

# Huawei Launches the Evolution Strategy for 5G-oriented Wireless Target Network

By [Globe Newswire](#)

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*The following article confirms HuaWei's lead in 5G telecommunications technology. In this regard, the campaign against Huawei including the arrest of CFO Meng Wanzhou is intent upon undermining China's strategic lead in 5G including Huawei's "All Bands Go to 5G."*

At Global Mobile Broadband Forum 2018, Huawei released the "All Bands Go to 5G" strategy for the evolution towards a 5G-oriented wireless target network. This strategy provides suggestions for future development of the wireless network in three key aspects: simplified site, simplified network, and automation.

*China is not only the largest producer of cellphones Worldwide, it is a leader in wireless technology. According to an August 2018 report by Deloitte Consulting: "China is winning the race against the United States to build a faster nationwide wireless network that uses 5G technology"*

*The US dirty tricks campaign (supported by Canada) indelibly seeks to prevent China from taking the lead:*

Unless the U.S. moves more quickly, it will be at a major disadvantage when it comes to creating dominant new companies in the emerging space....

Accordingly, countries that adopt 5G first are expected to experience disproportionate gains in macroeconomic impact compared to those that lag," the report's authors said.

U.S. companies have been sounding the alarm over a purported race against China over 5G, perhaps playing to the fears and strategic desires of the Trump White House. ([Fortune](#), August 7, 2018)

*The following article reviews the evolution of 5G technology and China's role.*

Michel Chossudovsky, Global Research, 20 December 2018

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I. Global commercial use of 5G networks has now entered the fast lane. Massive wireless connectivity has become an inevitable trend.

Data traffic of global mobile broadband (MBB) increases rapidly. By H1 2018, the data of

usage (DOU) for a number of global operators has exceeded 10 GB, and that in certain Middle East regions has even reached 70 GB. Data traffic is becoming a necessity following air, water, and food in our daily lives. Releasing data traffic helps to promote positive MBB business cycle in the global wireless industry and ushers in a new era of traffic operation.

New connections based on wireless technologies rapidly develop and are realized among individuals, families, and industries. By October 2018, new fixed wireless access (FWA) services have been put into commercial use on about 230 networks. About 75 million families can now enjoy the benefits of FWA-based home broadband (HBB) services. In the future, the larger bandwidth capability of 5G will provide fiber-like HBB user experience and enable diverse home entertainment applications such as 4K/8K UHD video and AR/VR. At the same time, new IoT connections are becoming a new source of potential growth for operators. LTE NB-IoT is undergoing rapid development and has seen 58 commercial networks around the world, with industry applications providing millions of connections such as smart gas, water, white goods, firefighting, and electric vehicle tracking. 5G technologies will offer more reliable connection capabilities with shorter latency. Massive wireless connectivity has become an inevitable trend.

In 2018, the development of the global 5G industry is accelerating. According to the 5G spectrum report published by GSA, the UK, Spain, Latvia, Korea, and Ireland have officially released spectrum resources dedicated for 5G by August 2018. In addition, 35 countries have scheduled related plans. The 5G industry chain is steadily growing more and more mature. Huawei has released 5G commercial CPEs in 2018, and multiple 5G smartphones will be launched in 2019. According to the report released by GSMA in November 2018, 182 global operators are conducting tests on 5G technologies and 74 operators have announced plans for 5G commercial deployment. Global commercial use of 5G networks has now entered the fast lane.

5G development will enable more commercial application scenarios and promote the continuous development of a digital society. Under such circumstances, Huawei has proposed a new eMBB industry vision for Cloud X featuring smart terminals, broad pipes, and cloud applications. For example, Huawei has shifted the most complex processes of rendering, real-time computing, and service content to the cloud. Thanks to transmission data streams using large bandwidth and ultra-low latency on the 5G network, as well as encoding and decoding technologies that match the cloud and terminals, applications such as Cloud AR/VR can be deployed anywhere anytime.

In 1956, John McCarthy organized the Dartmouth Conference and officially proposed the definition of “artificial intelligence” (AI) for the first time. After 60 years, machine learning and deep learning are now undergoing rapid development. AI technologies can be adopted in the communication industry. AI-based automation of network planning, deployment, optimization, and service provisioning will enable network O&M to be simplified, unleash network potential, and make networks more intelligent.

II. “LTE Evolution+5G NR” is gaining industry’s consensus for 5G wireless target networks.

In the 5G era, wireless spectrum evolution is divided into two phases:

Phase 1: Sub-3 GHz spectrum resources evolve to LTE and 5G NR high frequency bands are introduced.

