9 Ways 5G Will and Won't Impact the Future

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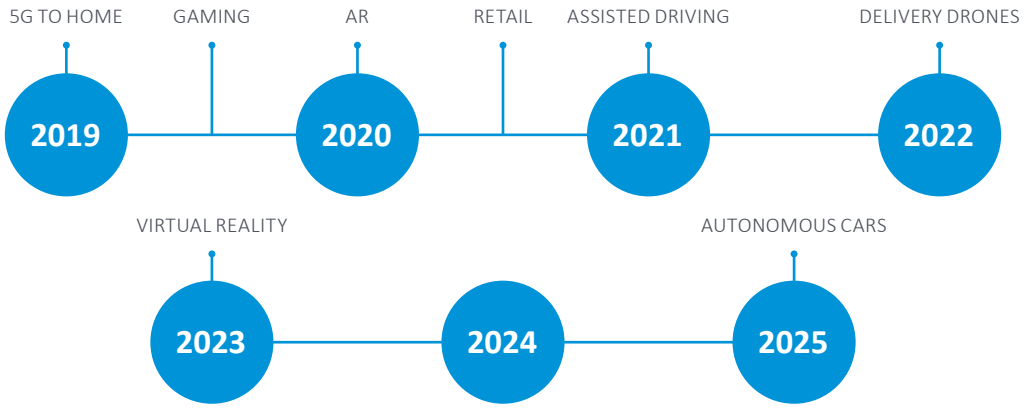
MWC Barcelona 2019 is fast approaching. It's a safe bet that many of the conversations there will revolve around 5G and how the network's faster speeds and lower latency will revolutionize the mobile industry…again. And it may, indeed it should, do just that. But when pushed to pick realistic new developments that could come as a result, many of the most enthusiastic proponents become somewhat evasive. Rather than listing out their predictions, the safe bet is to say that it's too soon to guess what the new innovations will be, just as no one could have predicted Uber in a 3G world.

Maybe so, but each "G" iteration comes with its own unique values that can certainly be used to make some healthy guesses. 1G brought us voice, 2G messaging, 3G the Web, and 4G, of course, unleashed video. So what about 5G? Here are some of our predictions for what it will—and won't—do, based on the fact and hyperbole that we've been hearing.



1 Fixed 5G to the home has huge potential

While we do not believe every consumer electronic product will need a cellular connection, we do anticipate fixed 5G to the home will be a strong growth area. AT&T is already pushing this concept as a means of testing out 5G technologies. Fixed 5G will provide a strong alternative to wired broadband to the home, allowing the carriers to quickly expand their ability to provide the all-important connection to the consumer's home.

As these carriers look to gain more consumer wallet share—and deliver content—the ability to provide the actual pipe to the home is highly appealing. Further, it will allow the carriers to target more rural markets that have little to no competition for broadband. We can expect to see bundled offers for a combination of fixed home and mobile services to further drive the appeal of each carrier's solution.

Timing: Now

AT&T and Verizon are already pushing 5G to-the-home services, and we can expect the other carriers to follow suit shortly. The carriers all need to drive additional revenue and connections for 5G and, simply put, the to-the-home service is the lowest possible hanging fruit. Add to this the carriers' desire to morph into entertainment companies and the benefit of controlling the pipe to the home becomes even clearer.

2 Gaming will be hot

Games have always been pivotal to the success of smartphones. Indeed, nearly all smartphone owners play casual games each month. But the mobile network's latency has always been a limiting factor in taking games to the next obvious level of multiplayer action. 5G should solve that, and several companies are already working on more comprehensive streaming game playing solutions (the so-called "Netflix of gaming"). Microsoft and Sony are both pushing this market, as they each have the installed bases (Xbox and PlayStation), but the more interesting push will come from mobile carriers.

For a mobile carrier, a strong gaming solution will provide an effective churn reduction tool: once a consumer is hooked on multiplayer games, they are less likely to churn away from the carrier—and their friends may look to join the carrier to participate in the same environment. In that respect, we should think of it less as the "Netflix of…" and more like the "FaceTime of…" as each gaming solution will be tied to a mobile carrier.

