Report Out

5G and its Impact on Michigan Business.

Technology

"5G is way more than just a step up from current wireless technology. It's a quantum leap that will bring an era of radically new possibilities across all areas of technology."

- **Hans Vestberg, CEO, Verizon Communications**

5G — the next generation of wireless technology—is poised to revolutionize global societies and economies, accelerating Industry 4.0 by enabling faster speeds and better connectivity as we enter a new decade characterized by continued, explosive growth in the number and types of smart devices and their associated connectivity needs.
Across the telecommunications industry, G5 is currently in use in over 30 cities nationwide. According to Verizon, by 2023, it is projected that there will be 1 billion 5G connections, with 20% of mobile traffic happening via 5G networks. In addition, 20% of the world's population will be covered by 5G. In North America, 5G's share of mobile subscriptions will be 48%.

Although the earliest wave of this technology will be driven by smartphones, ultrafast 5G will gain significant traction in other domains including autonomous vehicles, factory automation, remote health care, security and surveillance, smart cities and gaming.

The quantum leap from 4G to 5G will be extraordinary. While 4G can connect almost 2,000 devices per square kilometer, 5G could support up to 1 million in the same area with download speeds 10 to 20-times faster than 4G—and without the congestive latency of today's broadband.

A Verizon Virtual Roundtable

Thursday, July 16, 2020

The key elements of 5G deployment will include:

- Fiber
- Millimeter-wave spectrum
- Small cell deployment
- Multi-access edge computing

Here in Michigan — where we are leaders in manufacturing and mobility—5G is poised to be a game changer, as connectivity forms the backbone for operations and future innovations. The new fifth generation of mobile networks will be the catalyst for Industry 4.0.

While there is no denying the transformative impact 5G will have to the way we work and live, bringing 5G to market is not without challenges.

Below is a summary of the opportunities and challenges presented by the emergence of 5G technology, as summarized by Verizon leadership and Automation Alley's roundtable participants, a cross section of professionals from industry, academia and government.

Opportunities

Improved system architecture — G5 will allow for system integration (IT/OT convergence); puts performance software closer to the edge; and enables network slicing, the process of dividing a single physical network infrastructure into multiple virtual networks, meaning traffic and security breaches from one slice cannot interfere with another slice. The result will be more flexibility and better security for different applications running across one or more factories. (Mobile broadband, machine-to-machine, mission critical, future applications).

Faster speeds, better connectivity & higher bandwidth — enables a high number of machines, people and objects in factories to communicate large amounts of data at very fast speeds. This is the key to unlocking the "smart factory" and creating more agile and autonomous manufacturing systems, including the use of advanced remote industrial robotics and real-time digital twins.

Low latency — down to milliseconds allows further development of high performance, demanding applications including automation and control and autonomous vehicles. It also enables the use of other cutting-edge Industry 4.0 technologies, like augmented reality applications.

Cost savings — through battery saving and low energy operation.

Less cabling — frees up machines to become more modular and agile.

Challenges

5G creating economic growth in Michigan:

Q : What is holding Michigan back from being a leader globally in 5G?

A : We must continue to grow the 5G ecosystem in Michigan. This includes:

- Working with municipalities
- Continued investment from companies
- Continued testing locally (Verizon is currently testing at the University of Michigan's Mcity research center where they are putting their G5 network on wheels, testing use cases including smart cities and collision avoidance. Verizon's 5G Home was also launched recently in the Detroit market).

Ensuring secure 5G deployment for small-to-medium-sized manufacturers:

Q : While large OEMs intend to deploy 5G, SMEs face roadblocks due to limited financial and workforce resources. How can we ensure SMEs have access to 5G?

A : SMEs must adopt a digital-first approach to business, or they will be left behind. On the other side, the growing 5G ecosystem can help by providing use case examples of 5G ROI and giving SMEs a playbook for 5G deployment best practices.

Fear of change & conspiracy theories:

Q : There is still fear of technology and uncertainty surrounding automation, robots taking jobs and new 5G-led conspiracy theories. How do we change these perceptions?

A : We need to ensure we are dispelling inaccurate information with facts and showcasing and explaining the technology and how it can help businesses. There are a lot of technologies that are part of the Industry 4.0 story, and 5G is part of that story. It is a journey to 5G, and companies will need to have a digitization strategy in place to be successful. This includes:

- Focusing on the use case to identify the appropriate technology mix (example, collaboration between 5G and WiFi)
- The reskilling and upskilling of employees (5G can enhance employee training and safety through the use of AR technology)
- Understanding the benefits. There is a resiliency play for manufacturers to take a portion of their operations, leverage infrastructure using 5G and deploy. This is especially important in the current COVID-19 landscape. On the factory floor, 5G networks can help managers better monitor quality, increase speed, respond to supply chain needs and simplify workflows.

Next Steps

1. Identify a cost structure for business.
2. Provide industry with more case studies that define ROI.
3. Develop a simple and clear starter kit for smaller manufacturers—"5G for SMEs".

Roundtable Participants

Anca Sala, Baker College
Ben Smith, Clayton & McKervey
Cynthia Hutchison, Automation Alley
Daimon Geopfert, RSM
David Schippers, Walsh College
Dominique Holmes, Oakland County
Hushedar Mehta, Tech Mahindra
Irene Spanos, Oakland University
Mark Reudink, Crown Castle
Michael St. John, Marco
Mike Folster, BEHCO
Ranga Thittae, Tech Mahindra
Ruby Caggiano, Nextgen
Saleem Chaudhary, Ford
Sarah Tennant, MEDC
Somesh Razdan, Global Technology Associates
Jack Van Tiem, Kelly Services
Anthony Magnan, Verizon
Ben Ortiz, Verizon
Brianna Ellison, Verizon
Jordan Henry, Verizon
Kevin Holland, Verizon
Michael Davis, Verizon
Pete Jones, Verizon
Tupac Hunter, Verizon
David Vasquez, Verizon