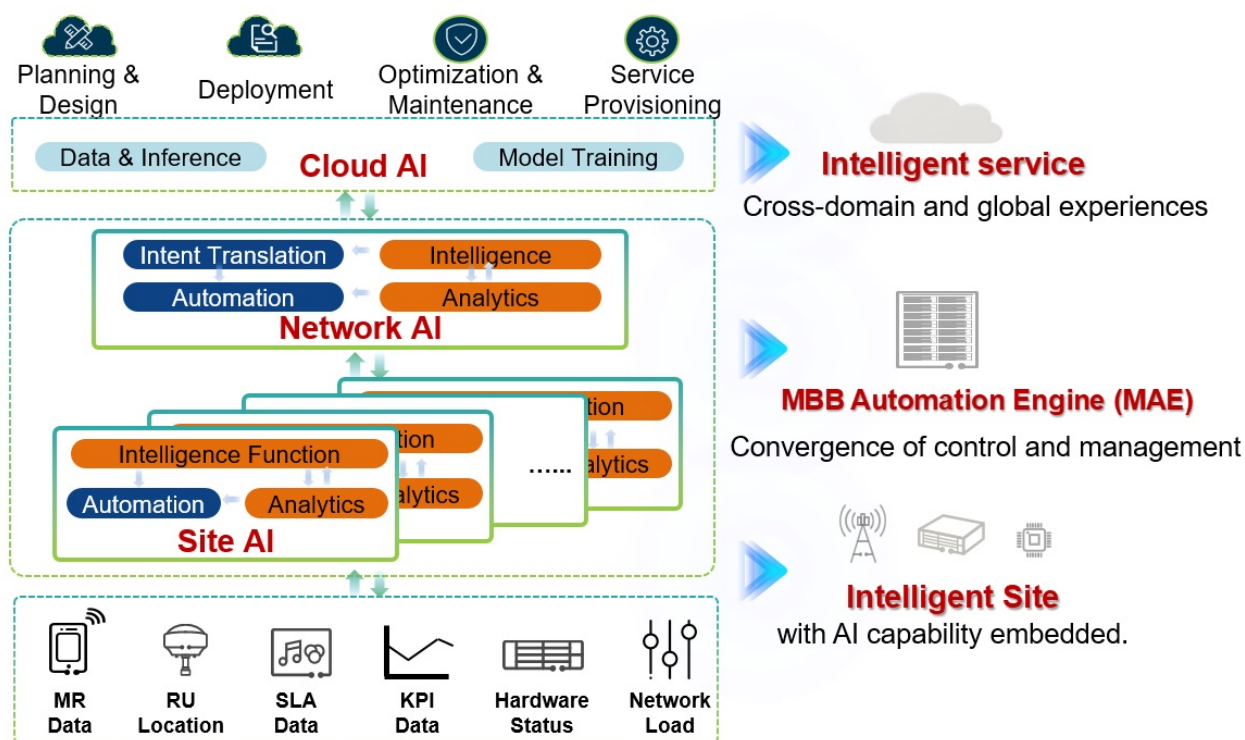
Phase 2: Sub-3 GHz spectrum resources evolve to 5G NR. “LTE Evo+NR” is realized on the target network.

Therefore, target network evolution in the 5G era can be summarized as “LTE Evolution+5G NR”. In the process of achieving this goal, the global wireless network faces the following challenges:

1. OPEX increases year by year. From 2005 to 2017, global operators’ OPEX/revenue percentage is increased from 62% to 75%. In the future, the coexistence of 2G, 3G, 4G, and 5G will increase the complexity of network O&M. In particular, site TCO is high. Site deployment still faces several issues such as difficult site acquisition, high engineering costs, and high site rentals.
2. 4G basic services fall back to 2G or 3G. Generally, insufficient 4G network coverage causes VoLTE services to fall back to 2G or 3G, deteriorating voice experience. NB-IoT/eMTC services also require better 4G network coverage. As a result, it is difficult for operators to shut down 2G and 3G networks. The coexistence of four RATs leads to more complex network operation and presents difficulties in reducing OPEX.

III. 5G-oriented simplified networks are built to effectively meet challenges and promote 5G business success.

Peter Zhou, CMO of Huawei Wireless Network Product Line, illustrated the evolution strategy for 5G-oriented wireless target network. This strategy aims to help operators resolve the preceding challenges and commercialize 5G. The evolution strategy includes three key aspects: simplified site, simplified network, and automation.



