the time taken from 40 minutes to less than 1 minute. In addition, this method saves over 90% of the resources previously needed. During the pandemic, Airbus has used a digital assembly to realize remote deliveries, significantly shortening delivery times. You see, new benchmarks for intelligent manufacturing are emerging one after another.

With the help of 5G, industries are going digital at

a faster pace. Next, we will work with our partners on industry applications to create value. We will leverage our capabilities in domains like networks, cloud, AI, and devices to help our customers unleash the potential of 5G, generating the first round of dividends from major 5G applications.

We look forward to working with industry partners to thrive together.

Thank you.

# 5G, Cloud & AI: New Value and the Digital Economy

Liang Hua's Keynote Speech at the 2020  
GTI Summit

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July 2, 2020

COVID-19 has changed our lives. Its impact on the global economy, health systems, and society has been huge. As the pandemic rages on, we are facing new expectations and requirements for digital communications infrastructure. As the critical infrastructure that supports digital and intelligent transformation, 5G is playing a vital role in fighting the pandemic.

With 5G, many countries have been able to reopen their economies and resume production. The potential of 5G is undeniable. It can boost investment and drive industry upgrades. 5G has become a new engine for economic and social recovery and growth.

On June 6 last year, China's Ministry of Industry and Information Technology officially granted the first 5G commercial licenses. Over the past year, China has built more than 250,000 5G base stations, serving over 50 million users. Innovative 5G applications continue to emerge across various industries. Companies worldwide are exploring new business models. The 5G industry ecosystem has taken shape.

Looking to the future, we must ask ourselves, how can we speed up 5G rollout and make "5G for All" a reality? I'd like to share my thoughts on this and give my observations on 5G, cloud, and AI. First, 5G, cloud, and AI are converging faster and will help industries go digital. Second, wireless technology standards must

be unified if we want to develop 5G. Third, all players worldwide need to work together to promote the development of the global 5G industry.

**First, 5G, cloud, and AI are converging. We see this happening faster and faster every day, enabling various industries and creating new value.**

5G has always been intertwined with cloud computing and AI. These technologies complement each other. 5G, cloud, and AI will soon penetrate almost every industry, driving faster technology upgrades and efficiency gains. When combined, they will make huge differences and create new value.

Over the past year, we have seen many examples of how 5G, cloud, and AI can be integrated to enable different industries. They have created real value.

The Yangquan Coal Industry Group in Shanxi is a good example. This company has a 534-meter deep coal mine where Huawei and a carrier partner helped deploy and optimize a 5G network. This was the world's first underground 5G network. It is also currently the world's deepest underground 5G network. 5G solved one of the company's most pressing problems by unifying its many complex communications systems. This 5G network also supports high-definition audio and video calls and fast data transmission.

The convergence of 5G, cloud, and AI has also created many new applications that the mine could utilize. These include 5G-powered intelligent coal mining, intelligent drilling, and intelligent inspection. These applications are minimizing the safety hazards workers are exposed to underground and improving overall mine safety.

A second example was in Wuhan during the initial COVID-19 outbreak. Here, Huawei worked with its carrier customers to build a 5G-powered remote consultation platform for the Huoshenshan field hospital. We got the entire platform up and running in only three days.

With this platform, senior medical experts in Beijing could connect with medical professionals in Wuhan over video and worked with them to perform remote consultations. This has enabled much faster diagnoses and treatment, and helped alleviate pressure caused by shortages of front-line medical resources. This also reduced the risk of infection for top medical experts as they had no need to travel to the epicenter of the outbreak. One doctor in Hubei was quoted saying, "Technology brings hope in the face of COVID-19."

In these examples, 5G supports high-speed connections and image transmission, the cloud supports data collection and remote computing, and AI conducts intelligent analyses to help make informed

decisions. There is true value in integrating these three technologies to help industries go digital.

Customizing digitization solutions for different industries requires collaboration between many parties. Industry partners provide industry know-how and details about their actual needs. Equipment providers like Huawei and carriers adapt 5G capabilities to meet these needs. Carriers deliver ubiquitous connectivity, ensure highly reliable operation & maintenance for huge numbers of equipment, and boast hundreds of millions of users. These advantages and capabilities can only be fully leveraged through digital operations. Carriers need to continue consolidating industry-specific know-how on cloud-based digital platforms and use a mix of digital technologies to ensure more efficient, agile operations. They must also work with industry partners to drive the digital transformation of vertical industries. This will advance the digital economy.

We hope the global industry will continue working as a whole to further push the convergence of 5G, cloud, and AI. The more integrated these technologies become, the more power we can unlock in connectivity and computing. This will drive industry innovation and development, and create new space for the digital economy.

**Second, wireless technology standards must be**

**globally unified and harmonized in order to realize the commercial value of ICT technologies like 5G and drive the industry forward.**

The development of wireless communications has always been a process of unifying standards. When wireless technologies first entered commercial use in 1991, wireless communications standards were fragmented. Now, these standards are more unified. There were three primary standards for 3G. There were two for 4G. 5G will have only one unified air interface design built upon one frame structure.

This is the result of discussions and collaboration between global experts from industry organizations like GTI, 3GPP, and GSMA. It represents a concentration of experience and brilliance. The efforts of everyone involved have helped flesh out rules for global collaboration across the industry. This is essentially how wireless standardization has advanced smoothly over the past three decades.

