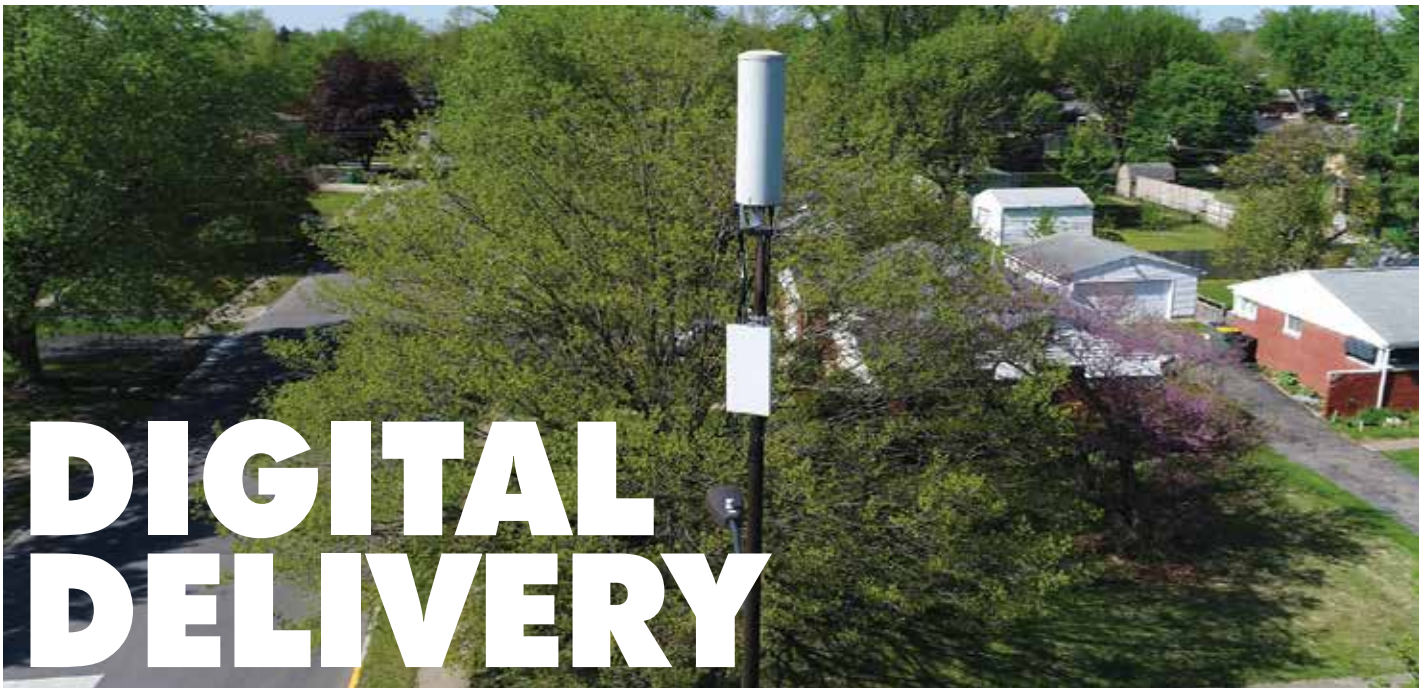


DIGITAL DELIVERY

Big Advantages Come With 5G Technology

By Charlee Beasor

Imagine a highway. Take Interstate 465 around Indianapolis, for example.

Think of the number of vehicles that are on that road on any given day. Now picture 250,000 times as many vehicles out there. Nearly impossible to visualize, right?

That is exactly what has happened to the traffic on mobile and wireless networks over the last few years, according to AT&T Indiana President Bill Soards. Much of it is video consumption, both streaming and downloading.

"Video makes up over half the traffic today," Soards notes. "Increasingly, we carry our TV sets in our pocket. That's driving a lot of usage on the networks."

In keeping with the highway concept, what would have to happen to accommodate that percentage increase of 250,000 cars and trucks on I-465? Build a bigger highway? Increase the speeds that vehicles are capable of driving? Divert traffic elsewhere?

The introduction of 5G (short for fifth generation) in Indianapolis will offer both a larger "highway" and faster speeds, up to 100 times faster than current 4G networks, Soards says.

"5G allows us to build massive digital highways," he asserts.