Such a solution will also help to drive innovation in smartphones, finally driving potential demand for gaming-oriented smartphones. This will be good news for niche players such as Razer, but will also be an area of potential differentiation for the larger OEMs. With the advent of 5G and these gaming solutions, expect to see more smartphone marketing focused on superior game playing specs, rather than today's single-minded focus on the camera.

Timing: 2019-2020

The gaming network concept is both a sprint and a marathon. We can expect to see the first of these subscription services roll out this year in a bid to gain early mindshare with the consumer. However, the multiplayer (action) games that require the best networks will need to rely on Wi-Fi connections for the next year or so as 5G deploys. This gives carriers and smartphone OEMs great marketing potential for "gaming ready" devices/networks with 5G products and services.

3 Augmented Reality will be a game changer

The case for augmented reality (AR) is far stronger than for VR. As its name suggests, AR is far less immersive than VR, but it has struggled to gain traction as the headsets remain a little bulky and less than aesthetically pleasing. As with VR's potential, when the processing can all be offloaded to the cloud, AR's form factor will be reduced. This means AR will be able to be integrated into standard-looking glasses and could potentially replace the smartphone in many cases, supporting calls and data feeds straight into the glass.

And this functionality will not be limited to glasses; helmets, such as the motorcycle helmet we discussed in Born to be Wired, can also benefit from a direct data feed rather than requiring a smartphone connection. Additionally, we expect to see more AR capabilities on the smartphone itself. AR does not necessarily require a headset to be an effective solution. Indeed, we should expect smartphone AR solutions to drive the initial market, which will, in turn, help justify the need for new glass-based solutions.

Of course, the key to true success in this market area will be the development of new AR functionality. The solution should not simply be smartphone functionality crammed into glasses. Rather, the AR solution needs to provide additional value, such as the ability to recognize objects around us – buildings, people, and so forth. But for this to occur, the glasses need to include a camera, which adds to the bulk and battery drain, as well as raising privacy concerns. As such, it will be a few years of baby steps before AR truly matches its potential.

Timing: 2020-2021

In many respects, AR already exists. Nokia introduced smartphone-based AR functionality in 2012 with its City Lens solution. More recently, retailers such as Ikea and Target have dabbled in the space with the ability to view furniture within your home. As such, we are bullish on AR's future and expect to see more compelling solutions next year, with a stronger range of headsets by 2021. It should be noted that motorcycle and ski helmets are already in production and are likely to lead the way to an AR future.

4 Retailers don't need 5G to revolutionize the in-store experience

The retail market has failed to make the most of the smartphone-toting consumer to date. There has been an opportunity to leverage AR solutions within the store (using the smartphone rather than AR-specific hardware) that has seen few useful applications. Will 5G help? Perhaps, but the driver is less from the 5G technology and more from retailers building stronger, more innovative apps.

For example, using simple barcode technology today, stores could pull up tutorials and related advice on any product on the shelf that would be of benefit to the shopper. Think of a consumer perusing streaming media products, such as Roku. An app could highlight how to connect the device, the peripherals (such as cables) needed to make all the connections, and other related "tutorial" information. This would vastly improve the consumer experience, but to be clear, none of this requires a 5G connection.

Where 5G will, potentially, help is with the AR future that we discussed earlier. The 5G functionality will enable the consumer's glasses more so than the retailer solution, but with the faster, lower latency network, retailers will have the opportunity to be more innovative in developing in-store experiences with AR. Of course, for this to be successful, AR glasses need to hit the mainstream. Until then, retailers should be developing plans for better in-store presence and looking to leverage more of the smartphone-based functionality, as a starting point.

Timing: 2021 – 2022

We would be shocked if leading retailers were not already working on AR-related strategies to improve the in-store consumer experience. Having said that, we've put the expected rollout date a year away as we anticipate 2019-2020 will see early(ish) experimentation, with broader deployments in 2021. After that, the maturity of the solutions will depend on key technology advances, such as 5G deployment and greater adoption of AR in the mainstream.

