

An Overview of 5G Preparations

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Abstract - Fifth Generation networks (5G) is not just another radio technology, its uptake opens the opportunities for Mobile Network Operators to drive a transformation of the mobile industry. With the advancement of complementary technologies in the same time frame, the scale of industrial transformation is expected to be high, with many leading thinkers describing it as the fourth industrial revolution. 5G is central to this, acting as the catalyst for the fusion of technologies such as Artificial Intelligence, robotics, 3D-printing, and Internet of Things (IoT). In this paper, tried to assess the best ways of preparation for 5G by getting industry insight through expert's views and describe the best strategy for successful launch in Mobile Operators.

Keywords - Internet of Things (IOT), Mobile Network Operators (MNO), Mobile Broadband, Business to Business (B2B), Business to Consumer (B2C), Machine to Machine (M2M), Return on Investment (ROI).

I. INTRODUCTION

What is 5G? 5G is the term used to describe the next-generation of mobile networks beyond the 4G LTE mobile networks of today. As of mid-2016, there was no standard so the definition is still very fluid. It is assumed that 5G networks will not become commercially available until the 2020 timeframe.

The International Telecommunications Union (ITU) will be the standards body that releases the final standard, which is also being referred to as International Mobile Telecommunications (IMT)-2020. The 3GPP is the mobile industry standards body that will submit a proposed specification to the ITU to be part of the IMT-2020 standard. Mobile operators and vendors all participate in the 3GPP specification process. The vision of 5G is becoming clearer as we move closer to 2020. Most experts say 5G will feature network speeds that are blazingly fast at 20 G/bps or higher and have a latency that is mere milliseconds. Not only will people be connected to each other but so will machines, automobiles, city infrastructure, public safety and more.

- 5G networks are also expected to have always-on capabilities and be energy efficient, all of which will likely require new protocols and access technologies.
- Although 5G is not expected to reach the British market until 2020, several companies have already started investing to prepare ahead for the new wireless mobile standard, and trial 5G networks are already being set up in other corners of the world.
- 5G stands for the fifth generation of the next wireless mobile standard.
- According to the Next Generation Mobile Network's 5G white paper, 5G connections must be based on 'user experience, system performance, enhanced services, business models and management & operations'.
- The 5G New Radio (NR) specification was released by standards body 3GPP in late 2017 - and chips are already being built '5G-ready'.
- And according to the Group Special Mobile Association (GSMA) to qualify for a 5G a connection should meet most of these eight criteria:

A. Advantages:

- Like all the previous generations, 5G will be significantly faster than its predecessor 4G.
- This should allow for higher productivity across all capable devices with a theoretical download speed of 10,000 Mbps.
- "Current 4G mobile standards have the potential to provide 100s of Mbps. 5G offers to take that into multi-gigabits per second, giving rise to the 'Gigabit Smartphone' and hopefully a slew of innovative services and applications that truly need the type of connectivity that only 5G can offer," says Paul Gainham, senior director, SP Marketing EMEA at Juniper Networks.

- Plus, with greater bandwidth come faster download speeds and the ability to run more complex mobile internet apps.
- B. Disadvantages*
- However, 5G will cost more to implement and while the newest mobile phones will probably have it integrated, other handsets could be deemed out of date.
 - A reliable, wireless internet connection can depend on the number of devices connected to one channel. With the addition of 5G to the wireless spectrum, this could put us at risk of overcrowding the frequency range.
 - The problems with 4G and even 3G aren't exactly filling us with the hope of an immediate super fast connection.
 - For a long time (and still even now) certain handsets and areas of the UK don't support or can access 4G connections, so the rollout for 5G is likely to be very patchy.

II. APPLICATIONS

A. High-speed mobile network

- 5G will revolutionize the mobile experience with supercharged wireless network, which can support up to 10 to 20 GBPS of data download speed. It is equivalent to a fiber optic Internet connection accessed wirelessly. Compared to conventional mobile transmission technologies, voice and high-speed data can be simultaneously transferred efficiently in 5G.
- Low latency is one of the most important features of 5G technology which is significant for autonomous driving and mission critical applications. 5G networks are capable of latency less than a millisecond.

B. Entertainment and multimedia

- Analysts found that 55 percentage of mobile Internet traffic has been used for video downloads globally in 2015. This trend will increase in future and high definition video streaming will be common in future.
- 5G will offer a high definition virtual world on your mobile phone. High speed streaming of 4K videos only takes few seconds and it can support crystal clear audio clarity.

C. Internet of Things – Connecting everything

- Internet of Things (IOT) is another broad area for development using supercharged 5G wireless network. Internet of Things will connect every objects, appliances, sensors, devices and applications into Internet.
- IOT applications will collect huge amount of data from millions of devices and sensors. It requires an efficient network for data collection, processing, transmission, control and real-time analytics. 5G technology will power wide range of future industries from retail to education, transportation to entertainment and smart homes to healthcare. It will make mobile more essential than it is today. What are the applications of 5G technology?
- Researchers predict the global, social and economic impact of 5G, which will benefit entire economies and society. It is expected to produce trillions of worth revenue in coming years.

III. CONCLUSION

The 5G technology is going to be a new revolution in wireless systems market. As data traffic has tremendous growth potential, less than 4G existing voice centric telecom hierarchies will be moving flat IP architecture where, base stations will be directly connected to media gateways. 5G will promote concept of Super Core, where all the network operators will be connected one single core and have one single infrastructure, regardless of their access technologies. 5G will bring evaluation of active infra sharing and managed services and eventually all existing network operators will be MVNOs (Mobile virtual network operators).

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