ARE WE READY FOR 5G?

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Introduction

Courtesy of: nokia.com

Most of the people are still baffled by 5G. With the fuss triggered by Trump and Huawei, all of sudden we are told about the awareness of the national security issue. We evolved from 1G to 4G over the past thirty years without any concerns, but all of a sudden everything seemed to be very sensitive.

The latest we read that the US government has auctioned the wireless airwaves which is also known as the midrange spectrum rights, which can cover the bandwidth of its fifth-generation wireless service. The Federation Communication Commission started the auction in December 2020 and racked up a record $81 billion in bids.

We were told that Verizon Communications secured more than half of the wireless airwaves and paid $45.5 billion for the rights. It was followed by AT&T who bid $23.4 billion and T-Mobile for $9.3 billion.

The wireless companies are preparing their electromagnetic spectrum to keep up with their customers' growing demand for music, video and software streamed to their smartphones. Any shortage of the asset can degrade their service and put the carrier to a competitive disadvantage.

The most asked questions for the 5G are as the following:

Speed - 5G's biggest selling point is its speed. It achieves that speed by using a biggest chunk of the radio spectrum which the phones use it to transmit signals. For the download of a full length movie, you can compare 15 seconds on 5G than six minutes on 4G.

It is not just about internet bandwidth, but it has also quicker reflexes. The technology eliminates latency and trims the milliseconds spent processing information. This allows machines like drones and virtual-reality goggles work more efficiently and handle more time-sensitive tasks.

The 5G signals use higher frequencies that can handle more data but will require hundreds of thousands of antennas on street lamp posts and telephone poles.

Service Status - 5G network started in early 2019 and they are now in several countries, although their availability is still limited. The early entrants, South Korea launched a national network in 2019. China claimed to have 5G services in many major cities.

In the US, AT&T, Verizon and T-Mobile have networks in place, but are still setting them up outside of the urban areas.

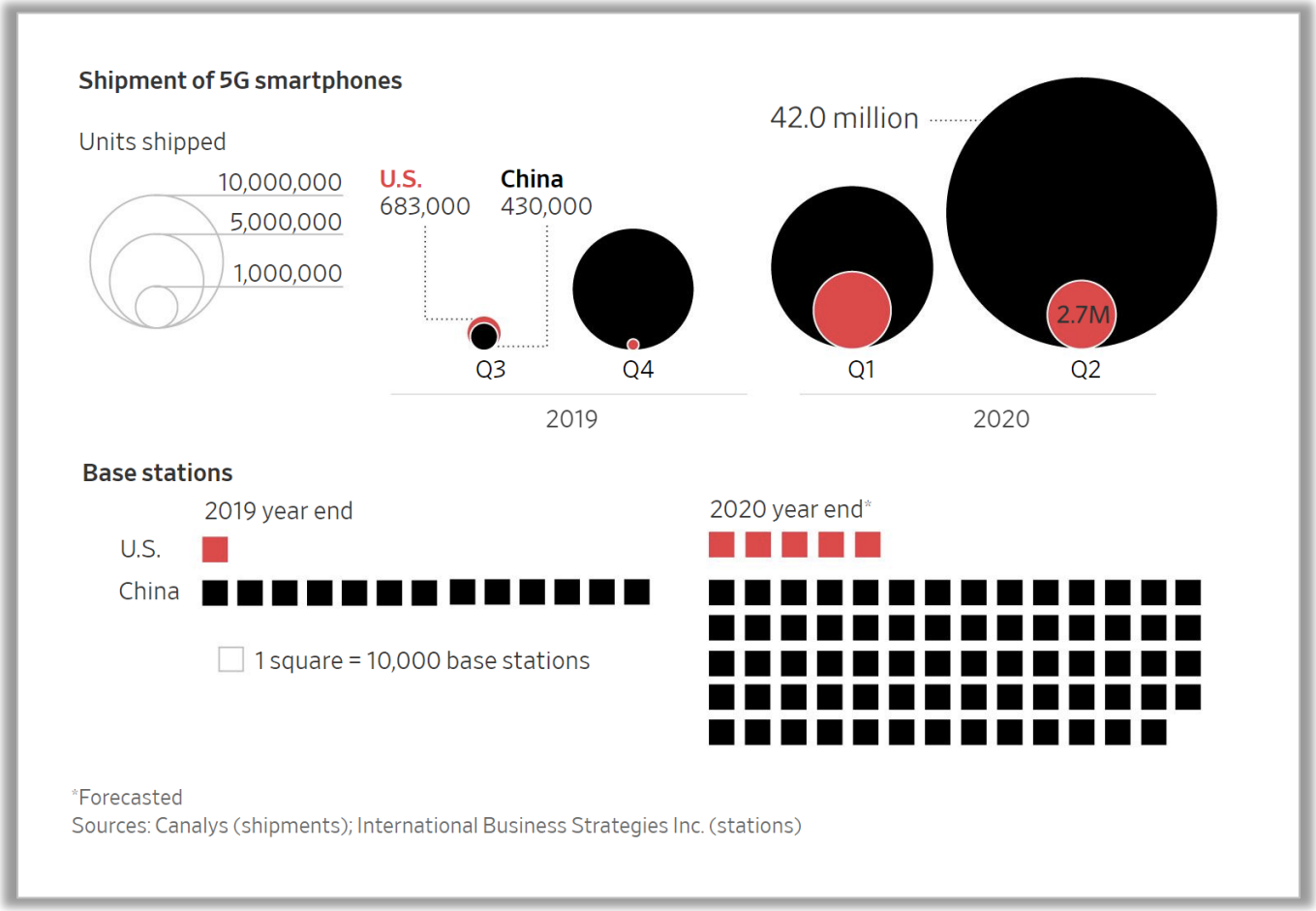
Samsung, the Android phone maker started selling 5G-capable phones already in 2019. Apple has just launched its first 5G phone in October, 2020.

