How the Arrival of 5G Turns Wireless Network Service Providers into Indispensable Players in the Internet of Things Market

The impending arrival of 5G wireless wide-area networking technology promises to leave an indelible mark on any industry that stands to gain from the rapid evolution of the Internet of Things (IoT).

After years of breathless hype, analysts at IDC report that this year represents a transition point for 5G, shifting from the hype of 5G's technological potential to real-world deployment. The introduction of this technology will bring life to a myriad of machine-to-machine use cases that have been conceived but until now have been unexecuted. Analysts believe that 5G will allow mobile network operators to broaden ways they can dramatically impact consumers' lives and influence business operations.

Chris Menier, Vice President and Transformation Strategist at Vitria answers questions on what 5G brings to the IoT world in general, and how it will alter the position of Network Service Providers in particular.

It seems like the waiting is finally over, when it comes to 5G technology. It is difficult to remember when a specific technology has received as much attention. Chris, can you help us better understand what impact we can expect 5G to have on the global digital economy?

Well, as you point out, we've been talking about 5G for a bit of time now. And in the industry, we have been talking about the Internet of Things (IoT) for an even longer period of time. What we are going to see now, in dramatic fashion, is what happens when these two technologies come together.

Unlike other overly hyped technologies that have made headlines before, we are already seeing some very impressive use cases emerge — especially in the IoT space — that are moving from the drawing board, through the labs, and now finally to the market very quickly. What I can tell you is that 5G is going to be one of the technologies that really accelerates the value that industry can derive from its IoT investments.

I think of 5G as a key enabler of IoT. It is going to introduce much more capacity for machine-to-machine communication and exponentially improve the capacity of our critical infrastructure, and also provides the promise of speed, and low latency in the ultra-wide broadband. All of those things together are going to enable a lot of these IoT use cases that we've been talking about for a while.

What are some of the specific technological capabilities that you expect 5G to bring to the table?

With 5G, one of the technological advances that will have a big impact revolves around network slicing. An application of virtual network architecture, network slicing uses the same principles behind software defined networking (SDN) and network functions virtualization (NFV).

This is a functional category that we have not been able to exploit in previous generations of wireless WAN infrastructures. By being able to slice the network, you can apply different qualities of service — even different capacities — across the network in an intelligent and intuitive manner. You can bring the right networking capacity to the right place at the right time. It will introduce efficiencies and functionality that were not economically — or technically — viable in the past.

As a result, for example, you won't have to bring everything back from the cloud to analyze data and network behavior locally. This has huge ramifications for industrial IoT applications. It will eliminate the need for expensive wired connectivity that they've needed for capacity and support for years, and it will streamline the number of machines and devices that must be in place to support a wide variety of workloads and applications.

So if you think about the physical network infrastructure that is currently in place in industrial settings — 5G and network slicing will allow you to confidently move most — if not all — networking elements to a wireless environment. On a manufacturing floor it will provide the high connectivity and low latency that used to be dependent on expensive infrastructure.

This alone is going to stimulate a whole new innovative evolution stream for industrial IoT, and accelerate implementation and adoption.

This has to represent an exciting new area of economic opportunity for the wireless network service providers. What is the play for NSPs that are embracing and deploying 5G into their markets?

Well, there's a reason for the excitement, for sure. Just about every wireless provider that I've interacted with over the last several months has very specific and concentrated 5G initiatives underway. For a number of years now there has been this concern among many NSPs about becoming a dumb pipe provider. NSPs that are involved with 5G are no longer just providers of connectivity with low level services over the top. They now have an opportunity to build important new business-to-business relationships that leverage the capacity and intelligence enabled by 5G to offer a broad range of sophisticated managed services.

NSPs have an opportunity to help change the way entire industries interact with their customers. Take, for instance, the in-stadium experience at sporting events or live concerts. 5G will enable facilities to unleash the full potential of devices — like high-end cameras and drones — to stream bandwidth-intensive 4K high resolution video. They will be able to provide audiences — at the stadium and at home — with customized real-time and interactive access to statistics based on data captured from all the various sensors located throughout the facility.