Indianapolis is one of just two cities nationwide (Houston is the other) that gained access to 5G networks from both AT&T and Verizon in 2018.

Andy Choi, public relations manager for Verizon, says the company views the technology as the "fifth industrial revolution.

"That's how serious we take 5G. Speeds will be up to 100 times faster than the 4G that we're used to. When you think about that – that's fractions of a blink of an eye."

It's not just the speed that makes 5G different; it's the capabilities that come with that speed.

"For decades, we've been primarily connecting three types of devices: cellphones, laptops and tablets," Soards offers. "5G is going to connect billions of different kinds of devices: sensors, cameras, vehicles, appliances, machines. Anything and everything will become connected to the network.

"(Consumers) will see it in the things they use today: video, social media, livestreaming. In the not-too-distant future, this will enable virtual reality, augmented reality, driverless cars, connected homes and the massive Internet of Things (IoT) explosion."

Adds Choi, "For Indianapolis, it means greater internet services options, more options, more choices. Traditionally, broadband has been tough for Indianapolis consumers and across the country; there wasn't a choice. … This will increase the options and give them much faster services at prices that remain pretty competitive."

Setting the pace

The companies are bringing 5G to Indianapolis in unique ways.

Mark Hill, CEO of Carmel-based technology company Lumavate and a longtime industry leader, explains how the two differ: "They're looking at it somewhat differently. Verizon is more like they want to replace your home WiFi, whereas AT&T is driving it more to the network.

"It's really good for Indy that both Verizon and AT&T are coming here," he contends. "It's just another sign that Indy's tech community is on a national stage. Here we are again taking another step. (It's) another thing that we can point to in Indy leading the way."

Going back to the early 2000s, government and business leaders in Indiana pushed for the state to be among the first in the nation to deregulate the telecommunications industry – with major reform taking place in 2006. That laid the groundwork, both in physical and metaphorical terms, for putting Indiana at the front of the broadband

technology landscape.

Today, much of Indiana's fiber backbone is in place, but rural areas of the state still struggle to get connected. The introduction of 5G could be the key to filling that void, though there are no current details on when statewide adoption of 5G will be possible. For now, the technology will be solely available in Indianapolis.

More recent policy changes – such as the small cell broadband legislation that the Indiana Chamber championed over the last several years and Gov. Eric Holcomb signed into law in 2017 – have enabled companies such as AT&T and Verizon to put additional hardware in place. At least 1,000 small cell antennas have been installed around the city in 2018.

In September of 2018, Soards, Indiana Chamber President and CEO Kevin Brinegar, Sen. Todd Young, Rep. Susan Brooks (IN-5), state Sen. Jim Merritt (R-Indianapolis) and others were joined by FCC Commissioner Brendan Carr at the Indiana Statehouse to announce the Federal Communications Commission's intention to model nationwide broadband efforts after Indiana's policies.

"Indiana has been focused on technology policy in a significant way for over a decade. We used to compete against neighboring states," Soards affirms. "Today, it's a global competition for investment and technology. Legislative leaders and governors have embraced pro-market policies to help attract the kinds of projects that we're excited to launch."

AT&T has invested nearly $1.7 billion in Indiana over the last three years in fiber and wireless networks, he reports.

Verizon has invested more than $932 million in capital expenditure in its network since 2015, Choi says.

"For us, Indianapolis is one of the nation's leading tech and business hubs. We know in Indy, people are really keeping the pulse on technology and what's next in making technological advancements," he maintains.

Soards says confidently, that from AT&T's perspective, 5G would not be coming to Indianapolis without the small cell legislation.

"Infrastructure is critical to the state, and the state Chamber has been a leading advocate. Digital infrastructure is critical. These were forward-looking policies that the Legislature has passed and the governor has adopted. This has allowed Indiana to be 5G (ready)," he states.

Choi also cites the small cell legislation as one of the reasons Indianapolis was chosen by Verizon. Another major factor was the partnership and enthusiasm of city leaders.

"We've called the city of Indianapolis a partner in laying the groundwork for 5G. When city leaders are being early leaders in 5G and seeing what this kind of technology can do … that kind of partnership inspires other city leaders to think about what it will take to build that next smart city or tech-forward city," he asserts.