Cost of 5G Handheld - It is known that the consumers would need the 5G phone to connect to the new network. The premium models from Samsung and Apple often cost more than $1,000 but there are lower priced models. For instance the iPhone 12 sells for $699, Samsung's Galaxy 20 5G for about $700, and in some Asian countries there are already the 5G-capable Android phones that can go as low as $300 for instance.

4G's Longevity - 4G service is still widely used and today's apps don't need 5G speed to work smoothly. The carriers won't want to risk all their subscribers to ask them to switch to the newer network technology. All 5G phones on the market support both systems.

Most of the shopping apps and the social-media apps won't act differently with the 5G connection. The 5G lightning-fast speed would create better experience with niche tech products from virtual-realty headsets to augmented-realty glasses. The AR and VR devices will play a larger role in gaming.

The Controversy of 5G



Courtesy of: wsj.com/articles/u-s-vs-china-in-5g-the-battle-isnt-even-close_Nov. 11, 2020

Telecom-industry leaders expect the 5G network to take the management of power-grids, oil refineries, and factories that can switch to wireless control, in some cases remotely, instead of the hard-wired connections.

That is without wire connectivity to the machines and this can become very venerable to hacking if the new networks are insecure.

In this arena of 5G, China is more advance with its 5G-network rollout, and by this year's end it will have 690,000 5G base stations—boxes that blast 5G signals to consumers up and running in its country. In the US, it is about 50,000 only.

Earlier on, China was aggressively building the base stations everywhere it is going. Like everything else, China has discounted deeply this technology and has been driving the main competitor, the Swedish Ericsson, out of most of the biddings. Later, it was exposed about the "back door" that put the western countries off the deal with China. Furthermore, the trade war with the US from the last administration, the 5G is one of the important issues that it cuts off the supply of the semiconductors to Huawei, the biggest player of China, and makes it almost paralyzed.

China is taking the 5G as its national champion, and its two big telecom equipment vendors, Huawei and ZTE, have the largest share of its market. But its network Is still only 8% of its population, and yet it is still ahead of the US. Take for instance Verizon's 5G coverage is only 1% of the US population.

New Potentials for 5G

Using 5G network to replace the using of Wi-Fi—fiber-optic cables and specialized radio signals, to create the wireless infrastructure. This is possible by using the environmental sensors for wireless connection. But this will require the closely planted cell tower, within a few hundred yards, to beam broadband wirelessly.