5G can empower digital transformation in other industries, which will stimulate the digital economy. So now is a critical moment for the development of 5G standards and the 5G industry. If we give into industry fragmentation and technology decoupling and the world no longer shares a common platform, technology development will slow down and even

become fragmented. This will hinder further industry collaboration and development.

We think the global industry must act now to unify wireless technology standards. This will help us fully monetize 5G and restore the global economy.

**Third, an open and collaborative ecosystem that thrives on shared success will promote the healthy development of the 5G industry.**

The wide adoption of 5G in industries needs a fully-fledged ecosystem. 5G needs to adapt to all the segments of very long industry chains. 5G also needs to be able to accommodate different devices and integrate with different systems in order to work flexibly and efficiently. As 5G applications are being widely adopted, 5G technologies and solutions are maturing, and 5G chips, modules, and devices are becoming more cost-effective.

When it comes to harmonizing spectrums, more continuous bandwidth will be needed to meet increasing demand. According to the ITU, global mobile traffic is expected to increase sharply over the next decade. By 2025, monthly data traffic generated per user will increase from 5 GB to 150 GB. This requires more licensed spectrums and wider pipes. Without them, mobile networks will be unable to handle such huge amounts of data traffic. 6 GHz will be the next potential

middle band for 5G as it can provide a continuous bandwidth of hundreds of megahertz. This will be an important resource for the healthy development of the mobile industry.

As 5G generates numerous industry applications, fast uplink speeds will be a must-have for industry digitization. We hope that more sub-3GHz spectrum resources will be identified for 5G. This will allow them to work with super uplink technologies and dramatically increase uplink speeds and capacity, unleashing the potential of industry digitization.

Huawei has always believed that openness and collaboration leads to shared success. This is the only way forward if we want to pursue technological innovation and allow more people to benefit from new technologies.

5G is already here. Huawei remains committed to openness, collaboration, and shared success, striving to build a fully connected, intelligent world. We will continue to work with our partners, including GTI, to drive 5G innovation and push the industry forward. Our goal is to bring 5G to all and create new and greater social value. Thank you.

# Guo Ping's Keynote Speech at 2020 Better World Summit

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July 27, 2020  
Shenzhen, China

Ladies and gentlemen,

Welcome to Huawei's Better World Summit.

The COVID-19 pandemic has made online communications the new default. In fact, our internal data shows that, during the pandemic, Huawei has been holding more meetings with our customers than ever before. These days I'm always on one video call or another.

During today's summit, I'd like to share our thoughts on where things stand at this unique moment in time. In particular, I'd like to talk about how we can use 5G to boost digital transformation across all sectors of society.

As you may know, two weeks ago Huawei announced its business results for the first half of 2020.

Our H1 revenue was 454 billion yuan, up about 13% year-on-year. This growth didn't come easy, especially given the complicated environment we are currently in. I'd like to thank all of you for your ongoing trust and support.

Going forward, we will continue investing heavily in R&D, and in bringing more high-caliber R&D talent on board to keep the innovation coming.

As our CEO Mr. Ren puts it, we are keeping focus and doing what we do best. No matter what challenges come

our way, we will fulfill our obligations to our customers and suppliers. We will get through this and keep forging ahead, helping grow the digital economy and pushing technology forward.

The pandemic has reshaped how we live and work, and has dealt a heavy blow to the global economy. Fortunately, ICT can help us fight back against the virus on multiple fronts.

As an ICT company, it's our responsibility to use the technology we have to help contain and defeat this pandemic. Together with our partners and customers, including carriers and enterprises of all types, we can use technological solutions to effect a positive impact on our communities.

By drawing on our experience in China, Italy, and other early hotspots, we have identified nine scenarios where ICT can help combat the pandemic. These scenarios exist across four stages of the pandemic: when cases first begin to rise, widespread transmission, when cases begin to plateau, and post-peak recovery. Whether it's hospital network deployment, remote consultations, online education, or restarting governments and businesses, we've been sharing our experience and capabilities to help control the spread of the virus and reopen economies.

Let me give you some examples. Since the first major outbreak, countries all over the world have been building field hospitals, but the shortage of doctors is still a constant headache. In February, the city of Wuhan built a field hospital with 300 beds in just a few days, while China Telecom got an emergency 5G network up and running in just 24 hours. With this network, a medical expert over 700 kilometers away was able to perform remote ultrasounds on patients in Wuhan. It only took 15 minutes per patient, and the results were perfectly clear.

Technology enables seamless interaction between doctors and patients, no matter the distance. In 2018, the First Affiliated Hospital of Zhengzhou University opened a national telemedicine center that provides remote medical services to more than 1,400 medical institutions in China, Zambia, Morocco, and many other countries. Each year, the center supports more than 40,000 remote consultations and 500,000 remote diagnoses in specialized fields like electrocardiography, pathology, and radiology. We believe that the combination of 5G and medicine will help us make the most of medical resources.

While we hope we can get the pandemic under control soon, the ICT industry needs to plan for the more distant future.

As of this June, 81 telecom carriers have rolled out commercial 5G networks. The countries and regions covered by these networks account for 72% of the world's GDP, including leading economies in Europe and Asia Pacific.

Globally, there are already more than 90 million 5G users. Over 700,000 5G base stations have been deployed, and we expect to see more than 1.5 million by the end of this year. As global 5G deployment begins to wrap up, we need to strengthen our focus on industry applications. This will help us unleash the full potential of 5G.

On July 3, 3GPP announced that Release 16 specifications are now frozen. This will jumpstart the development of 5G industry applications.

