Mobile Reshapes the World

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During the last eight years, the Mobile Broadband Forum has become a community for creating exciting ideas. For example, last year, we introduced the CloudAir initiative. Now it's an industry standard and has been deployed in 30 networks globally.

Keynote speech by Huawei Rotating CEO Ken Hu at MBBF 2017

Recently, the community has been debating whether we're at the best time or the worst time in the history of the mobile industry. Some say that the market is very crowded, and competition is fierce. Indeed, the mobile penetration rate in over 120 countries and regions exceeds 100 percent. But I believe this is the best time for mobile. So where is the next growth opportunity, and how can we catch it?

Meet our new subscribers

If I told you, there are another 1 billion new subscribers waiting for you right now, what would you do? You'd wonder who they are, where they are, and how you can engage with them. Well, let's meet those new subscribers.

In northwestern China, telcos are helping dairy farmers connect more than 1 million cows with NB-IoT technology and special collars. They've made this into a very successful business for both farmers and telcos.

NB-IoT networks deliver great improvements in battery life, coverage, and cost. This allows cows to move farther, graze longer, and live healthier lives.

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More importantly, the collars can collect biometric information from the cows. With this data, farmers can better manage movement patterns and grazing habits. They can also manage the milk production cycle in a more accurate way, and greatly enhance productivity across the whole cycle.

As a result, this solution helps farmers to generate an additional US$420 dollars per cow, per year – that's a 50 percent increase in profit.

Now, you might be thinking: I'm a carrier. How can I make money from a cow? You can. There's money for carriers too. Every connected cow is a new subscriber. In this case, the telco provides an integrated solution for farmers. The special collars, connections, and data services bring in US$10 dollars per cow, per year.

When I first heard about this project, I realized that connected cows are literally cash cows. Let's step back and look at the global market. There are 100 million cows in China. There are 100 million in the US, too. In Brazil, there are 200 million.

Globally, this is a huge business of 1 billion new subscribers offering US$7-10 dollars ARPU that we shouldn't miss.

This is just one of many possibilities

Think about this: There are 20 million shipping containers in the world, 100 million new bicycles manufactured every year, 300 million LED streetlamps lighting up our cities and towns, and there will be 1.8 billion water meters by 2025.

The list goes on. The only limit is our imagination. These are projects we're exploring on our X Labs platform, which we announced last year.

In just one year, our research clearly shows that growth in mobile is possible, and the opportunities are real. All we need to do is take action.

Taking action

We have to change the way we develop our business. We have to add muscle to our networks, and make them smarter. And we have to build a stronger ecosystem. First, we have to change the way we manage our business.

This is a mindset issue. We have to believe that everything can be connected and will be connected.

I believe that more connections mean more possibilities, including connected cows, connected shipping containers, and connected streetlamps. This is a huge opportunity for IoT.

We need a fresh mindset to serve all these new subscribers. For people-to-people communications, the service model is pretty straightforward. However, scenarios for IoT are extremely diverse. They all need different connections and specialized applications. We need a new model. I call this the scale-out and scale-up approach.

First we have to scale out in the traditional sense to provide more connections and get more revenue. Once we get everything connected, we will have a lot of room to develop value-added services. That's the scale-up part. In China, local telcos are working with the water authorities to connect 800,000 water meters with an NB-IoT network and develop a smart system.

In this case, the telcos provide the basic data connections. And beyond that, they work with application developers to provide value-added services like leak detection, water consumption analysis, and predictive maintenance. This helps them to double revenue. While scale-out is low-hanging fruit, scale-up is where the tasty fruit is. But, it's not easy. To realize these value-added services, we need to understand more on the vertical side. And of course, we need partners.

Rethinking networks

For many years, we've been building our networks to connect people. We provide a simple and similar service model to all consumers. However, now we're connecting a massive number of things. We need different connections to support diverse applications.

This is a huge challenge for our networks in terms of performance and operations. We need stronger network performance to support applications that are completely different, like VR in the cloud and robotic arms for Industry 4.0. Our existing networks aren't ready for this.

The same is true on the operations side. As applications are becoming more diverse and complicated, network operations lag far behind. The process is still too hands-on.

Let's look at two figures. One, on average, the cost of O&M is 3 to 4 times the cost of network equipment; and two, 70 percent of network faults globally are from human limitations.

This isn't sustainable. We need a fresh approach to network development. This is Huawei's vision for future networks. We believe that future networks should be application-centric, data-driven, and eventually, they should be intelligent systems.

Future networks have to be able to support diverse applications. That means two things: They have to be software-defined, and they have to provide stronger network performance. We need greater capacity, lower latency, and more connections. As we prepare for Industrial IoT, we'll see a sharp rise in demand for machine vision. In smart factories, cameras will be the eyes of machines. They will generate a huge amount of data, about 10 GB per second per camera. Imagine a factory with 1,000 cameras.

Future networks also need to provide lower and more reliable latency. For example, smart grids need constant 20-millisecond latency. That means no spikes, no dips. We need to start adding this muscle now, so our networks are ready for a huge range of applications in the future.

Future networks should also be data-driven. GE creates digital twins for their engines. When one of their engines is running in the physical world, another virtual engine is running in the digital world. We should do

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the same with our networks. We should build our own digital twins. There will be two sides to future networks: the physical network and the digital network.

The data generated from network operations will be the bridge that connects these two parts. Insight from digital twins will help us to automate network operations, provision applications, and perform network maintenance. Digital twins will also give us a new platform to introduce AI and thus make the whole network more intelligent.

Our goal is to build intelligent networks. We want to build networks that are automated, self-optimizing, and self-healing. Full autonomy is what we're aiming for, just like autonomous cars. At Huawei, we've been working on this for several years. We have successfully introduced AI-powered predictive maintenance in our products and solutions. And in the near future, we'll bring you some really exciting news. Ultimately, future networks should be fully automated, with zero faults.

But technology isn't enough. To access new opportunities, we need a stronger ecosystem. In the past, we focused on connecting people. That was like planting a single tree.

And now, we're connecting things. That's like planting an entire forest. We have to get integrated into the ecosystem, and build it out together.

Many vertical industries have not embraced mobile yet. We should help them understand the value of mobile, and how it's relevant to their business. And telcos need to understand more on the vertical side. To close this gap, we should build more platforms, more communities, and more alliances. The best way to do this is to come together and explore real cases.

To give you an example, we've made exciting progress in low-airspace connections. This is a joint effort between mobile carriers, chipset manufacturers, platform developers, vertical application developers, and drone makers. As an industry, we spent 30 years connecting the surface of the earth. Now we're working to connect everything up to 300 meters in the air. This year, we built a large-scale industrial base for testing. By 2020, we hope to nail down standards together, and connect 30 percent of industrial drones through mobile networks. We call this the Digital Sky Initiative.

Mobile reshapes the world. But, mobile won't change the world by itself. The responsibility is on us.

We've successfully connected more than 5 billion people in the world. And we will connect everything in the future. Yes, we will face a lot of challenges. In the Chinese language, "weiji" means both for challenge and opportunity. It means opportunities always come from challenges.

Let's not focus on what limits us. Instead, let's look at where we can be and make it the best time for mobile.