5 Drones and delivery robots will move beyond the experimental phase

The concept of drones as a retail delivery mechanism has been around for a few years now, but while retailers have experimented with the concept, the market has yet to see a full deployment. Early examples of this experimentation include Amazon with drones, as well as pizza delivery with traveling robots. (Domino's started testing this concept in Europe mid-2017.)

5G wireless technology is key for these delivery solutions, particularly drones, to move from the experimental phase to a broader trial to ensure the delivery solution can be effectively controlled remotely. As with cars, these autonomous delivery solutions require lower latency to ensure they can avoid obstacles and arrive where—and when—they are supposed to. And clearly, it's not just delivery solutions: a 5G network can better support myriad drone solutions for remote monitoring, such as railroads, electrical over-head cables, farming, and so on.

Timing: 2022-2023

There is a broad range of trials already underway for both drones and delivery robots. The key challenge in this space that may impact timing is most likely a regulatory one: robots on the sidewalk and drones in your front garden can have a major impact on the walkways and skies that will need some very thoughtful guidelines. Easier solutions relate to the examples of crop management and railroads, where the drones or other automations will be on privately owned land.

6 Virtual Reality could be significant

Virtual reality (VR) solutions have thus far failed to ignite the imagination of the mainstream consumer. After a flurry of initial interest (primarily driven by the basic VR headsets that you attached to your smartphone), the market has struggled somewhat. One of the core problems has been that the "real" headsets that provide a better VR (or mixed reality) solution, compared to the smartphone-based ones, need a lot of processing. That requires the headset either being physically attached to a powerful PC, or being rather bulky, with lots of processing power in the device.

5G, and the edge computing approach it will bring, means more of the VR power can be offloaded into a cloud-based solution. Ultimately, this means the headset could become more of a "screen" that receives a stream of data from the cloud. The net result will be much lighter and more usable headsets.

So why are we only cautiously optimistic about the VR opportunity? Simply put, there are still many hurdles to overcome with VR, such as better-quality content and—far more importantly—the social issues. Many consumers do not want to be fully immersed in a VR world and would prefer to be cognizant of the world around them. A case in point is watching video. The current, basic, VR headsets offer a fairly impressive Netflix solution allowing consumers to feel like they are in a movie theater watching a big screen, all while just using a smartphone (having downloaded the movie, typically) and a headset. Surely this is an ideal solution for viewing movies on airplanes, rather than staring at the tiny screen in front? And yet, when was the last time you saw someone toting a VR headset on a plane?

Timing: 2023-2025

While we remain cautious about VR's potential in the consumer market, it's a cautiousness tinged with optimism. VR will become a growth market, but it always suffers from an abundance of industry over-enthusiasm that all too often leads to misguided projections. We're taking a more cautious approach: the technology needs 5G to break free of heavier, corded headsets. That requirement alone places it at least two to three years out. Further, we expect much of the early PR noise on VR will come from carriers looking for a strong use case for 5G. Add to that the need for a more refined perspective on what the technology will be good for (in the consumer space), and the need for far stronger VR "worlds," and we realistically believe this will be a four-to five-year opportunity. However, there is a caveat: we do expect to see more VR functionality enter the commercial space prior to that—just not strong consumer VR solutions outside of the gaming space.

7 5G will drive autonomous vehicles forward

The combination of lower latency and edge computing are fundamental to the success of autonomous vehicles in the long term. These vehicles require a rapid influx of data (and plenty of processing power) to successfully navigate around each other. Additionally, the ability for cars to communicate with each other is key to congestion control, collision avoidance, and myriad other issues.

Just as important as 5G's edge processing and bandwidth is the mesh-like capabilities that come with some of the new 5G chipsets. This means the car will not just rely on the 5G cellular connection to receive data, but also that it can communicate with other cars (with the same technology in them), traffic lights, and other devices to ensure a smoother ride in rural and urban areas. Of course, for this to really be useful, there's an assumption that most cars on the road will include the functionality. As a result, while we do believe 5G is a major step forward for self-driving cars, the timeline for this advancement is certainly longer than with some other 5G uses—at least five years out.

The advent of 5G will also improve more consumer-focused innovations in the car, such as AR solutions and entertainment options. The latter includes gaming (see earlier) as well as more interactive services that can leverage the passing scenery as part of a new entertainment experience. (Think of a more advanced iteration of Pokémon Go.)

