Future of Mobile Networks

The Next Wave of Technology Delivers Faster, Better Experience for Fleets.
New technology, surge in mobile device use ushers in evolution of networks

Nearly nine in 10 Americans today are online, up from about 50 percent in the early 2000s according to the Pew Research Center. 77 percent of Americans own a cell phone, up from 35 percent in 2011. Half of Americans also own a tablet, up from just 3 percent in 2011. As screens get larger and smartphones become smarter, many of the online activities we used to do on computers are now being done on cellular-connected devices. In addition to smartphones and tablets, wearable devices like smart watches are also rapidly growing in usage — all demanding fast data speeds for streaming video, social media, gaming, transmitting information to dispatch in real time, using time-saving apps like weigh station bypass and more. Gartner predicts that 20.8 billion devices will be connected to the Internet by 2020. By comparison, there are currently an estimated 6.4 billion connected devices in the world. This surge in mobile smart device use is connecting us like never before — but it’s also putting a significant strain on our mobile networks — and ultimately the spectrum.

While there seems to be an infinite supply of WiFi enabled devices, there’s a finite amount of spectrum to go around. Think of spectrum like a highway, where frequencies are the lanes. Each lane can only hold so many cars. Similar to if you go from a one-lane highway to a three-lane highway, the more spectrum a provider has, the better the service. If the data transmission is more robust and frequent, more spectrum is required. The transmission of real-time data and continuous internet connectivity requires networks to be better, faster and provide more coverage. This all boils down to the fact that networks need more bandwidth to keep up with today’s—and tomorrow’s—demands for faster, better data transmission.

Good news is on the horizon: Major carriers are building the infrastructure to support the next generation of wireless connectivity called 5G. With 5G there is a 1 millisecond response time - that means that in far less than a blink of an eye, critical data is transmitted. Read on to understand how and when carriers will transition from older networks to 5G, and how it will impact and ultimately benefit you and your fleet.
The need for better, faster and more widely-available coverage has resulted in new networks with faster speeds and more bandwidth. All the major carriers have invested in Long Term Evolution (LTE) for many years now, and customers are experiencing LTE coverage where Code Division Multiple Access (CDMA) and High Speed Packet Access (HSPA+) were previously never available, such as rural and remote areas of the U.S., Canada and Mexico. To continue investing in LTE and the future, carriers must reallocate their portion of the spectrum from CDMA and Global System for Mobile Communications (GSM) to LTE networks, rather than maintaining lagging, obsolete networks that cannot accommodate new technology and faster speeds.

U.S. carriers will begin to repurpose CDMA and GSM networks beginning in 2019 with Verizon, and other carriers in 2020 and beyond. Verizon announced they will stop accepting new activations on the CDMA network, as they’ll no longer be able to support those devices once the network is discontinued by the carrier. Networks will degrade CDMA in stages, so large areas of coverage may disappear at any time. It’s hard to say how long a CDMA customer will have reliable coverage, but users will start to feel the pain well before the final switch is turned off.

This transition has already taken place for much of Canada, with Western Ontario taking the lead back in 2015, then Alberta, British Columbia and Saskatchewan in 2017. Ontario, Manitoba, Yukon, Northwest Territories, Quebec, Newfoundland, New Brunswick and Maritimes will only have viable CDMA networks through April 2018 before the entire country says good-bye to CDMA for good.
Enter LTE networks, which utilize new digital signal processing (DSP) techniques to increase the capacity and speed of wireless data networks. LTE networks operate on a separate radio spectrum. As CDMA networks degrade, their allotted spectrum is moved to LTE networks to capitalize on the network’s expanded capacity.

LTE is the next advance to higher bandwidth and lower latency beyond CDMA and GSM capabilities. It continues the path to long-range technology planning to ensure long-lived devices, faster speed and better service. The LTE network available currently is 4G LTE, which is highly available nationwide and offers higher bandwidth and improved network responsiveness.

Starting in 2017, Trimble was the first telematics company to provide 4G LTE connectivity in the North American trucking industry. Through the ConnectedFleet platform, fleets can connect their drivers, devices and equipment in real time to improve efficiencies and increase safety. With the introduction of LTE connectivity, Trimble customers can now have the potential for faster connection speeds and the ability to access information more efficiently in geographical areas that previously had little to no coverage. For fleets that previously only had access to satellite-based communications, this means they have a more efficient and cheaper way to connect their drivers and devices.