Source: Huawei

Simplified site enables full outdoor base stations and facilitates site acquisition, deployment, and TCO saving.

Along with the development of Moore's Law, the 7 nm technology has enjoyed widespread commercial adoption throughout the chip manufacturing industry, and BBUs are becoming more and more integrated. In recent years, lithium battery technology has seen rapid development, and the energy density of lithium batteries is far more superior to that of lead-acid batteries. The development of new technologies makes full outdoor wireless base stations a reality. Peter Zhou pointed out, "Using componentized outdoor BBUs, blade power modules, and blade batteries, full outdoor macro base stations can be deployed on poles without shelters or cabinets. This greatly reduces the upgrade cost of existing sites, decreases the difficulty and cost of obtaining new sites, and helps operators reduce TCO by 30% and above."

Antenna reconstruction is required for 5G deployment on the C-band. Currently, 70% urban sites cannot deploy new antennas due to insufficient antenna space. In order to resolve this problem, Huawei proposes the "1+1" antenna solution. That is, one multi-band antenna is used to support all sub-3 GHz bands, and one Massive MIMO AAU is used to support C-band NR. In total, two antennas are able to support all operator's frequency bands. This solution greatly simplifies site space, reduces site OPEX, and realizes 5G NR deployment with insufficient antenna space.

Simplified network realizes the construction of an LTE full-service foundation network and ensures "Zero Fallback" for three basic services.

In the 5G era, the coexistence of multiple RATs (2G/3G/4G/5G) results in complex networks and high O&M costs. Therefore, basic voice, IoT, and data services need to be migrated to the LTE network so that the LTE network becomes the bearer network for basic services and 2G and 3G networks enter the life cycle development phase. Peter Zhou emphasized that, "The LTE network needs to be built as a full-service foundation network to achieve 'Zero Fallback' for basic services such as voice, IoT, and data. Therefore, LTE must be planned based on the coverage of basic services rather than the traditional population coverage."

Aiming to help operators achieve the goal of "Zero Fallback" for three basic services, Huawei has launched the innovative CloudAIR solution to implement cost-efficient and fast LTE coverage on low frequency bands. About 100 networks have deployed CloudAIR. Additionally, Huawei's innovative RuralStar solution designed for suburban and rural areas effectively satisfies operators' requirements for low-cost MBB networks, further bridging the digital divide, and allowing more people to enjoy the convenience brought by wireless communications and MBB. RuralStar has been put into commercial use on 35 networks across the world.

AI-based automation is implemented for customers' work flows to fully unleash network potential.

In the past few years, telecom networks have made many attempts in O&M automation. However, automation for all scenarios and all service processes requires systematic thinking and innovation in terms of architecture and key technologies. Peter Zhou claimed that, "The architecture of AI-based MBB network automation consists of three layers: Cloud AI, network AI, and site AI. Hierarchical automation is performed among these layers. Site AI focuses on single-site automation and embeds AI capabilities into site devices to build smart base stations. Network AI focuses on O&M closed loop and single-domain automation to implement unified management and control in a single domain. Cloud AI provides smart model training, enables cross-domain automation, and supports automatic closed-loop

operation for all scenarios and the entire life cycle covering planning & design, deployment, optimization & maintenance, and service provisioning.”

Based on the preceding architecture, two shifts and one capability building need to be completed to enable risk prediction and intelligent identification on networks and automated management and control of mobile networks.

A shift from network element-centric O&M to scenario-centric O&M: In the past, automation mainly focuses on network element O&M. In comparison, AI-based automaton provides functions based on customers’ operation scenarios to implement full-process automation (covering planning & design, deployment, optimization & maintenance, and service provisioning) and full-scenario automation.

A shift from network management to the convergence of control and management: If network management and control cannot be fully converged, configuration management as well as performance monitoring and control cannot effectively form a closed loop. In the future, MAE (Mobile Automation Engine) will implement management and control convergence, effectively handle all tasks in a single domain, and realize single-domain automation.

Building the AI capability at sites: Based on the AI chipset and neural network algorithm, AI capability is implemented in base stations to support automatic feature deployment, performance monitoring, and parameter self-optimization and realize single-site automation.

Peter Zhou said:

“Simplified site, simplified network, and automation help operators reduce TCO, simplify the network architecture, reduce operation costs, and fully unleash the network potential. This lays a solid foundation for the successful commercial use of 5G networks and helps the industry to identify the goal and direction for future network evolution. Huawei also wishes to work more closely with industry partners to innovate continuously, build a 5G business ecosystem, and finally achieve a better connected digital society.”

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