5G in Europe

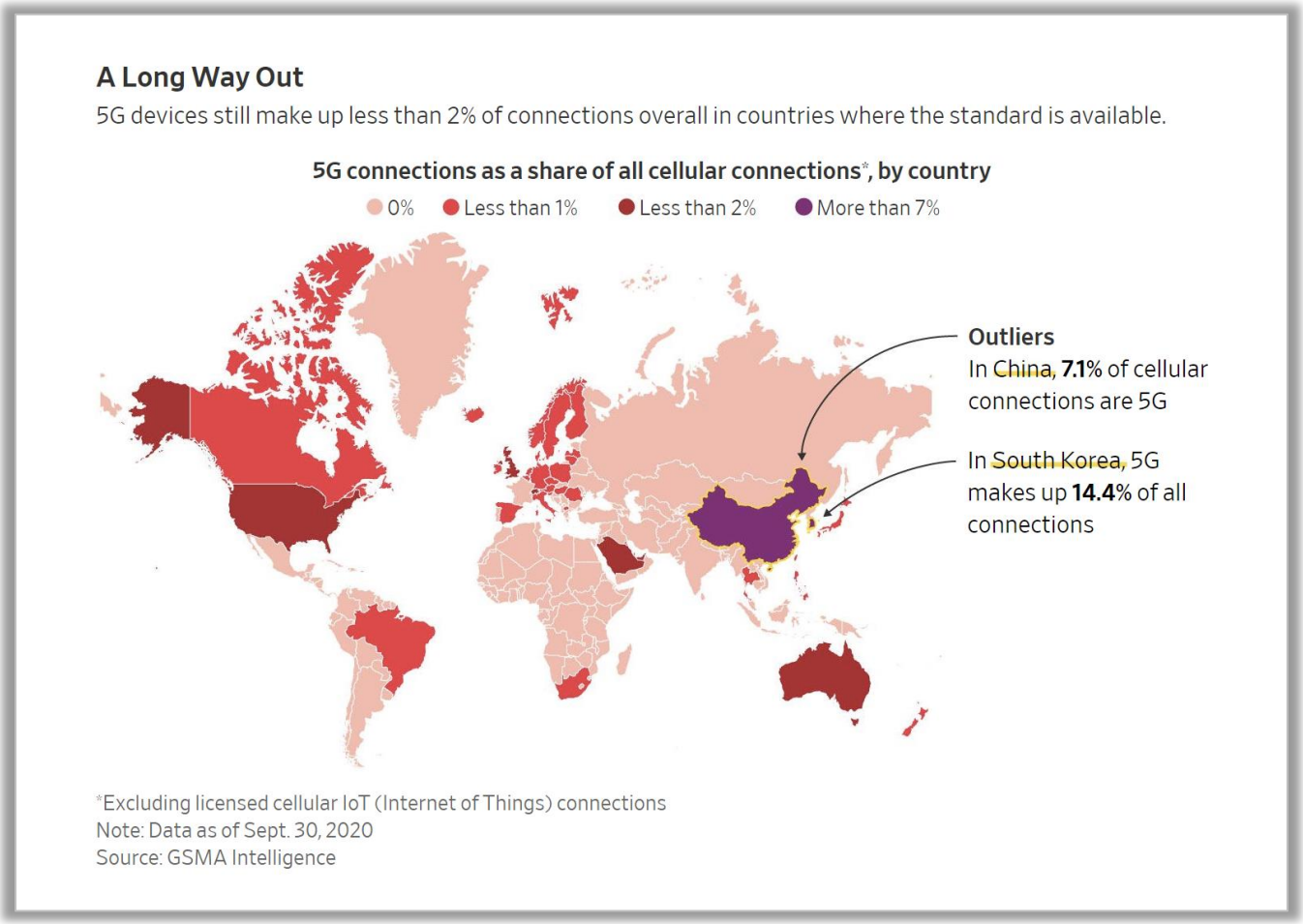
As the end of September 2020, the UK and 17 of the European Union's 27-member countries had launched 5G service. The exceptions included France and Portugal. But the UK said that plans to develop its network will delay two to three years, after they have stopped buying Huawei's 5G equipment and have them removed because of concerns over the national security.

Post-5G Technology

Courtesy of: www.itu.int

Each generation is about ten years and already in 2018, the International Telecommunication Union, a United Nations agency that coordinates global wireless standard already began an initiative to identify and reach the post-5G technologies that are expected to emerge in 2030 and beyond. Players like the US and China are vying their preferences on the list. The standard for 6G can be referring to the speed of 100 gigabits per second, or 10 times faster than 5G.

Are we Ready for 5G?



Courtesy of: wsj.com/articles/everything-you-need-to-know-about-5g Nov. 10, 2020

Back to our first question that if it is necessary for us to switch to 5G with most of us still holding to our 4G technology. We are told that our 4G will keep working for a long time and its service is still widely available. Those carriers would not risk losing older phone users until most of their users have switched to newer network technology.

So that we know, AT&T didn't switch off its 2G network until 2017, even though the 2G network was launched in the early 1990s.

In 2005, when 3G was first introduced, it was a far cry from what many considered as a satisfied experience with the 2G. The 3G service enabled users at that time to tap the internet via cellular networks at speeds comparable with the wired Web connections. It began with the large cities and the 3G was making internet available virtually anywhere where one can get a cellular signal, allowing smaller devices became available to Web browsing capabilities. Cellphones were not just a phone but a device with Web access.

Someday we will look back when 5G will be extensively used and when all the optical-fiber cables replace with broadband beamed wirelessly.