

The Sprint to 5G

[Click here to view as PDF.](#)

“5G will have an impact similar to the introduction of electricity or the car, affecting entire economies and benefiting entire societies.”

–Qualcomm CEO STEVE MOLLENKOPF

The Sprint to 5G

Evolutions in telecom are like clockwork: once a decade something extremely important happens. In the 1980s, the first nationwide mobile network operators (MNOs) appeared (think AT&T and the predecessors to Verizon, Sprint and T-Mobile). In the 1990s, GSM (Global System for Mobile communications) rolled out as a standard that became like the Bible for the industry. At the turn of the century, 3G was the new rage and, about ten years after that, 4G/LTE opened the floodgates for transmitting large quantities of data.

As we rapidly approach the 2020s, another important progression in mobile broadband is underway: the rollout of 5G. The new technology has elicited various responses from business leaders, politicians, consumers and technologists. Some point to the opportunity ahead: faster data speeds, vast applications for the Internet of Things (IoT), and improved coverage in densely populated areas. While others question the economics of it, the applications for it, and the impact it will have on everyday life.

Whatever differences of opinion are out there, one thing is clear: the race to 5G has turned into a full-out sprint.

What is 5G and why should you care?

To take a step back, most devices (cell phones, tablets, computers, sensors, drones, etc.) currently use fourth-generation wireless technology to stay connected – also known as 4G or LTE. 5G, a set of standards still under development, is fifth-generation wireless technology that will allow devices to transmit data at higher speeds and with improved coverage in densely populated areas. To give one simplistic example of an application that is particularly near-and-dear to my heart, think about how hard it is to stay connected at a large sporting event with current wireless technology. Now, think about if you could go to that same sporting event but, instead of waiting minutes or longer for your social media image to post or video to upload, you could be streaming another sporting event live or pulling up anything you wanted on the internet in the blink of an eye. Voilà: you have 5G.

And, while the promises of 5G are potentially groundbreaking for everything from consumer devices, to autonomous vehicles, to augmented reality, to artificial reality, to healthcare monitors, 5G networks are very expensive to deploy because they require a dense construction of towers within a specific area, which demands significant capital expenditure. To make 5G a reality, consumers, companies and countries around the world will have to invest hundreds of billions of dollars to upgrade hardware, phones and networks. This will provide a tremendous opportunity for companies and countries leading the way in these efforts to reap huge economic benefits over the next decade – or longer.

Who's leading the race?

Recently, 5G has become a very topical issue, in large part due to its emergence in the political discourse. In December of 2018, the United States arrested the CFO of Huawei, China's largest telecom hardware provider, for committing fraud and helping evade sanctions against Iran. The news rattled markets and upped the ante in an already tense trade war with China. Since the arrest, the United States has been on the offensive, pressuring allies to ban Huawei from building out 5G networks on national security grounds.

More recently, President Trump made it clear that winning the race to 5G is a national imperative, tweeting the following in late February:

"I want 5G...technology in the United States as soon as possible. It is far more powerful, faster, and smarter than the current standard. American companies must step up their efforts, or get left behind. There is no reason that we should be lagging behind on something that is so obviously the future...We must always be the leader in everything we do, especially when it comes to the very exciting world of technology!"

The impetus for the arrest, the tweet, and even news from the Trump 2020 campaign about nationalizing 5G are clear: winning the race to broadly deploy 5G will have significant geopolitical and economic ramifications. Unfortunately, for anyone keeping score on how the United States has been doing up to this point, the data is pretty alarming.

Deloitte published the following in a report titled, "5G: The Chance to Lead for a Decade":

"Since 2015, China [has] outspent the United States by approximately \$24 billion in wireless communications infrastructure and built 350,000 new sites, while the United States [has] built fewer than 30,000. Looking forward, China's five-year economic plan specifies \$400 billion in 5G-related investment. Consequently, China and other countries may be creating a 5G tsunami, making it near impossible to catch up."

To emphasize this point, the below graphic illustrates just how far behind the United States is in the race to deploy 5G networks nationwide.

