

5G is transforming the nature of work in Manufacturing

Q&A with Ande Hazard



“5G’s going to be a catalyst for innovation in manufacturing, both in the creation and quality of products, and also in how products are delivered into the supply chain.”

Ande Hazard

Vice-President, Manufacturing and Transportation Solutions
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Read how 5G is shaping the future of work in manufacturing in this insightful Q&A with Ande Hazard.

Q: What is 5G, and why is it important to your business?

Ande: 5G is the fifth generation of cellular wireless technology, offering greater speed, lower latency, and higher bandwidth. 5G, using C-band spectrum, helps enable manufacturers to do more with the expansion of Internet of Things (IoT). 5G and edge computing will optimize operations between sensors, cameras, and machines. It'll also provide manufacturers with huge amounts of data they can act upon in real time and offer virtually infinite revolutionary use cases. 5G is the connectivity behind it.

Q: What is latency, and why is it important?

Ande: Network latency is the time required for a data set to travel between two points. 5G today has tested around 10 milliseconds for processing of data with the goal to be in millimeter wave of one millisecond. That's the kind of speed that will happen as the 5G network continues to build out, creating a new realm of almost instant data processing and unlocking new opportunities in manufacturing.

Q: What kind of challenges do you hear from customers around 5G?

Ande: Even the most ambitious and sophisticated customers can struggle with technology, infrastructure, and road mapping, as well as finding executive support for the investment. It's not just a capital investment challenge, but it's understanding what the future yield will be of any investment and wondering what the next-gen solution should be. Manufacturers are trying to bring new opportunities, new products, or new ways to sell their products faster. They're wanting to transform the monetization of this product offer while building direct models for engaging customers and growing business. Modernization is imperative. In the future, we will see enhancements in performance management, asset intelligence, smart warehousing,

digital twinning, sensing and detecting, dynamic scheduling – the use cases are virtually infinite.

Q: Why should a manufacturer care about 5G?

Ande: Think about how important manufacturing is to the U.S. and global economies, as it touches transportation, retail, healthcare, and all other industries. If manufacturers take advantage of the emerging technologies with 5G – you can see the bigger picture and impact. How can we look at advanced robotics, vision systems, augmented reality (AR), virtual reality (VR), artificial intelligence, and all that 5G enables?

If you think about 5G as an enablement of advanced technologies that will build your business faster with more intelligence and carry the data to make things work, that's how manufacturers should think about 5G.



Q: Who in manufacturing organizations should pay attention to what 5G will bring?

Ande: Historically, wireless connectivity has been the responsibility of IT – maybe even procurement. But with the capabilities of 5G, we move beyond wireless connectivity as we're used to talking about it. As manufacturing technology has evolved, the connected sensors and devices that are on factory floors making instant and automated decisions bring IT and operational technology (OT) together. They're codependent and intertwined. Many Industry 4.0 advancements will be possible because the systems that execute the manufacturing functions are more integrated than ever into the infrastructure.

There's also less distance between the systems that control the manufacturing processes, and those that control the data storage, the communication, and the computing. There's not a very big distance now between what has to happen on the factory floor and how it has to be processed.

Then, when you think about third-parties in the supply chain ecosystem that tap into your manufacturing machinery for, say, maintenance or analytics – OT and IT need to collaborate to add cybersecurity considerations, etc. Technology investments must produce business outcomes and generate value, which both OT and IT organizations understand. Collaboration across the business is imperative to take into account individual business unit challenges while solving for the collective company goals.

Q: What technologies are possible using 5G in manufacturing?

Ande: We're looking at what can be done using AR and VR. How could we use AR/VR to train employees faster, smarter, and remotely? Or help someone in the field remotely with a repair situation, or remotely manage a machine using AR and VR? How do you transfer knowledge when workers aren't sitting together? We see AR and VR as a key application to 5G. And once you adopt it, you can unlock even more use cases in productivity.

Q: What other technologies will we see enabled with 5G?