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The introduction of LTE coverage is part of Trimble’s continued efforts to evolve the platform to better serve the needs of customers — both today and in the long term. Offering LTE connectivity gives fleets the ability to collect data from vehicles, drivers, and devices faster and more reliably than ever before. This enhanced connectivity can enable quicker decision-making when a driver is on duty, and provides more options to drivers who want to stay connected and communicate with family during off-duty time. In addition to realizing the benefits of LTE bandwidth and speed, customers will continue to gain critical insight into their fleet’s coverage through Trimble’s Managed Network. Trimble’s monitoring solutions provide highly detailed wireless network metrics that report minute-by-minute connectivity, coverage depth and latency for all trucks in a fleet.

LTE coverage is available for fleets that operate in the U.S., Canada and Mexico and use the Trimble Mobile Gateway and Trimble ConnectedGateway.
What’s Next: 5G

The next iteration of LTE network capability to enter the industry will be 5G LTE. Currently, standards are still being finalized in 2018, but we can expect to see large-scale deployments of the latest network in 2019. 5G LTE will take the best of CDMA and GSM and make a completely new network with adaptability to talk to multiple cell sites at once. This powerful combination allows networks to use multiple channels at once, boosting speeds and the amount of data that can be transmitted, while lowering costs to operate on hardware, which will allow the networks to invest in more cell sites.

The benefits of 5G are impressive, including extreme reliability, nearly universal coverage and 1 millisecond response time, meaning data transmission is in real-time. For fleets, this means data will be transmitted to dispatchers in real time, enabling them to make critical decisions without lag time, as well as using weigh station bypass and other critical applications to save time and improve productivity and safety. 5G will also provide a better experience for drivers, reducing time waiting for instructions, waiting in line at the weigh station, and providing a better user experience connecting with family and friends during off-duty hours.

Mobile providers are running trials right now with Minneapolis, Minnesota being one of the first metro area networks fully built out for 5G. Building out the full first markets will help set some of the standards needed for large-scale deployments. Standards are expected to be finalized in 2018, with large-scale deployments scheduled for 2019.

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LTE paved the way for connected trucks, roads and cities. 5G LTE will fulfill the speed promise by aggregating multiple service points and bands to support high-demand applications, video and connected fleets, as well as the future technology of tomorrow’s fleets such as virtual reality and autonomous vehicles.

**Selecting a Fleet Mobility Provider with Network Connectivity in Mind**

Networks will continue to evolve along with technology and it is imperative for your fleet to select a technology provider that has the future of networks in mind. Here are a few key questions to ask when discussing solutions with providers:

- What is your most advanced network currently available?
- What throughput does your device provide?
- Does the device provide a seamless experience across North America?
- Do you offer a fully managed and monitored solution?
- What is your technology path and plan?
- Are you engaged to continually evolve for the latest advancements?

Addressing some of these network-related questions up front can help your fleet ensure you are selecting technology that is built with the future in mind.

At Trimble, our solutions are created to be as future-proof as possible, allowing you to stay connected as the network evolution continues.
The intense surge in mobile smart device use is connecting us like never before, with predictions that demand will more than triple from 6.4 billion connected devices today to 20.8 billion by 2020. What’s more, users are demanding fast mobile data speeds for streaming video, social media, gaming, transmitting information to dispatch in real time, using time-saving apps like weigh station bypass and more. This greater demand for speed by a greater number of connected devices is putting a significant strain on our mobile networks – and ultimately the spectrum.

To make way for improved networks, U.S. carriers will reallocate their portions of the broadband spectrum, removing obsolete networks that cannot support faster speeds and real-time data transmission. U.S. mobile service providers will repurpose CDMA and GSM networks beginning in 2019, and large areas of coverage may disappear at any time.

Major carriers are building the infrastructure to increase supply to meet growing demand and support the next generation of wireless connectivity called 5G LTE. 5G LTE provides extreme reliability, nearly universal coverage and 1 millisecond response time, meaning data transmission is in real time. For fleets, this means data will be transmitted to dispatchers in real time, enabling them to make critical decisions without lag time, as well as using weigh station bypass and other critical applications to save time and improve productivity and safety.

Trimble is leading the way to prepare its customers for future networks, working closely with carriers to upgrade to devices that support LTE connectivity.

Top Takeaways
Trimble is transforming the way the world works by delivering products and services that connect the physical and digital worlds. Core technologies in positioning, modeling, connectivity and data analytics enable customers to improve productivity, quality, safety and sustainability. From purpose-built products to enterprise lifecycle solutions, Trimble software, hardware and services are transforming industries such as agriculture, construction, geospatial and transportation and logistics. (NASDAQ:TRMB)

To learn more about Trimble visit: mobility.trimble.com or call (888) 346-3486.

78% of the top 100 private fleets use at least one of our products

100% of the top 100 for hire fleets use at least one of our products

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