Image not found or type unknown

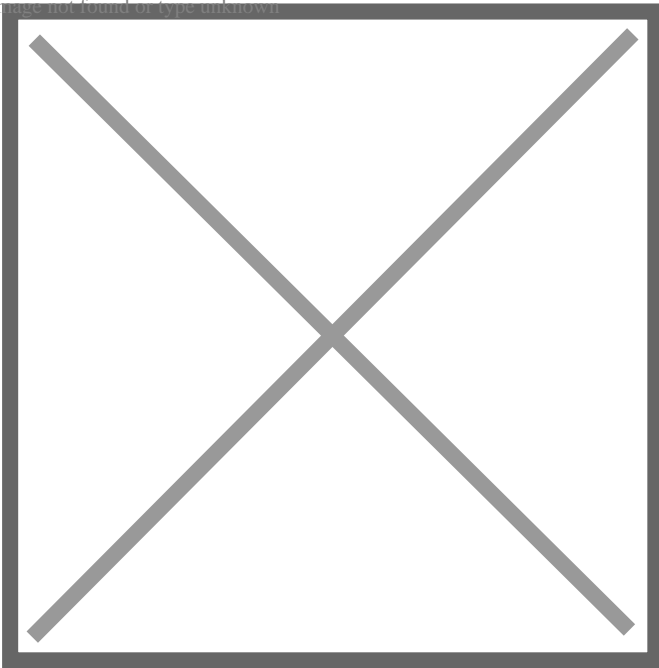
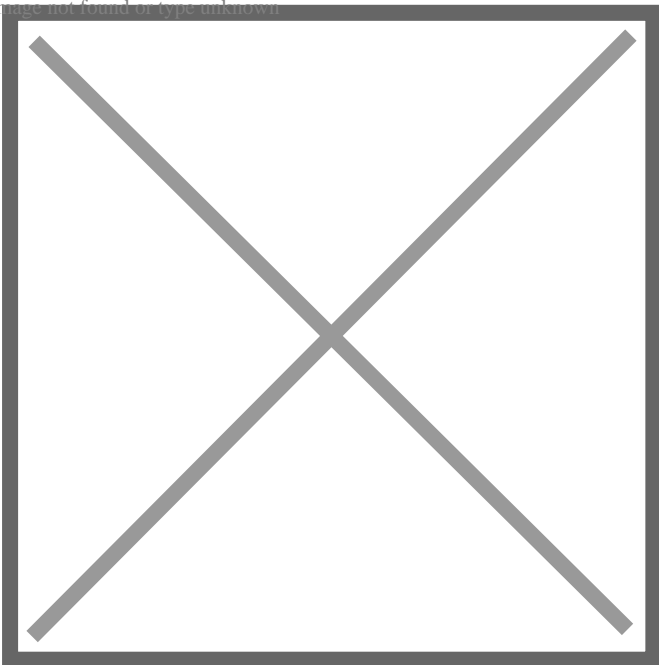


Image not found or type unknown



Source: Deloitte analysis in “5G: The Chance to Lead for a Decade”

Sprinting to the finish line

As 5G rolls out and becomes more widely available to consumers and businesses, early adopters will have a clear advantage over those using older generations of communications technology. In order to close the gap and ensure the United States has a fighting chance to emerge at the head of the pack, proponents from both sides of the aisle have thrown out the idea of nationalizing aspects of 5G deployment. While doing so would undoubtedly expedite the rollout of this technology to both urban and rural areas and eliminate friction in the network deployment process, it would also create several potential risks, chief among them disrupting the free-market principles that have been the hallmark of our business ecosystem for centuries.

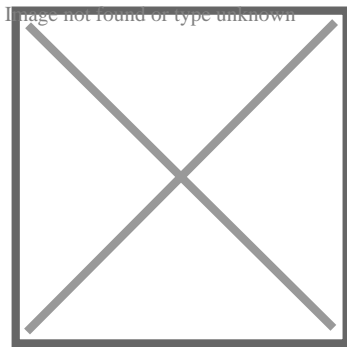
A more prudent approach to expedite the rollout of 5G is to inspire local, state, and federal

leadership to eliminate or reduce obstacles that lead to long deployment cycles. The same Deloitte report stated that:

“Cycle times for municipal permit approval can be greater than 120 days, forcing delays in consumer access to wireless capacity and inflicting significant costs on carriers. Many cities continue to use the same approval standards and processes for small cell equipment deployed at the top of an existing city lamp post as they would for deployment of a new 70-foot macro tower in the public right of way; an unsustainable solution if the United States aims to keep pace with other countries’ 5G deployment.”