There are opportunities even in sustainability, with predictive maintenance. In the factory, we look at not only 5G, but also what edge computing can help do, with high bandwidth within that facility with low latency applications. For instance, computer vision for quality, inventory management, and safety. Automated guided vehicles (AGVs) are great examples of how you could further automate some of the equipment and the vehicles within a facility that can then bring more automation and address the workforce shortage.

For the customer, it's not about us bringing 5G to the table as much as looking at their business, at what is not optimized, and asking what should be optimized in their environment or utilized in a more efficient way. Then we can back into a use case that helps that manufacturer with a connectivity enablement using 5G.

Q: What other advice do you have for a business looking at 5G or a hybrid of 5G and existing connectivity?

Ande: Focus on the outcome. What's the business outcome that you're not achieving today? Back it into what's maybe not working or is broken or not ideal. And then you back in the connectivity that can enable it.

Q: What about 4G, Wi-Fi, 5G? Can there be a hybrid model for connectivity?

Yes. If you're going to digitize or digitally enable a factory, (which you should), data is going to continue to grow. It's going to have an increased number of computations per microsecond. And there's a limitation at some point from a saturation of Wi-Fi with regards to that, right? It was not designed for that, per se. And so with Wi-Fi, we see our clients very much finding it's the right technology solution, but it's going to have to segment for perhaps some other applications that are not ideally landing in the Wi-Fi environment. We look at 5G, and even cellular as a whole, as a complement to Wi-Fi. They can live together in harmony within a manufacturer.

There's going to be a consistency with 5G as it becomes more pervasive, particularly in this intelligent infrastructure. It's going to breed a new level of

possibilities. We help our customers think in terms of what we can do today that could be successful on Wi-Fi and 4G LTE, but then as 5G investments are capable to adopt that technology into a hybrid model to support all the business wants to do.

Q: Let's talk digital twinning, which can give you a view into some very complex machines.

Ande: With our automotive partners, we're enabling 5G technologies through our connected car capabilities with plans to develop technologies over time, as the various bands are completely pervasive. But when we look at digital twinning today with some of our partners, we look at it in the terms of complex machinery and how we can replicate it, prove it out, test it out, and use it as a test environment before implementing something at scale that's expensive from a machinery perspective.

What's interesting with 5G is that it will allow for a broader range of manufacturers to take advantage of digital twinning. You're kind of making the marriage between the digital and the physical, and you're shrinking that timeframe. And I think that brings a lot of opportunities to our manufacturers.

Q: What do manufacturers really have to do to prepare for 5G?

Ande: I really think the concept of multi-access edge computing (MEC) is a technology that can be further enabled with 5G but can be taken advantage of with cellular capabilities today. So, I really am passionate about MEC as a starting point. I think it can really jumpstart a lot of IT modernization.

Q: What is multi-access edge computing (MEC)?

Ande: MEC is a managed service that enables enterprise customers to differentiate and route specific data traffic to designated customer applications in a private wireless network campus environment based on device, IP address, and customer policy. It allows factories to put decision-making intelligence within this edge

compute, and that edge compute then can also decide what can be on my network and what can't be on my network. So, it puts an inherent security capability on top. It's a piece of equipment that's managed that makes intelligent decisions within the factory. And I think it brings edge computing closer to the manufacturer versus the network edge that we talk about and hear about a lot, from the cloud provider network edge. So, it's taking that cloud network edge right into your facility.

Q: So, in other words, it reduces complexity, because it makes a distributed decision about what to keep and not what to keep?

Ande: Exactly. And 5G enabled with MEC is going to be a huge opportunity for our manufacturers. But again, you can use MEC today without 5G as you ramp into that cellular kind of next generation.

I encourage manufacturers to have a partner that can talk across the advanced wireless spectrum. As many of our customers are asking, "What do I do next? What's my first step?" Every manufacturer is going to be a little different where they are on that advanced wireless spectrum, as well as with their security posture requirements. They need a consultant that can help march down that roadmap with them.

For more information of how AT&T Business can implement 5G solutions into your manufacturing business, click [here](#).

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