A sustained, industry-wide effort is spurring the mobile communications industry to change the world for the better at an ever-increasing pace. To orient operators to the future, Huawei’s MBB 2020 vision defines network capabilities in terms of customer experience.

By David Wang, President of Huawei Wireless Network

Advanced mainstream mobile devices enable data access anytime and anywhere so that people can better arrange the time fragments that make up modern life and work.

Today, mobile devices are the first screen people use at work and play, and mobile video is what they’re choosing to watch. The skyrocketing data levels accompanying this trend require carriers to change how they develop their networks. The focus now needs to be on providing a video experience that’s acceptable for users while making networks the enabler of the intelligent mobile cloud. At the same time, the cellular IoT market is set to become a major revenue source for mobile operators in the next few years.

In response to these trends, Huawei has proposed its MBB 2020 vision, with the following aims: connect the unconnected with 6.7 billion MBB connections, drive up service experience with 1 Gbps access speeds, and deliver ubiquitous networks that realize a fully connected world with 1 billion connections in cellular IoT.
Operators should regard experience as the core and networks as the foundation of the MBB 2020 vision. They must be prepared to adapt to changes in the industry, aggregate and integrate with vertical industries, and create new MBB ecosystems.

However, achieving these goals will ask much more of spectrum resources, site planning for base stations, air interface technology, and architecture.

**Experience and networks: The core of MBB**

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**Experience 2020**

Networks must give customers a great experience if operators hope for basic competitiveness. Right now, the connection experience of service use and access is more important than the basic network experience of coverage and speed. To respond to this change, network infrastructure requires more resources and technological support.

**Network 2020: networks as the foundation**

- **500 MHz of new spectrum**

  ITU predicts that mobile broadband will hit gigabit speeds by 2020, changing traffic models and increasing demand for new spectrum. At the WRC-15 conference, Huawei urged governments to reach a consensus on releasing 500 MHz of spectrum for the telecom industry in three sub 6 GHz bands: UHF, L-band, and C-band. These are respectively used for wide coverage, mobile, and high-capacity scenarios.

  Because spectrum resources will remain limited, the industry needs new technologies to improve air interface spectral efficiency. To satisfy user requirements, 4G wireless air interface technology must be upgraded to 4.5G, after which new 5G air interface technology can be introduced. 4.5G includes air interface technologies such as 256-QAM, M-MIMO, LAA, NB-IoT, and Massive CA, which are likely to give operators the upper hand before official 5G deployment.
• Five million new base station sites

Huawei has found that base stations sites are very unevenly distributed around the world, with a clear paucity in Latin America, Asia, and Africa. We predict that a further 5 million new sites will be needed to provide sufficient capacity to meet the MBB 2020 vision.

Huawei is developing solutions to continually improve base station site integration by reducing volume, enhancing efficiency, and lowering power consumption. This will allow faster base station deployment and eliminate system restrictions to quickly meet business needs.

• Network evolution: architecture first

In some ways network architecture is more important than planning air interfaces and base station sites. Why? Because architecture determines the direction of digital transformation and service development. Huawei hopes to help the entire industry deploy services with greater agility, and thus increase operating efficiency.

Network architecture evolution should begin with the cloudification of currently independent systems before moving on to service-oriented, end-to-end sliced networks. This evolution will help operators quickly adapt to service launches, and enable them to collaborate with OTT providers through agility slicing.

Huawei can help operators quickly implement end-to-end slicing for different services to meet different latency, speed, connectivity, and management requirements.

• Eco 2020: co-constructing a new ecosystem

Spanning consumers, operators, and infrastructure network providers, today’s MBB ecosystem is consumer-centric. IoT will soon shape it into a vertical, consumer- and market-centric ecosystem that includes integrated solution providers. Although operators have advantages in network security, proximity to customers, coverage, QoS, and QoE, they must invest in IoT to remain competitive.

Low power wide area

It’s also worth noting that the LPWA (Low Power Wide Area) market is full of opportunities. Currently, LPWA lacks standards and a blueprint for using technology to construct networks. The industry has proposed NB-IoT specifications that are more suited to mobile operators. These specs have advantages in terms of constructing traditional cellular hybrid networks, using carriers’ licensed spectrums, increasing coverage, providing more connections, and implanting architecture more easily. These benefits lower costs for end-to-end construction, and meet business needs better than the current models for using unlicensed spectrum.

Huawei continues to urge the industry – including operators, platform providers, chip makers, and service providers – to join forces at this critical juncture and work together on building the new ecosystem.