How does the introduction of 5G affect the overall ecosystem of wireless networking technologies that are already in the market — NFC, BlueTooth, Zigbee and 802.11ax? What does 5G do to that environment?

It will have an impact for sure. As 5G technology matures, and people get more experience with the different applications, we can expect by 2020 to see a flattening of the wireless networking environment. There will probably be opportunities to use 5G for both our LAN and WAN connectivity infrastructure.

This will allow devices to speak to each other with a little bit more ease, because a good portion of the "protocol competition" goes away, along with some of the transport competition.

On the other hand, if the environment is not managed properly, this development could introduce new risks. As an example, there was a 5G trial during the Rio Olympic Games in 2016. One of the big reports to come out of the trial was that there were around 100 billion security events across the network. This is because there were so many devices communicating to each other across that same network plane. So, while there's the benefits of flattening a network, it also introduces some risk around security and other things.

Picking up on your comment about "dumb pipes," it seems that the term itself is going out of style. There seems to be a whole generation of new technologies — including NFV and SDN, that are designed to create super, super smart pipes. Tell us a little bit about how 5G contributes to that environment. How is that going?

I recently read an interesting interview with the CEO of VMware. To this very point, he explains that there will be two types of 5G deployment. There will be those that:

- Leverage NFV; and

- Are unsuccessful deployments.

I agree with him, because in the end, it comes down to the network slicing that we talked about before. These are the technological capabilities that allow service providers to dynamically allocate speed, capacity, and coverage based on real-time use case demand.

For instance, if you want to take real advantage of applications around virtual reality or augmented reality — which beyond entertainment drive industrial use-cases like assisted technical maintenance, or assisted medicine, and other remotely augmented, high-fidelity services — you are going to need network slicing, and virtualization.

What steps do you think NSPs need to take to maximize their opportunities in IoT with the deployment of 5G networking?

Ironically, the biggest step they have to take is to ensure that they develop a culture around customer-centricity, rather than a technically oriented network-centricity. In some ways they are way ahead of the game. Some of these providers have millions and millions of consumers that are very well served by their NSPs. That is a skillset that industrial partners are going to want to leverage as they move forward with their IoT and digital transformation initiatives.

Another immense area of opportunity for NSPs who want to get into the IoT game is to apply their extensive experience in network security. With IoT, almost every organization becomes a networking organization. As enterprises add more and more devices to their networks to connect more and more people, the imperative to effectively manage risk will grow exponentially. NSPs can help organizations out with this. They understand as well as anybody the implications of the network effect.

A related area of opportunity revolves around complexity management and operational risk. As NSPs begin their 5G implementations, new technologies and capabilities like Massive MIMO, beamforming, full-duplex traffic, and small cells will come to the forefront as offerings that enable smarter and more efficient performance across the network.

Where does a company like Vitria fit in? How are you working with your NSP clients to prepare them for the 5G era?

Well, at Vitria we have always kept our focus on the complex issues that surround real-time digital operations from a customer experience standpoint, and we have developed deep expertise in leveraging the exploding volume of disparate data assets to enable effective automation. We do this by bringing the power of artificial intelligence and machine learning to bear.

On the real-time front, our platform, VIA, has been designed to handle multiple data sources at once. This enables us to send you accurate, real-time data, so that you have clear visibility into your operations.

From a scale perspective, we realize that the game is not just about mastering the huge volume of data that is out there, but also reconciling the great variety of data that is being generated. 5G and NFV and other technologies are going to generate a need to track and monitor a lot more metrics.

We are working with NSPs to simplify that whole process by associating the array of logs, stats, counters, scores and telemetry into the basic, fundamental layers of delivering a service.

Finally, once we have brought all of this data together, we work with NSPs to make sure that the right people have the right access and the right context to do their jobs better. We are using technologies like machine learning and artificial intelligence to rapidly understand and act on the insights presented by the data that is generated every day, every minute, every second.