Flashing yellow

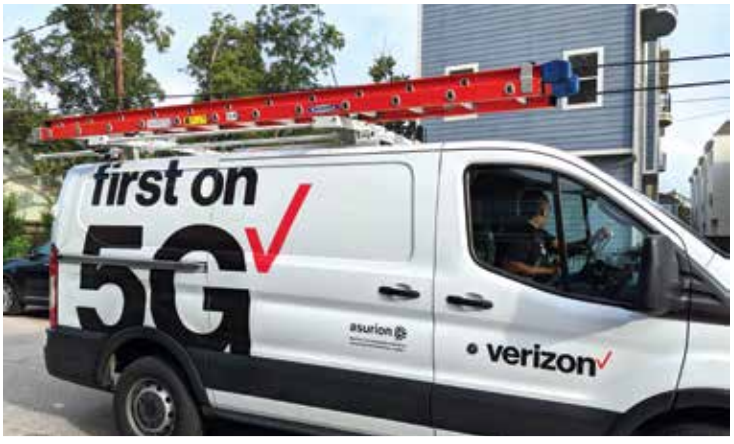
One challenge that will slow down the adoption of the network is for everything else to adapt to the speed and capability of 5G. That "everything else" encompasses a lot: software, hardware and consumer behaviors, to name a few.

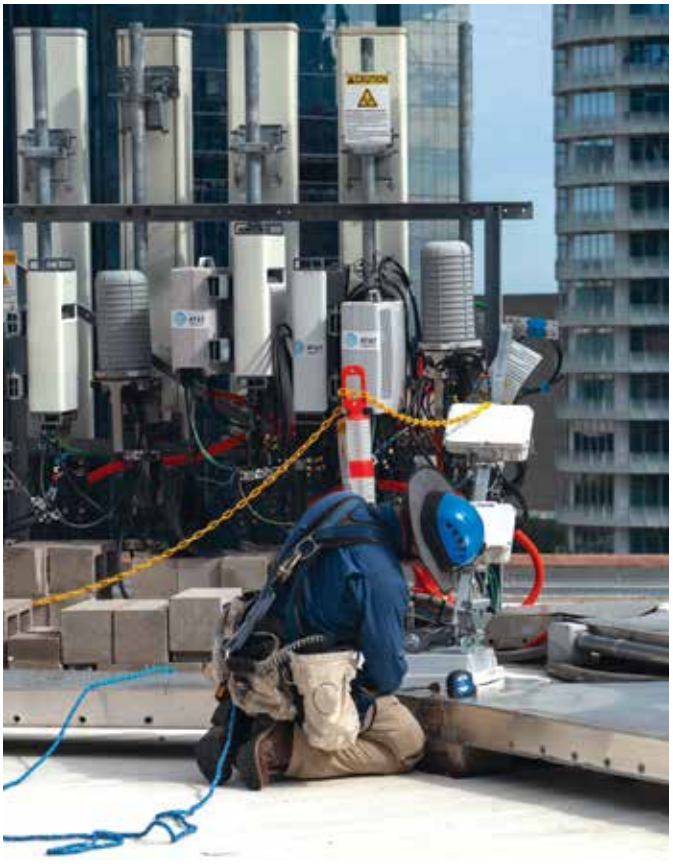
Your everyday smartphone, for example, is not yet capable of handling 5G.

"It's going to take some time to catch up," Hill shares. "Think about how we thought about the reliability of the network 10 years ago, versus how we think about it today. Ten years ago, I couldn't always rely on my phone. Today, it's pretty reliable. It's the next level for all kinds of applications."

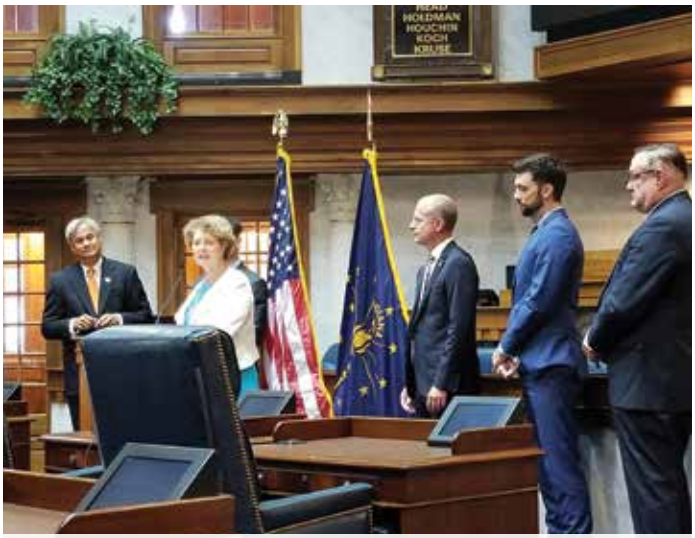
He cautions, however, that 5G is not the be-all-end-all.