4.5G can unlock MBB 2020

Huawei understands future trends. It knows customer needs and sees the challenges ahead. These challenges will not be easy to solve. 4.5G will serve as the bridge allowing step-by-step network improvements, adapting to changes in the environment, and achieving the magnificent vision of MBB 2020. 3GPP has determined that 4.5G standards will be named 4.5G LTE-Advanced Pro, and has started the process of standardization.

Huawei’s 4.5G solutions are Giga Mobile, Connection+, and Experience 4.0. Giga Mobile comprises high-capacity, high-speed solutions designed to hit peak speeds of 1 Gbps during initial network construction, which will later become the average speed. Because the roles of chip capacity and indoor coverage are vital, Huawei is working with Qualcomm to launch a 600 Mbps chip before starting on a 1 Gbps chip. Huawei’s LampSite solution solves indoor coverage problems, and is already widely deployed in current networks.

With Experience 4.0, Huawei provides HD voice and HD video solutions for voice MOS 4.0 and video vMOS 4.0. Huawei has successfully researched VoLTEPlus and vMOS, both of which now provide powerful support for Experience 4.0.

Connection+ marked Huawei out as the first in the industry to launch a LPWA-based technology solution, which it then evolved into the 3GPP-approved NB-IoT. To achieve economies of scale, Huawei hopes to drive NB-IoT standardization as a matter of priority alongside mainstream standards, preferably for early 2016. Huawei also aims to lower NB-IoT costs to within US$5 million through large-scale commercial adoption so as to deploy cellular IoT on a large scale.

The MBB 2020 strategy is the first step on the path to achieving the MBB 2020 vision. Huawei will use 4.5G as a solid bridge to the next stage and to overcome the various obstacles that exist as it strives to realize the MBB 2020 vision of a Better Connected World.
Consumers around the world are getting used to quick mobile Internet connections, putting operators under greater pressure to provide ubiquitous 4G coverage coupled with a fantastic user experience.

According to GSMA Intelligence, a total of 422 operators in 143 countries had launched LTE networks by mid 2015. At that time, the number of LTE users had hit 755 million, which is projected to surpass 1 billion by the end of the year and reach 3.6 billion in 2020.

But the rapid uptake of LTE services has created new challenges as well as opportunities for operators as they roll out and upgrade their mobile broadband (MBB) networks.

Worldwide data usage is on track to expand by more than 60 percent over last year, and monthly data traffic is forecast to increase tenfold by 2020. To keep up with the soaring demand, an increasing number of operators are already looking to deploy LTE-Advanced. As of 31 July, 131 operators in 60 countries had plans to invest in LTE-A, according to GSA statistics. That’s 30 percent of all operators with LTE networks.

In addition, it’s no secret that traditional revenue sources, such as voice and SMS, are in decline and operators are struggling to find new revenue streams. Monetizing data continues to be one of the most significant obstacles they face.

To tackle this key theme and help develop a long-term industry vision for MBB connectivity and innovation, Huawei is once again organizing the 2015 Global Mobile Broadband Forum (MBBF).

The event, which runs from November 2 to 5 at the Asia-World Expo in Hong Kong, is expected to attract over 1,000 operators, regulators, industry partners, and media from around the world.

“Transformation does not happen behind closed doors,” said Qiu Heng, President of Huawei’s Wireless Network Marketing Operations. “If you want other industries to use the network, you need to meet their real needs. Our communication with other industries is still at an early stage, and we aim to meet with them as well as operators at this forum to explore future possibilities together.”

One area of discussion, Qiu said, will revolve around operators’ ability to develop new sources of revenue from the IoT sector, as well as Huawei’s efforts to develop a wider ecosystem to create opportunities in related industries.

The two-day conference features more than 20 external speakers from operators such as HKT, SoftBank, Telefonica and Vodafone, as well as Bosch, CNN, Google, Phillips, Visa and TIME.

Huawei’s Rotating CEO and Deputy Chairman Ken Hu will kick off the forum with a presentation themed Building a Better Connected World. He will be followed by HKT group executive director Alex Arena, who will talk about the need for speed before 5G. GSMA acting director general and CTO Alex Sinclair will speak about global spectrum considerations.

Huawei is expected to make a number of announcements during the event, including a 1 Gbps demo from HKT, Hong Kong’s largest operator, and a joint GSMA-Huawei white paper on the benefits of C-band spectrum for MBB.

This is Huawei’s sixth annual MBBF conference and will showcase the latest MBB trends covering 4.5G applications, 5G innovation, narrowband Internet of Things (NB-IoT) and the MBB network evolution in a 2,000-square meter demo area. This year’s forum will also feature the MBB experience tour, where attendees will have the chance to see HKT’s 1 Gbps service in action.