But there is a middle-phase, before we get to Level 5 autonomous driving. 5G will certainly accelerate the development of assisted driving solutions, where the car contains more intelligence, but still requires the driver to be aware of the road. In this case, through the advanced chipsets, 5G will enable cars to understand and communicate with other vehicles and traffic-related objects, traffic lights, etc.

Timing 2025-2030

Realistically, and despite what some car manufacturers may claim, Level 5 autonomous driving will not be available until 2025. Having said that, we can expect to see a steady stream of enhancements over the next few years, as car manufacturers continue to race towards the ultimate goal. 5G wireless will be a key component in that momentum, so we should expect to see 5G-related announcements starting in mid-2020.

8 5G for everything will not happen

One of the more popular theories is that, with 5G, everything (especially home automation products) will have a cellular connection. That is highly unlikely to happen for a couple of reasons. Firstly, adding a cellular modem into each device is expensive. Secondly, the service plan pricing for each device will make this a cost-prohibitive solution. Rather, we can expect WiFi (and to a lesser extent, Bluetooth, Zigbee, and so on) to remain the dominant solution for consumer electronics and related technologies.

Of course, there will be exceptions, and there are certainly some products that will benefit from a cellular option. Security cameras, such as Nest cameras, for example, could come with a cellular option that would allow the camera to be placed further from the home base. But while the lower latency is certainly an improvement for this type of solution, there is nothing fundamental about 5G that significantly increases the appeal of such a solution over 4G options such as the Arlo Go, which currently supports LTE. Indeed, home security as a general rule should benefit from a cellular backup service to ensure the security solutions keep running in the event of a power outage or broadband disconnect. But again, this does not require 5G; the current 4G services are suitable.

Timing: 2025+

We're not big believers in the 5G-for-everything mantra. As such, we've placed the timing as 2025, less because we expect this development to happen by that date, and more because it's worth re-evaluating the potential in six years' time.

9 Greater mobility for laptops is unlikely to evolve with 5G

The goal of a truly portable, connected laptop and related devices has proven to be a challenge over the last decade or so. (Think back to Netbooks in 2008 and tablets more recently.) But it's a vision of the future that the carriers will come back to once again with 5G. Of course, there's a significant driver for the carriers, which hope to increase the total number of connections per consumer, particularly as overall cellular-connected tablet connections continue to slide.

The challenge has always been that consumers dabble with the concept, but do not remain loyal to the concept in the longer term. Does 5G solve this problem? It's unlikely. Cellular speeds for laptops are already very good with 4G technology, and while 5G brings improved latency, consumers are unlikely to be swayed by the change. After all, a paid cellular connection has to compete against almost-ubiquitous free WiFi which, while often of questionable quality in the case of public WiFi, is often good enough for consumer needs.

Timing: 2020-2021

We can expect to see a resurgence of connected PCs emerge in the next 12 to 24 months as all-in-ones, Chromebooks, and others look to evolve to meet a perceived consumer need for always-connected usage. However, we remain unconvinced that improved hardware alone will help drive the consumer market forward. So while we are stating 2020-2021 for this move, the date really applies more to the hardware push, rather than consumer acceptance.

5G will drive connectivity—but only at the right price

Over the next five years and into the future, 5G will enable connectivity wherever consumers are, from their homes to their cars. It will propel innovation across mobile gaming, self-driving cars, in-store AR, drones, and more—but there's one caveat.

Many of the options and services that we've discussed above are highly dependent on how the carriers price 5G services. Take the cellular-connected PC for example: in theory, this should already be a strong use case with 4G (LTE), but the current pricing models make this option less appealing for many consumers who would like the convenience of always-on, but do not necessarily require it every day.

In other words, for 5G to really drive all of the above connectivity, there needs to be significant innovation in how a consumer is charged. AR glasses, for example, are less likely to be successful if the price per month is too high. The carrier that builds the next generation of pricing models is likely to be the most successful at pulling in consumers and the OEMs looking to add cellular connectivity to their devices.

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