Beyond reducing the amount of red tape out there, another way to ensure the uniform implementation of 5G nationwide is to offer carriers, telecom companies and investors incentives for spreading the technology to both rural and urban areas.

As carriers double-down on efforts to win the 5G race nationally, it will take a coordinated approach with local, state, and federal agencies to ensure that frictions are eliminated to win the 5G race globally. The world has reached an inflection point that will determine who leads the next decade of growth in tech and telecom sectors. It's important that the US emerge from the pack because the country that wins the sprint for 5G will have the most influence over the future of telecom standards – thus remaining in the proverbial driver's seat for decades to come.



Michael Johnston
Tech Contributor

About the Author

Michael Johnston is the co-founder of [Teal Communications](#), an IoT connectivity platform that also delivers hardware and software for private-LTE and 5G deployments. In addition to serving as an Evergreen employee, Michael also acts as a business consultant to a Fortune 50 technology company and serves as a strategic advisor to [Nodesmith](#). To contact Michael, send an email to mjohnston@evergreengavekal.com.

OUR CURRENT LIKES AND DISLIKES

No changes this week.

LIKE

- Large-cap growth (focus on lower P/E issues within this style; i.e., “growth at a reasonable

price”)

- Some international developed markets (especially Japan)
- Cash
- Publicly-traded pipeline partnerships (MLPs and other mid-stream energy securities) yielding 7%-15% (as a result of the continuing rally, do limited buying for now; however, the momentum is strong and long-term value remains)
- Gold-mining stocks (while near-term overbought, they may be on the brink of a powerful upside move)
- Gold
- Select blue chip oil stocks (still attractive despite their bounceback)
- One- to two-year Treasury notes
- Canadian dollar-denominated short-term bonds
- Short-term investment grade corporate bonds (1-2 year maturities)
- Emerging market bonds in local currency (start a dollar-cost-averaging process and be prepared to buy more on further weakness)
- Mexican stocks (after a sharp recovery, we are again trimming back on our REIT holdings)
- Large-cap value (there are still bargains in this style, but not nearly as many as there were two months ago)
- Intermediate municipal bonds with strong credit ratings
- Intermediate-term Treasury bonds (especially the five-year maturity)

NEUTRAL

- Most cyclical resource-based stocks (some are looking more attractive)
- Mid-cap growth
- Emerging stock markets; however, a number of Asian developing markets appear undervalued
- Canadian REITs
- Intermediate-term investment-grade corporate bonds, yielding approximately 4%
- US-based Real Estate Investment Trusts (REITs)
- Long-term investment grade corporate bonds
- Long-term municipal bonds
- Short euro ETF
- Long-term Treasury bonds
- Investment-grade floating rate corporate bonds
- Select European banks
- Small-cap growth
- Preferred stocks
- Solar Yield Cos (PG&E's bankruptcy has weakened the fundamentals for some of these)

DISLIKE

- Small-cap value
- Mid-cap value
- Lower-rated junk bonds
- Floating-rate bank debt (junk)
- US industrial machinery stocks (such as one that runs like a certain forest animal, and another famous for its yellow-colored equipment)
- BB-rated corporate bonds (credit spreads widened significantly during the 4th quarter of 2018 but have declined sharply this year; we expect renewed widening in the months

ahead) * **

- Short yen ETF (i.e., we believe the yen is poised to rally)
- Dim sum bond ETF; individual issues, such as blue-chip multi-nationals, are attractive if your broker/custodian is able to buy them

* *Credit spreads are the difference between non-government bond interest rates and treasury yields.*

** *Due to recent weakness, certain BB issues look attractive.*

DISCLOSURE: This material has been prepared or is distributed solely for informational purposes only and is not a solicitation or an offer to buy any security or instrument or to participate in any trading strategy. Any opinions, recommendations, and assumptions included in this presentation are based upon current market conditions, reflect our judgment as of the date of this presentation, and are subject to change. Past performance is no guarantee of future results. All investments involve risk including the loss of principal. All material presented is compiled from sources believed to be reliable, but accuracy cannot be guaranteed and Evergreen makes no representation as to its accuracy or completeness. Securities highlighted or discussed in this communication are mentioned for illustrative purposes only and are not a recommendation for these securities. Evergreen actively manages client portfolios and securities discussed in this communication may or may not be held in such portfolios at any given time.