The business case for 5G is not just connectivity. When technologies like 5G, computing, cloud, and AI come together, they reinforce each other to create greater value. Building on this synergy, Huawei can develop scenario-based solutions that address the unique needs of our customers and drive their business success.

Let me give you a few examples. From businesses, to campuses and cities, we can meet a diverse range of digital transformation needs by drawing on the synergy between five major domains.

First, a business example. An aviation technical

service provider in Europe is using 5G applications to make aircraft inspection and design more efficient.

One of these applications is 5G-enabled remote inspection. Before 5G, in-depth aircraft inspections would take two full months of work onsite. Now with the support of 5G, their engineers can inspect aircrafts remotely using four different 4K livestreams. This solution alone cuts labor costs by 78%.

Another application is 5G-enabled cockpit design. In the past, engineers had to spend at least an hour each day downloading 3D model data. 5G has changed this by providing a downlink rate of up to 1.5 Gbps, allowing multiple engineers to download 3D model data whenever they need it. 5G, coupled with our Digital Twin solution, can help engineers promptly identify any conflicts in the design process. The result is a 20% improvement in efficiency. With 5G, this customer can reduce costs by 66% annually.

5G applications for industrial and business campuses tend to be more complicated. Let's take a look at the Hong Kong airport.

The airport worked with a local carrier to deploy a dedicated 5G network, which has created a new ecosystem for industry partners. The airport analyzed different service touch points, as well as passenger,

baggage, and information flows, and uncovered the need for a rich array of 5G applications. Things like paperless travel, baggage tracking, and self-driving baggage trucks. These applications will maximize the value of their 5G network.

At the Shenzhen airport, they're using ICT to optimize the flow of passengers. They have reduced peak boarding time from 40 minutes to 25 minutes. In the future, we will see more and more airports use 5G, strong computing power, cloud, and AI technologies to improve their experience, safety, and efficiency.

5G also lays the foundation for digital cities. In Xiong'an, China's three leading carriers have already built more than 7,400 5G base stations. These 5G networks mesh closely with general urban planning to support a wide range of applications, including integrated environmental monitoring, 5G slicing for banking services, and autonomous driving for delivery vehicles, buses, and cabs. The Beijing-Xiong'an expressway, spanning about 100 kilometers, will provide two lanes for self-driving vehicles and support vehicle-to-infrastructure communications.

We see a clear trend in which carriers are expanding their business focus, from simply providing network services to delivering municipal services through 5G, edge computing, cloud, and front-end equipment. This

shift doesn't really add to their existing cost burden, and it helps them to extract greater value from digital services for vertical industries. 5G is highly adaptive to the bandwidth needs of front-end equipment. It can support both bandwidth-intensive video services for cameras, as well as latency-sensitive services like radar speed detection, allowing carriers to provide low-cost access for both B2B and B2G markets.

We believe this shift will open up more market space for telecom carriers.

For 5G to succeed commercially, the whole industry needs to work together.

To start with, we need unified standards for industry scenarios. Here's a mining example. We deployed an underground 5G network for the Yangquan Coal Industry Group in Shanxi. During this process, we designed one set of standards to connect seven disparate, complicated communications systems that had already been in use in the underground environment. This resulted in huge efficiency gains.

We also need to unify standards for applications. For example, at ports, the reliability standard for HD video upload should be 99.9%, whereas the standard for bridge crane control signals should be 99.999%. It's only when standards are unified that 5G can be integrated, as a

basic capability, into digital platforms.

Moving forward, Huawei will double down on efforts to equip our partners with the capabilities they need, promote joint innovation, and drive growth for everyone in the value chain.

Of course, given the current economic environment, carriers need to focus on both short-term and long-term goals. More precise deployment is how they can maximize the value of their networks. We have three suggestions for this.

First, carriers should prioritize user experience and spend money where it's needed most to maximize the value of existing networks.

Second, carriers should make the most of existing 4G and FTTx networks, and integrate them with new 5G networks through holistic coordination and precise planning.

Third, 5G deployment plans should prioritize hotspots and key industry applications. This is the only way for carriers to unlock the full potential of 5G.

Carriers also need to figure out how they should evolve their networks in a way that best addresses scenario-specific requirements. Future network plans should take into account four factors: business growth,

uncertainties, social responsibility, and cost optimization. The ideal target network would be one that provides ultra-broadband connectivity, a network that is both simplified and intelligent. But the most fundamental goal should be to maximize the value of networks to unlock their full potential and achieve business success across the board.

In the past 30-plus years, Huawei has deployed over 1,500 networks in more than 170 countries and regions, serving over 3 billion people worldwide. We also provide smart devices to 600 million consumers and deliver services to 228 of Fortune Global 500 companies. We play a vital role in the global ICT industry. And we will continue working with our customers and partners to build a robust ecosystem, focusing on industry applications that generate genuine value.

We have a broad set of capabilities spanning 5G, computing, cloud, AI, and industry applications. By leveraging these strengths, we can provide scenario-based solutions that unlock the full potential of 5G and help both our customers and partners achieve business success.

Thank you!

# Unleash Network Potential, Inspire Business Growth

Ryan Ding's Keynote Speech at 2020  
Better World Summit

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July 28, 2020  
Shenzhen, China

Ladies and gentlemen, welcome to Huawei's Better World Summit. My topic today is "Unleash Network Potential, Inspire Business Growth."