"I think it's just one more step on a long journey. There's a lot of things going on here.





Verizon and AT&T are bringing 5G technology to Indianapolis, one of just two cities nationwide that has early access. Both companies are currently working on compatible 5G mobile devices.



Congresswoman Susan Brooks speaks at a September announcement that national policies for broadband will be modeled after Indiana's, including small cell legislation that the Indiana Chamber championed in the General Assembly and was signed into law in 2017.

When I moved here in 1990, there was almost no tech community. Think about that 25- to 30-year-journey that we have been on. We've jumped in front of a lot of our peer cities," Hill says.

It's not a panacea, but early access to 5G for Indianapolis is a "strategic advantage," according to Soards.

"The future is now. … Most analysts believe 5G won't be deployed until much later in 2019. This is a fantastic advantage for Indianapolis."

Revving up

How much will these developments impact economic development in Indianapolis and eventually the rest of the state? Time will tell.

All agree that anything companies can do to attract talent here is crucial.

"Talent continues to be the one element that seems to be impacting our ability to grow even faster. My hope is that a number of stakeholder groups and legislative leaders will coalesce around talent programs in the years ahead," Soards says.

"There's not a state in America that has 100% broadband ability yet, but no doubt we'll be at the front of the list. It's good collaboration and policies that attract in Indiana."

Hill points to the city's 5G capabilities as an asset for innovative companies that can utilize the technology for testing autonomous vehicles, for instance, as well as other IoT or artificial intelligence interests. Or just any company that values a city and state where favorable conditions for growth exist.

What else is needed for Indiana and Indianapolis to continue the momentum? A "hunger to stay connected," Choi suggests.

"When you think about what our world looks like now, you can either embrace it or run from it. We have always been on the side of connecting residents and connecting people. It's not only the thirst for technology, but the thirst to build a network. The marrow of all of this is a connection to each other and a connection to people," he concludes.

RESOURCES: Bill Soards, AT&T Indiana, at www.att.com | Andy Choi, Verizon, at www.verizon.com | Mark Hill, Lumavate, at www.lumavate.com

INNOVATION AND INDIANA'S BUSINESS FUTURE

COMMUNITY

Shelley Klingerman

When it comes to the topic of Indiana's business future and innovation, for communities like mine (Terre Haute) it's all about shifting a mindset. The history of Terre Haute is steadied in manufacturing. For many years, much of our local economy was centered around traditional manufacturing jobs.

Today, many of those legacy manufacturing companies are no longer operating in Terre Haute, which leaves a big hole, but also a big opportunity to innovate ourselves by leveraging another set of assets – higher education – this community possesses.

It is unusual for a community of this size to have such a high concentration of higher education. Terre Haute is home to Indiana State University, Rose-Hulman Institute of Technology, Saint Mary-of-the-Woods College and Ivy Tech. Like many other things, we tend to take for granted the things that surround us every day, and we grow accustomed to them.

However, when it becomes necessary to look toward our community's future through a different lens, it requires innovation of vision. Innovation is a very broad term that can be assigned a variety of definitions, but in this case innovation is looking at established community assets in a different way.

University communities are well positioned to contribute to Indiana's business climate because the population and faculty that sit under these university umbrellas are the seeds of new businesses and corporate innovation. When you connect the fresh ideas of digital natives who think differently with traditional well-established companies and business leaders, the collision can result in a business expansion or new start-up businesses that use technology, new tools and a different approach to solving business problems.

What's innovative about this you ask? It's the intentional effort to ask a young entrepreneur how THEY would solve a problem. Many of the tools to do so now, that didn't exist as recently as five years ago, offer new and efficient ways to resolve challenges.

As these problems are addressed, there is also the potential to advance to a broader scale, leading to new fundable, scalable start-up companies. The outcome of this innovative thinking will be an organic landscape change of local communities, resulting in a well-sowed business climate across the state.

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