

The great leap forward: How the world's largest operator aims to jump one generation

China Mobile's straight-talking **Bill Huang** (General Manager of the company's research unit, the China Mobile Research Institute) sees a fundamental change in the way 4G is driven by operators, but believes telecom vendors are not moving fast enough. He also explains **the lessons learned from Western markets** and how China Mobile can use this knowledge to gain a competitive advantage.

TEXT Mats Thorén TEXT Anna Harvard

To put things in perspective: China Mobile has a subscriber base twice the size of the total population of the US – close to 600 million. What the world's largest telecom operator thinks about the future naturally has a great impact, not only on the Chinese market, but also on the global one. This is especially so given that China aims to secure a leading position in telecom.

► **China Mobile is pushing the time division (TD) flavor of LTE hard. Why is it necessary to have more than one kind of LTE, and what benefits does TD offer end users?**

To understand, you must look back at what caused this technology evolution. There was an understanding that to go digital we must have a global standard. There were many candidates but they fell apart. GSM was a very good effort and succeeded in becoming the first real global standard. Then came 3G. In retrospect, 3G was a questionable development. It optimized voice capacity and quality but data traffic was kind of an afterthought. GSM did the job just fine. The best example is China Mobile. We deployed the world's largest GSM network with the lowest tariffs, and never saw the need for a better voice service. 3G was a solution looking for a problem. And indeed, WCDMA did not take off until HSPA was developed. So from a historical perspective, HSPA was the only killer application for WCDMA, and internet access is the only reason HSPA took off.

Mobile internet is the only growth area for

mobile communication. Today broadband access is dominated by wireline ADSL connections, but these will be replaced by mobile communication, in the same way as GSM replaced wireline telephony. The technology of choice is orthogonal frequency division multiplexing (OFDM) and LTE is the 3GPP version of OFDM. LTE carries the heritage of GSM and WCDMA with it, and is the most important global platform for a single mobile standard.

Now, the selection of TD technology as a strong candidate in the evolution of LTE gives us an internet advantage. Historically, mobile communication has been symmetrical, dominated by voice. Internet traffic is not symmetrical. Downlink is typically 10 times faster than uplink, and addresses this. TD is unique in the way you can adjust the uplink and downlink ratio. And that's why TD has become very useful – not only does it allow operators to use spectrum more efficiently, it also offers consumers a better user experience and lower costs.

I don't think we should do everything in TD, even though it meets all the requirements of mobile internet. FDD has its own reasons to exist. The best way is to stop competing and start creating technologies that can be dynamically configured for duplex use. After all, it's just a matter of how you "duplex" your traffic to send and receive. We have the capability today to make multi-band radios that can operate on both flavors. It's really not a political or economic conflict. So I think LTE can be best optimized by providing the combined capabilities of FDD and TD.

Isn't there still a risk of fragmenting the 4G market, especially in terms of devices? ►



In the US, I think *carriers have already given up*. They allow Google, Amazon and Microsoft to run cloud computing.

► Everyone agrees that LTE is one standard. On the devices side, there might be concern if frequencies are not aligned, but this really has nothing to do with FDD/TD. Hopefully we can get a limited number of frequencies, in the range of five to seven. Chip design has now reached a point where a single chip can handle more frequencies, so the problem is not as big as it once was for device vendors.

How will China Mobile use 3G?

We will accelerate. For China Mobile 3G is an important licensing issue, and we are building a 3G infrastructure to create the momentum with which we move towards 4G.

Isn't that a long way off in the future? Don't you need to develop mobile broadband now?

Completely wrong! We are targeting commercialization next year, not in five years. In fact, operators in India and Japan plan to go commercial this year, but we are not that aggressive. So you see: 4G is not being pushed by the vendors, like 3G was. 4G is being pushed by the carriers. LTE is the only standard in the industry where, if you have a product, people will buy it right away. It's the reverse of how things used to be, and very interesting. LTE is being developed fast, but not fast enough.

Do you see a problem in the way telecom vendors advance from one generation of technology to the next?

Yes, we have criticized that for years. They are not moving fast enough. They are not satisfying market demand.

How will you charge for mobile broadband?

Historically our service strategy for data has been traffic-based, selling bandwidth like a commodity. That will change, either into some kind of bundling from linear to non-linear buckets or into a flat rate where a fixed fee gets you unlimited bandwidth. It is good for consumers to know the cost. Secondly, we are moving into content-based billing. Instead of looking at data volume, we can charge for downloading a movie, regardless of size, or a song or a book. We have all of that already in place. But frankly I don't think consumers are used to content-based billing, so we need to edu-

cate them – in many cases. People pay more attention to traffic billing, and the feeling about content is very often that it ought to be free.

China Mobile's strategy is that we will be a content and application aggregator, therefore becoming a smart pipe – not a dumb pipe that just provides access without aggregating anything. So we become the Walmart of information.