Yesterday, Mr. Guo Ping, Huawei's Rotating Chairman, presented Huawei's business results for the first half of 2020. Despite the impact of COVID-19 and other external challenges, we still managed to have robust operations. The rainbow always comes after the storm.

I'd like to thank our carrier customers and partners for your support along the way. We will continue to offer the best possible products and solutions. We believe that with the telecoms industry's combined efforts, we can support the fight against the pandemic and address the challenges caused by uncertainty with our unique advantages.

Since the beginning of the pandemic, contactless communication and work has become essential. Huawei uses digital technology to change the way we work and continues to offer superior customer services, whenever and wherever they are needed.

First, we are continuing to discuss with our customers how to respond to the pandemic and develop our business through digital marketing like online exhibitions and online summits. Many of you may have been a part of one.

Second, we are applying digital technology to our sales process, including electronic bidding, electronic contract signing, and integrating the systems of POs and electronic invoicing. This digital approach makes contactless transactions a reality, reduces personal interactions, and allows for more efficient and secure transactions.

Third, we are shifting to digital delivery and services. This provides additional delivery assurance in the times of pandemic. For example, we used to visit sites in person during the acceptance process, but now we use remote video to perform acceptance check, reducing site visits and contact between people.

At Huawei's Global Technical Assistance Center in Romania, most employees work from home using secure digital tools and systems, so they stay healthy and customer services remain unaffected.

Digital work has become a new normal. Huawei is adapting to this. And 3GPP also for the first time used online voting for the review of standards regarding the recently finalized Release 16.

As the pandemic continues to spread, knowing how to address network challenges while achieving commercial success is a challenge all carriers face. I'd like to share a few suggestions on network construction and

business development.

First, carriers and Huawei should work to reduce unnecessary site visits and make full use of existing networks to maximize their value. This can help them optimize TCO and rapidly respond to growing data traffic.

In Indonesia, a carrier upgraded its LTE network with software and completed capacity expansion in just four days. Its network traffic increased by 11.8% in one week.

In Italy, the pandemic led to a 25% increase in data traffic in just a few days, and carriers expanded network capacity in hotspots by adding boards and replacing RRUs. To respond to the growing traffic, they reformed the 2.1 GHz band and upgraded 3G networks to 4G.

In South Korea, blade power is deployed at 5G sites on the same poles as RRUs. Compared with outdoor power cabinets, blade power cuts power losses of cables and cooling systems by 85%.

In addition, Huawei continues to help carriers optimize site TCO with our simplified site solutions, such as all-in-one antennas and wireless microwave.

My second word of advice is that the best experience brings the biggest commercial success. In South Korea, for example, LG U+ has built the best 5G networks and

launched many innovative 5G services, offering users the best experience. This translates into real financial results.

We help carriers who chose us to build the best 5G networks. With our end-to-end network optimization, 5G users can have a better experience on Huawei networks. With 5G smartphones now available at a wide range of prices, our networks can help carriers bring in high-value users and quickly monetize 5G networks.

My third suggestion is to speed up 5G commercialization in B2B for new business opportunities.

5G is entering a new development phase. There are 81 commercial 5G networks worldwide. The B2B market is the key for carriers' new growth opportunities. We have seen 49 5G industrial modules in commercial use, which can support large-scale application of 5G across industries. 5G will soon take off in B2B.

To succeed in B2B, choosing the right industry to focus on is crucial. To make this happen, we can look at three factors.

First, industry attractiveness. It is about an industry's demand for ICT and if the market for 5G applications is big enough to make the E2E value chain successful. Second, commercial viability. It means whether or not the industry has a strong digital foundation and people is willing to pay for 5G. Third, technical viability. It is

about whether or not 5G solutions can meet different industry needs.

By considering these three factors, we can see private lines a quick-win use case in B2B. In addition, we suggest carriers currently focus on mining, steel, port, oil field industries when developing 5G in B2B.

Next I'd like to share some industry applications and use cases so you can see the huge application and commercial value that 5G will bring to industries.

5G private lines are a way for carriers to quickly access the B2B market. Guaranteed SLAs of private lines can dramatically increase the value of 5G connections so that carriers can quickly monetize 5G traffic. The 5G ecosystem is becoming increasingly mature. As 5G CPEs, 5G enterprise routers, and 5G cameras are used on a large scale, 5G private lines can be applied to various scenarios such as SMEs' Internet access, enterprise interconnection, live broadcasts, and video uploading.

In Kuwait, a carrier replaced microwave with 5G private lines to provide services for SMEs. The provisioning time of these services dropped from 2 weeks down to 2 hours, and tenant-level visualization into SLAs is now possible.

As of today, More than 15 carriers have launched 5G private lines that provide connectivity services for

businesses.

This June, China Mobile, Yangquan Coal Industry Group, and Huawei jointly launched a 5G-powered smart mine in Shanxi, China. A dedicated 5G network was deployed 534 meters underground, making mining management smarter.

Workers used to operate coal shearers onsite, but now with the low latency of 5G, they can do it remotely in an air-conditioned room.

The 5G network dramatically reduces the number of workers underground and the associated safety risks. Underground inspection used to require many people checking equipment onsite, but with the 5G network in place, the machines can be inspected remotely using ultra-HD cameras. This reduces the number of workers on a single coal tunnel from 140 to 60.

During real-world deployment, network equipment used in underground environments must meet strict requirements such as being dustproof, waterproof, and explosion-proof. Huawei's 5G equipment can be used on a large scale because it is explosion-proof certified and meets the safety requirements of the coal mine industry.

The intelligent transformations of coal mines worldwide powered by 5G will create new business opportunities worth 65 billion US dollars for the ICT

industry. Chinese carriers have already formed industry alliances to actively explore these opportunities.

Next let's look at how 5G is being used in steel production. In China's Hunan Province, 5G networks have been applied to the production process of Hunan Valin Xiangtan Iron and Steel.

Its factory workers used to operate cranes in noisy, dusty, and hot environments. But with 5G, workers can operate from the office remotely and each one of them is able to operate three to four cranes. This improves both the work environment and the efficiency, leading to an increase in the factory's productivity by 20%.

The complex environment of the steel factory made network planning much more complicated. Huawei and a local carrier worked together to develop mature network planning, deployment, maintenance and optimization capabilities specifically for the steel industry.

5G is being increasingly applied in the steel industry, and is expected to create a market worth 33.4 billion US dollars for the ICT industry.

I've talked about the huge commercial value 5G will bring to the B2B market, but this also means carriers need to further develop their capabilities.

To be adopted across industries, 5G must provide

guaranteed SLAs. Edge computing, slicing, and cloud capabilities are also needed to meet network and application requirements in different scenarios. Carriers thus need to build planning, deployment, maintenance, optimization, and operations capabilities targeting B2B. For example, they need to improve their dedicated network planning capabilities that target different production environments. And they need to provide products and solutions that meet industry requirements, such as being dustproof, explosion-proof, or high-temperature resistant. In addition, they need to develop service and ecosystem enablement platforms, provide standardized products and services, and equally important, build viable business models across the value chain. Only with these capabilities will 5G be deployed at scale in B2B, rather than being marketing hype.

Unlike previous generations of mobile communications networks, investments in 5G is not only driven by telecom services, but also by requirements from vertical industries. This means that 5G development in B2B needs more than the efforts of carriers and telecom equipment vendors. It needs industry partners as well.

Unified industry standards are the basis for large-scale 5G development in B2B. We are happy to see that cross-industry collaboration is well under way. 15 contributions on electric power were adopted by 3GPP

from a joint project between China Mobile, Huawei, and China Southern Power Grid. This means the standards for the electric power industry and the ICT industry have been integrated. We have also seen a lot of progress in mining and steel. Many industry ecosystem alliances have been established and are collaborating on standards.

Release 16 not only includes standards for enhanced basic 5G capabilities, it also represents new 5G capabilities for vertical industries. 5G is evolving from a technology that is merely usable to one that is enjoyable. This will further speed up 5G's development in B2B.

Last but not least, ICT infrastructure is becoming more and more important in the fight against COVID-19 and in reopening the economy. Reliable and secure networks and uninterrupted connectivity have become a matter of life and death during the current outbreak. ICT infrastructure has also proven to be a vital engine for post-pandemic economic recovery. Countries are racing to invest in ICT infrastructure, especially 5G, to speed up industry digitalization. Their purpose is to make ICT infrastructure the foundation for digital economy development.

The telecom industry needs to be forward-looking. They need to think hard about how telecom networks can adapt to the ever-changing needs of individuals,

families, and businesses as well as how to support digital economy development. We will do our best to help carriers build future-oriented target networks to support their continued success.

Let's work together to unleash network potential for business success and a better future. Thank you.

# The Brussels Effect in the Digital Age

Catherine Chen's Byline for Parliament  
Mag

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September 7, 2020

In 2012, US Law Professor Anu Bradford coined the term "The Brussels Effect", referring to the European Union's unilateral ability to regulate global markets. Today, we have entered the Digital Age where data is replacing land, labor, and capital as an economy's main factors of production.

To thrive in the digital economy, companies will need to re-imagine how value is created and distributed in such an economy. We need unified technical standards, as well as rules for data governance. Europe, with the Brussels Effect, may be the only global market with both the will and the ability to set these regulations in the Digital Age.

Some are calling data "the new oil". But there is a fundamental difference between data and oil. Data is unlimited and sources of data are increasing indefinitely. This means economic development will no longer be restricted by limited supplies of natural resources. The way we have created value since the Industrial Age is going to change. We urgently need governance and regulations for data, as governance has consistently lagged behind technological development.

The EU is particularly strong when it comes to regulatory capabilities. Frankly speaking, data governance has been overlooked in many parts of the world. The EU, in contrast, has been a trailblazer. The

General Data Protection Regulation (GDPR) marked a huge leap forward in personal data protections. It not only allows for informational self-determination, but also provides remedies for instances when individual privacy is infringed upon.

When it comes to setting standards, Europe must continue to have the confidence to move forward. As an economy with extensive connections and trade links to other global economies, the technical standards that would best suit Europe are ones that are globally unified and support cooperation and inclusiveness. A global market governed by unified standards would benefit many exceptional European companies, by allowing them to fully leverage their strengths.

Since the Industrial Revolution, Europe has contributed more to the development of standards than any other region. The EU's industry standards have influenced the types of products that we produce and the way global business is done. For example, the EU's Registration, Evaluation, Authorisation of Chemicals (REACH) regulation guides US-based Dow Chemistry's product execution the same way EU standards for dairy products guide how Chinese dairy factories install their equipment. In the end, these regulations drive quality around the world.

Rules-based governance and multilateralism will

reinforce Europe's position in the Digital Age and contribute to a thriving digital economy in Europe. This will also influence other markets to develop their own industries and economy in a more balanced way.