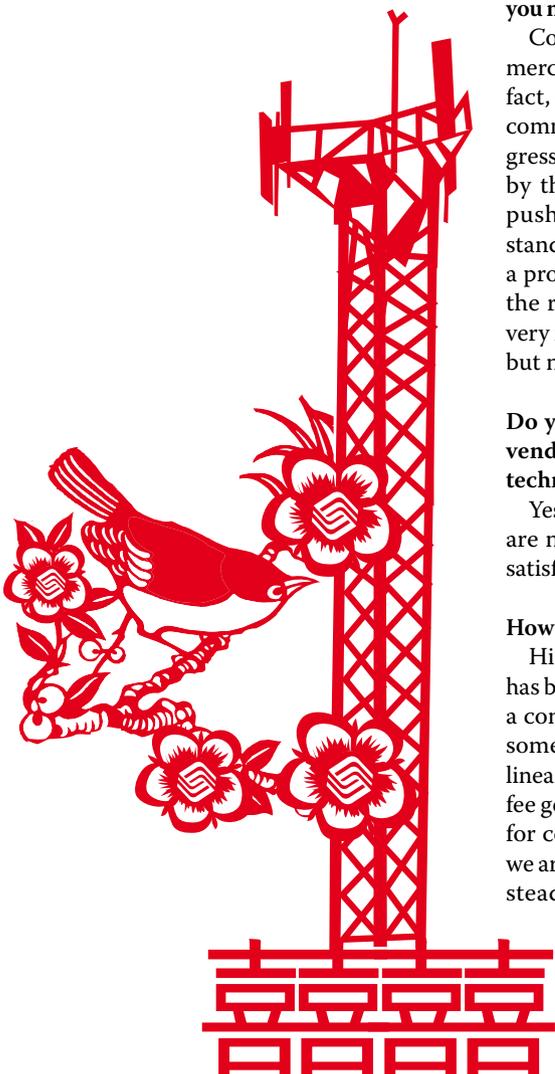
Instead of charging for content or traffic we can create a club. People are familiar with that concept. You pay one monthly charge and everything is free. It's very effective; Netflix is a good example of a subscription-based service that I think has a very good future as a business model. At China Mobile we can do anything with scale, but we can't do everything in a niched or personalized way. So, if we provide a club we get to leverage that scale. We have 600 million subscribers. If only 10 percent sign up, that's already 60 million members. If just 1 percent sign up, that's 6 million members.

How do you handle the threat from the over-the-top (OTT) players, the internet companies?

It is a very real threat: OTT services can now replace almost any communications service imaginable. OTT services are usually free, so this business model is based on backward billing. Clearly that is not something that we as operators are willing to promote. What we hope to entice the user with is the quality of service – that's our most important competitive advantage. Secondly, we must also look to reduce the cost of our services, potentially making them free as well. If we use other ways to generate revenue – like advertising or the club concept, and the user subscribes to a bandwidth bundle – we could provide the voice club service for a fixed fee, while guaranteeing the quality. Then I think we could kill off OTT very easily.

What's your relationship with Google?

Our relationship has in some ways always been very cooperative, as an internet company and an operator. But there are competitive issues. Google is in some ways less significant in China because of its exit from the market. But we cooperate on operating-system development – “Android plus.” We





both believe in open source, open development, open ecosystem, and open search.

What do you expect from the cloud?

For mobile internet we have established a three-front strategy: LTE; the smartphone (operating Ophone, which is based on Android plus); and cloud computing. Only by combining all three can we create a really competitive and successful mobile-internet business.

We believe the cloud is an infrastructure technology that can address the cost of computing, reduce energy consumption and become a common platform for society, consumers and companies. Historically telecom operators have been reluctant to embrace it, but this was a mistake. In the US, I think carriers have already given up. They allow Google, Amazon and Microsoft to run cloud computing. But there are opportunities for China Mobile. If anything, we can do infrastructure on a large scale, data centers and so on. We do not have to develop all of the internet services in the world to compete with Google or Facebook. What we could do is build a cloud-computing infrastructure and invite all the internet companies to partner with us.

So Chinese operators can enter the cloud-computing business from a position of strength?

Operators tend to be slow, and in the US they missed the opportunity. But in China we have seen what happened; we can learn from the US market and use this knowledge to get ahead.

How do you develop or find new, winning services?

The most important phenomenon that will drive change in the mobile communications industry today is the evolution of smartphones. What used to be a communications device is now an all-purpose computing device. Today, fewer than 20 percent of our subscribers use smartphones. We think that in three to five years over 80 percent of our subscribers will use smartphones.

If you look at the top applications in the app store, almost all of them are entertainment focused. The next-biggest group is focused on commerce – apps that enable mobile devices to replace the credit card, apps that perform ID functions, ticketing apps and

so on. We have deployed many of these applications to ensure that, essentially, the mobile is the only device you have to carry with you everywhere you go. This will facilitate a tremendous new scale of commerce and really change people’s lives.

Have tablets changed this picture?

No, I see them as just bigger smartphones. In fact, Microsoft and others have tried for many years to introduce tablets and failed. But when Apple introduced the iPad, which is just a big iPhone, everybody loved it. So, this proves that a successful tablet is a big smartphone. The look and feel is very similar to that of a phone.