Today's world is full of uncertainty. Businesses need the certainty of rules and systems to point them in the right direction. Europe is well positioned to become the world's foremost technological regulator and the primary rule-maker for the digital economy. I hope Europe will continue to lead the development of multilateral standards and rules. All globalized companies, whether they be in Europe or elsewhere, will benefit from such leadership.

# **Build prosperity and resilience in the Digital Age with rules and mutual trust**

Catherine Chen's Speech at the International  
Seminar on "Seizing Digital Opportunities  
for Cooperation and Development"

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September 8, 2020

Your excellencies,

Distinguished guests,

Good morning.

I'm Catherine Chen, Senior Vice President and board member of Huawei Technologies. I am delighted to attend today's seminar. I believe we need rules and mutual trust to build economic prosperity and resilience in the Digital Age.

In 2012, US Law Professor Anu Bradford coined the term "The Brussels Effect". This refers to the EU's unilateral ability to regulate global markets. Today, we have entered the Digital Age where data is replacing land, labor, and capital, and is becoming the economy's main factor of production. To thrive in the digital economy, governments and companies will need to re-imagine how value is created and distributed. We need unified technical standards, as well as rules for data governance.

Some are calling data "the new oil". But there is a big difference between data and oil. Data is increasing indefinitely. Its supply is unlimited. This means economic development will no longer be restricted by limited supplies of natural resources. The way we have created value since the Industrial Age is going to change. Governance rules have lagged behind technological

development, so we urgently need tougher data governance.

To establish this governance, we need to care about two things: rules and standards.

Frankly speaking, data governance has been overlooked in many parts of the world. The EU, in contrast, has been a trailblazer. The GDPR marked a huge leap forward in personal data protection. It not only allows for informational self-determination, but also provides remedies for instances when individual privacy is undermined. Many other countries have since followed the EU's lead, and today we have seen 120 countries pass their own personal data protection laws.

GDPR's success shows us how critical consensus is for enforcing rules. People need to come to a consensus before developing complex and effective systems. I think this is why we are here today.

The 5G industry, for example, needs international trust and communication to address security concerns and prosper. It needs countries to respect digital and cyber sovereignty, protect user privacy, reject backdoors in products or services, and encourage secure and orderly flow of data across borders.

The 5G Security Catalogue recently published by Germany is also a good example we can follow. It is the

world's first 5G security verification model that actually works. While everyone else has been focused on arguing over risks, the German government came up with rules and methods to address them.

There must also be standards. China and Europe, as economies with extensive connections and trade links to other global economies, must support a collaborative and inclusive approach to global technical standards.

The creation of standards not only helps create new markets, but is also key to consumer protection. Standards make consumers' lives easier. They can trust products and services that meet certain standards. With standards, products and services can be provided at lower costs; they can also be made available in any market that adopts these standards. With a consensus on standards and trust, all excellent companies, regardless of their country of origin, can benefit from unified standards.

Today's world is full of uncertainty. Businesses need the certainty of rules and systems to point them in the right direction. At Huawei, we believe that the global industry should work together to build a multilateral, consensus-based, transparent, and practical trust mechanism. This will create a fair, free, open, and collaborative global governance framework. On top of this, the digital economy can create real value and drive

the global economy to recover and flourish.

Huawei is more than willing to participate in the creation of a governance framework for the future digital world. We want to share our thoughts and experiences to contribute more value to society and benefit all.

Thank you!

# Creating new value with synergy across five tech domains

Guo Ping's Keynote Speech at Huawei  
Connect 2020

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September 23, 2020

Distinguished guests, ladies and gentlemen, and everyone joining us online, good morning!

Welcome to Huawei Connect 2020. On behalf of Huawei, I would like to express our heart-felt gratitude to all of our customers, partners, and friends for your ongoing support. Thank you!

This is the fifth year we gather in Shanghai. In 2016, we envisioned an intelligent world and called upon partners worldwide to build a rich and diverse ecosystem, one like Costa Rica's. In 2017, we announced our goal of becoming one of the world's five major cloud service providers. In 2018, we announced our AI strategy, and then in 2019 we revealed our computing strategy. In 2020, we have completed large-scale 5G rollout worldwide. This year, it's all coming together. We see a massive convergence of opportunities across five tech domains.

Today I would like to talk about creating new value with synergy across these five tech domains.

**“All human wisdom is summed up in two words – wait and hope.”**

As you know, Huawei is in a difficult situation these days. Nonstop aggression from the US government has

put us under significant pressure. Right now, survival is the goal.

As Alexandre Dumas said, "All human wisdom is summed up in two words – wait and hope."

As more and more governments and enterprises go digital and embrace intelligence, the ICT sector will see incredible potential for growth. We look forward to opening this new chapter together with our partners.

### **The digital economy is a major growth engine**

As we have seen, the digital economy is playing a key role in economic growth.

A report from Oxford Economics shows that the digital economy is a significant engine for growth, and has been for quite some time. That growth isn't limited to the digital economy itself, though. Digital transformation gives all industries access to incredible growth potential. Investing one dollar in digital technology leads to three dollars in digital transformation returns.

Take China for example. Last year, the digital economy accounted for around one-third of China's total GDP and two-thirds of its total economic growth. New digital demand from governments and enterprises

is constantly emerging.