How do you work with the app store concept?

We embraced it completely and the way we differ from Apple is that we support all operating systems – including ios if Apple wants us to.

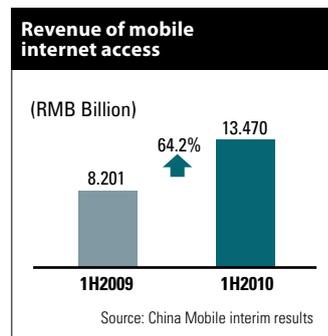
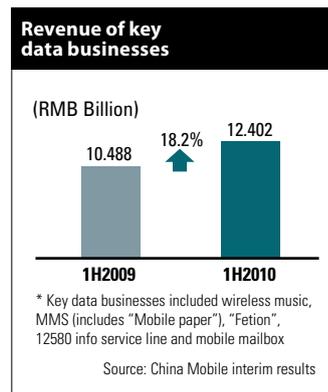
Do you really mean “all?” Isn’t it necessary to specialize?

We hope to create a platform that is independent of operating systems. Some of the gaming platforms are like that. There can be only one open-source platform in the end. We think the best way would be if everybody joined one. Google can’t solve everybody’s problems. The reason China Mobile chose Android was that we need the flexibility to differentiate. We need to add components, APIs and functionality to Android. That’s why we call it Android plus. Many vendors do Android plus, they just don’t call it that.

Our phonebook has the users’ idle or active status for messaging. Google would not do that for us; they would put their own messaging service there. We, of course, want to optimize the platform for our services and they want to optimize it for their services. But since it’s based on a common platform, everyone can have their services optimized. So everybody is happy, and everybody wins.

What are your plans for visual communication?

Video was the very epitome of a 3G service, but somehow it never took off. ▶





We don't necessarily have to **compete with the banks**. We can rather just be the wallet and change a monthly fee for the service.

► I don't think the concept was bad; the problem has been the poor quality. Now we will see a new generation of video services based on IMS – purely IP-based. They are already being introduced to work with HSPA. This platform delivers very good quality, and if you combine that with a tablet I think it will take off very quickly.

I don't know if video is going to be a major revenue stream, but I am sure it's going to be a major application. I say that because making video calls on IMS will become an internet application, so it depends on how we charge for it. It opens up the potential for more creative billing strategies. We would be able to deliver a level of quality that would be very difficult for an OTT player to achieve.

How can operators leverage both walled-garden and OTT content?

Our strategy is definitely open, but in some cases we want to be the aggregator. So we compete with internet companies for the rights and capabilities to aggregate. We want to use our own store and billing system and our own developer environment. We may have a common API, but different content, and exclusivity. We studied what kind of apps users download and you'd be surprised how similar people's tastes are. The top 1,000 apps have a 99-percent share of the market. That's very good news for operators. We are not very good at long tail, but we are definitely good at short tail.

What about IPTV?

Since we are mainly a mobile operator we don't have a large-scale IPTV strategy. But TV on mobile phones would be a very important area for us. We want a mobile phone to be able to transmit TV to a large screen – so you can watch the program on your phone's small screen or your computer screen, but also take it with you when you visit someone and watch it together on a large screen, in high definition. You won't need the DVD. The mobile becomes the set-top box. So China Mobile doesn't need a three-screen strategy – we only need a one-phone strategy. We are working on a wireless multimedia transmission technology called WiMo for this, and expect it to be available in two to three years.

Are you ready for mobile banking?

To be frank, we have not figured out which

technology's the right one to get the credit card or the payment mechanism into the phone. The most viable one for phones would be near-field communication (NFC). We have already established our architecture for mobile commerce and an account system with connections to all the banks, so from a service point of view we already have everything in place. What we need right now is for more phones to have the capability to carry the mobile payment and transaction engine – the right chip and components to support it, along with NFC.

Is banking a comfortable area for operators?

We don't necessarily have to compete with the banks. We can rather just be the wallet and charge a monthly fee for the service. In other words, the banks can issue the cards and put them into our phones. We will make our platform open for all the banks. We don't have to issue our own cards; all we have to do is to become the channel for the credit cards. And then we can make money. It is a great service – to sign up you don't have to fill in a lot of forms; we have all the customer data that is needed.

What do you expect from the Internet of Things?

I think this is the ultimate area for mobile communications. Whether it will happen during the next 10, 20 or 30 years remains to be seen. We have not yet figured out where the explosive growth will come from. China Mobile has fewer than 10 million non-human users. Today the applications are very vertical and difficult to implement – they take a long time to integrate. Everything is ad hoc, and we need more universal solutions. We have not identified a large enough homogenous user base, but we are working hard on cars. If we can get all the cars connected, that's big.

What will be your main revenue areas five years from now?

Data services currently contribute a very low percentage, but internet access will be our number-one source of revenue, followed by internet-related services, including cloud computing and content aggregation. Revenue will also come from content and applications such as entertainment, games and commerce. Voice will probably be very insignificant. ●