## **Connectivity and computing: Bedrock of the digital economy**

Of course, connectivity and computing are the foundation of the digital economy. 5G and the Internet of Things (IoT) are at the heart of connectivity, whereas cloud and AI represent the future of computing.

We're all familiar with Moore's law. As time passes, computing power will continue to increase as the price decreases. Metcalfe's law tells us that the value of a network is proportional to the square of the number of nodes in the network.

So the density of our connections multiplied by the sheer amount of computing power at our disposal will ultimately determine the strength of the digital economy.

The convergence of connectivity and computing will change all industries – whether it be transportation, finance, or energy – and create new value for society.

## **5G and AI have sparked the age of intelligence for governments and enterprises**

We have seen great changes in the role of connectivity across all sectors of society, including government and enterprise applications. The evolution from 1G up through 4G pretty much solved the challenge of connecting people. 5G, on the other hand, has ushered in an entirely new era, one where everything in the world is fully connected. At the same time, the computing industry has slowly gravitated towards AI, which is already creating immense value for governments and enterprises around the world.

Connectivity and computing must become further integrated with industries and focus on the pain points of real-world scenarios.

This focus, combined with unique industry know-how and the right ICT technology, can create practical value much more quickly. Over time, you can link these different scenarios together and gradually build up to your grand digital vision.

Let me give a few examples.

### **Intelligent coking: Saving ¥6 billion per year, industry-wide**

Let's start with a case study from the coking industry. Coking is the process of turning coal into coke, a type

of hot-burning fuel. During this process, the way you blend coal is extremely important because it determines the production costs, quality, and end price of the final product. For the most part, coal blending is typically a manual process, one that is highly reliant on senior experts in the field. It's inefficient and difficult to optimize.

The Golden Stone Group wanted to change that, so they partnered with Huawei to come up with a solution. Together, we combined AI with the Golden Stone Group's coking expertise to create an intelligent coal blending model. This model has significantly increased precision, efficiency, and reliability. This set of systems helps the Golden Stone Group save 15 yuan per ton of coal, for a total of 27 million yuan per year.

Now expand that to the entire coking industry in China. If every coking plant saves 10 yuan per ton, the entire industry can save over 6 billion a year. And this is just one small example in a relatively niche industry.

### **Intelligent logistics hub: Operating efficiency up 30%**

Here's an example from a major logistics hub.

The Shanghai Kangqiao Logistics Hub is a massive facility covering around 100,000 square meters.

In the past, their data collection and automation was practically nonexistent, and taking inventory was mostly a manual process. It took a month to complete. In addition, vehicle scheduling was unplanned, which frequently caused traffic jams and long delays. It was always one issue after another.

To address these challenges, Huawei and DHL implemented an intelligent upgrade for the logistics hub. Using Huawei's intelligent campus platform, DHL integrated over 20 business systems, transforming dock, warehouse, and asset management into intelligent, interconnected processes. This drastically decreased inventory times, and vastly increased the efficiency of inner-campus traffic and dock utilization. In total, they increased operating efficiency by 30%.

### **Shenzhen: Setting the Gold Standard for Smart Cities**

In recent years, city governments have been even more interested in intelligent solutions than businesses.

Take Shenzhen, for example. Over the past few years, both individuals and organizations have benefited a lot from Shenzhen's smart city program, and overall satisfaction has increased greatly in many aspects of city life.

Building smart cities is huge and complex undertaking. Shenzhen is currently in the process of becoming a smart city. As part of these efforts, the Government Services Data Bureau of Shenzhen is working with Huawei and our partners to integrate the service systems of 42 different government agencies.

They are leveraging our strengths in domains like 5G, cloud, and AI, to integrate over 100 types of data, creating an integrated "1 +10 + N" central management hub.

### **Creating new value with synergy across five tech domains**

Just now, we took a look at some leading examples of digital enterprises, campuses, and cities. In the near future, a growing number of governments and enterprises will start reaping the benefits of digital technology too.

Over the past few years, Huawei has built up a solid portfolio of ICT technologies. Moving forward, we will work more closely with our partners to apply these technologies to practical industry needs.

By providing targeted, scenario-based solutions, we want to help enterprises grow their businesses and help governments achieve their strategic goals of boosting

domestic industry, benefiting their constituents, and improving overall governance.

Connectivity, computing, cloud, AI, and industry applications are the five major opportunities we see in the ICT sector. And by producing synergy across these five domains, we look forward to creating new value together with our partners.

### **Focusing on four tech domains to support a flourishing application ecosystem**

Next I'd like to share some of the progress we've made in connectivity, computing, cloud, and AI, as well as our business strategies in these four domains. Then I will wrap up by sharing more information about how we've been supporting our partners in their efforts to develop industry applications, boost the supply chain, and grow their own industries.

### **Intelligent connectivity: Enabling governments and enterprises to maximize the value of connectivity**

First, connectivity. The foundation of digital transformation for both governments and enterprises.

As we speak, all industries are beginning to

incorporate digital transformation into their production systems, and demand for connectivity has changed dramatically.

For example, coal mines, ports, and factories all need higher bandwidth. To achieve truly smart manufacturing, different industries also have varied requirements for latency and reliability. So we have to be able to provide a customizable network experience with SLA assurances.

To meet these needs, Huawei is working on something called intelligent connectivity. Basically, we want to deliver a hyper-automated network that provides ubiquitous gigabit access and a deterministic experience.

### **Computing: Diverse computing power for a broad range of business needs**

Different technologies like big data, AI, and HPC all have diverse computing needs, and monolithic computing architectures no longer have the chops to meet them. If we hope to meet growing demand for different types of computing power, we need to diversify.

And that's exactly what Huawei is doing. We have decoupled software from hardware to adapt our compute to different processing needs, including x86

and Kunpeng.

## **Huawei Cloud: One of five major clouds in the intelligent world**

The cloud is the best platform for unleashing the full value of computing power. As such, it's a cornerstone of the intelligent world.

Three years ago, also at Huawei Connect, I said that our goal was to become one of the world's five major clouds, and that we were committed to long-term strategic investment in public clouds.

Over three years of persistent effort, Huawei has established 23 regions worldwide, attracting over 1.5 million developers.

This doesn't mean that our cloud team can relax. On the contrary, they're under much greater pressure than ever before, because they've managed to raise the bar pretty high for themselves.

Moving forward, we will continue to advance our hybrid cloud solutions to meet the complex digital transformation needs of governments and enterprises around the world. We hope to become a preferred partner in their intelligent upgrade process.

## **Huawei AI: Driving innovation in major business systems**

AI technology has developed rapidly over the past several years. In this time we've been exploring ways to better integrate AI into the management systems of governments and enterprises.

For example, in Shenzhen Airport, they're using AI to manage airplane gate logistics. Last year, we leveraged facial recognition technology to increase the efficiency of airport security checks by 60%.

Throughout the pandemic, we've been using AI to analyze the CT scans of potential COVID patients, reducing the time it takes to get results from 12 minutes to mere seconds.

The banking industry is also using AI to fight fraud. We've made the impossible possible by using AI to produce accurate warnings in just minutes.

## **Industry applications are key, and we're here to support you**

Now let's take a look at some industry applications. Connectivity and computing are a lot like the early days of electricity. At first it was only used for lighting. Gradually, it expanded to power home appliances and

industrial equipment, which brought tremendous change to all industries and officially ushered in the electric age.

During this process, the use of electricity in homes and industries created sectors that were dozens of or even a hundred times larger than the electric sector itself.

In 2016, we brought up the idea of building a diverse and thriving Costa Rica-like ecosystem, one where we empower partners to grow the market and reap the most benefits from the new value chain – just as electric-adjacent enterprises benefited the most from the age of electricity. Many of our partners will showcase their exemplary applications and solutions at this year's exhibition. Make sure to check them out!

Here's a taste of what you'll see.

### **Growing vertical markets: Business innovation and rapid growth**

First, an example of growing the market through business innovation.

Tech Education used to be a traditional IT training facility. By working with the Huawei Cloud team, they now provide ICT solutions for the education industry.

Huawei Cloud provides Tech Education with technical solutions and monetization support. In 2020, Tech Education's transaction volume on the Yanxuan e-commerce platform has already exceeded 80 million yuan, a year-on-year increase of 800%.

This is just one example. To date, the Huawei Cloud has brought together over 13,000 consulting partners and over 5,000 technical partners. Huawei is committed to helping more companies like Tech Education drive business innovation and secure rapid growth. Their success is our success.

### **Boosting the supply chain: Helping our partners make breakthroughs and become hidden champions**

When it comes to boosting the supply chain, we're big believers in growing together with our suppliers and sharing the wealth.

Here I would like to share an example that involves a key component of 5G base stations.

Back in 2016, Huawei began working with Cooler Master, a traditional supplier of heat dissipation solutions. Back then we were working on a transformative set of 5G cooling systems, and they were very actively involved in the process. With Huawei's help, they were able to

make strategic breakthroughs in surface processing techniques.

In addition, working with Huawei enabled Cooler Master to optimize their processing procedures and logistics, which significantly improved their product quality, productivity, and supply capacity. They also managed to cut costs by 30%. Over the course of this three-year relationship, Cooler Master has increased its sales to Huawei by a factor of 20.

We will keep working with our partners to improve their capabilities, making sure that there's plenty of benefits for them throughout the process, and that we can grow together.

### **Strengthening the foundations of partnership: Deep roots make for greener leaves**

We're in it for the long run with our partners. We stand together through thick and thin. CS&S is an excellent example of this.

We've been working together for more than ten years, starting back in 2009.

In 2014, CS&S went global. Then in 2017, they became our first Huawei Cloud partner. They've really been with us through everything. In 2019, CS&S joined

Huawei Cloud's Kunpeng Partner Program.

As you can see, CS&S has worked with Huawei in different capacities at different stages of our growth. We share value and stand together.

In return, CS&S gets top-notch technical support from Huawei, and together, we have expanded into new markets. CS&S's partnership with Huawei Cloud is a great example. They grew their business by 900% in only four years.

Only deep roots make for green leaves. We will keep working hard to strengthen the foundations of collaboration with capable and willing partners. And we very much look forward to growing together with you.

### **Working with global partners in more domains to serve customers around the world**

We will keep working hard to provide the best possible products and services in connectivity, computing, cloud, and AI.

Huawei will generate the power, and our partners can harness it. Together, we will succeed and create greater value for our customers.

In addition, we will work with our global partners in broader domains like basic innovation, standards

development, talent, and corporate social responsibility. Our ultimate goal is to provide our customers with top-quality products and services.

Before I go, I would like to leave you with a quote from Walt Whitman: "Keep your face always toward the sunshine and shadows will fall behind you."

2020 has been a year of grave uncertainties for everyone. Let's keep our faces toward the sunshine, and we'll get through this together. Thank you!

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