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# EDITED TRANSCRIPT

VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

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AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

## CORPORATE PARTICIPANTS

**Ronan J. Dunne** *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

## CONFERENCE CALL PARTICIPANTS

**Tim Horan** *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

## PRESENTATION

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

My pleasure to welcome the second day of our keynote here. Verizon, Ronan Dunne, who basically runs Verizon Wireless. I know you have a very long title.

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

That's good, Tim.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

That's up there on the board, Executive Vice President and Group President of Verizon Wireless. I think you can skip the slide there. You might have another safe harbor.

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Just in case you make me say anything that's forward looking, everybody, reference the safe harbor slide.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

Great, great. Is there one more slide there? Or are we good?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

That's it.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

No? Great. Good, good. So I think this is going to be one of the better keynotes I've ever hosted in 20 years. I had dinner with Ronan last night, and he's got a great, great vision of where wireless is going. And he was -- this is his second year here. Last year, he basically came out and said, "Verizon are going to do great things, and the industry is going to do great things." And everybody, was like, "This guy is a real." He's really got the blarney there. And basically, he...

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

We did a few things.



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

You did a few things. You've executed really well in the industry. It has done much better than last year.

## QUESTIONS AND ANSWERS

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And maybe just to start out, what were the main things that you did that have kind of improved financial results and growth?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So look, I think I joined the business about 2 years ago. And the first compelling kind of discovery for me is something that won't necessarily surprise anybody here, is that when I looked inside the business, I saw 2 amazing capabilities, network and execution. And yet I saw a market which was evolving, where we had built the best network on the planet, frankly. And we were a little bit circumspect about how we were presenting that out to the customer. So clearly, the first big move was in February of '17, to say the best network in the U.S. deserves unlimited. And so we introduced unlimited, but not in the sense of simply we came late and me, too. But we used it as a vehicle to evolve from a network and technology-enabled, customer-led organization. And I think the thing that we've done consistently since then is consistently met customers' expectations. We showed leadership in how we can evolve the capabilities in the underlying technology to deliver solutions for our business customers and really value-add experiences for our consumers.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And I know you've been -- your advertising message on TV has changed quite a bit. Can you talk about what it was, what it is now or what the main message is?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Yes. I think, again, it was a good example. The industry was a little bit in a conversation with itself. Everybody wanted to do comparative advertising, cross-reference. Customers really are interested in, explain to me why for me. So what we've done is we've significantly changed the narrative towards really understanding the moments of consequence of why a great network and a great service and experience is going to matter to you in a whole range of experiences that you have. We've also, with our human ability campaign, raised the bar in understanding Verizon and Verizon's intent in the broader sense of leadership from a community, society, economy and customer point of view. And that has resonated exceptionally well with customers.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

Now the main thing I want to focus on is the forward-looking statements. The -- I mean, I think you have a great vision of where the industry's going in the next 5 years, and particularly how Verizon's going to lead the industry. And can you maybe describe it first in the next 5 years? Or in 5 years, where do you think the network capabilities will be? And then we can kind of focus on the applications? But primarily, the network, how -- yes, what will the network look like now then versus where we're at now?



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

Sure. And look, maybe as a segue way into that. Look, we've had a bit of change to the organization recently. Hans and I have known each other for many years. And so the good news there, and just to say it, is that over the last couple of years, we've been building and evolving our strategy. I've been deeply involved, and Hans has been deeply involved in it. So we're in a position now to -- where actually, this is about accelerating the momentum of a clear strategy that we've been enabling for a while. And that strategy is, and it's important to present this, it's engineering and technology-enabled. This is not technology for technology's sake. This is about how do you deliver enhanced capabilities that are meaningful to customers in whatever, whether it's consumers or business. And one of these, for us, is how we can deliver the benefits of our scale and capability in a way that's personalized to the individual user's need. So we fundamentally disagree with this concept of scale means that one size should fit all because that's the way you deliver the benefits of scale. On the contrary, network as a platform means that I have all the benefits of scale. But with the enhanced capabilities of 5G, and particularly over the next 3 years as the next couple of releases of the standards come out, increasingly, I will be able to deliver a network for a 1:1 relationship. So I'll actually be able to deliver an experience on the network that is defined around the specific user needs of that customer at that time. So all of the benefits of our scale and our great technology, but brought together in a way that delivers a personalized experience. I think that is the real game-changer. My view, and we'll go broad maybe, and then we'll go specific on this, is that, in some respects, 4G has spent a lot of time making up for the sins of 3G. 3G overstated its capabilities. It came early. It didn't really deliver. And to some extent, expectations were kind of, low. So 4G has done a really, really good job of saying none of this stuff actually works. And you can start to rely on it. You can build business models around it. You can build applications that you can be confident with. So what 5G has the opportunity to do is the take the step-change. So if you think about it, the last couple of generations of our technology have persuaded people that unplugging from the wall is a reliable and consistent experience. But all we've done is really mobilize what we used to do anyway. I think 5G gives us the opportunity to build out ecosystems and models that are fundamentally enabled by the technology, but are not simply based on how do you mobilize an old traditional wireline experience.

**Tim Horan** - Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst

Well put. And could you talk about maybe the functionality of the network? How much faster can it get? How much more capacity? How much better latency? What are the metrics are you thinking about in terms of the basic foundation of the network?

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

So when we look at network, we think about really 3 things on the way we enhance the network. So spectrum, of course, is an asset that is a critical asset to all of us as carriers, but then features within the network. And the last couple of years in 4G, and probably it's not as well-recognized as it should be, the enhancements in network equipment and the enhancements in devices to support and use those features has been very, very substantial, whether that be carrier aggregation, whether it be things like 256-QAM, Massive MIMO, other things. Each of these as well as being an interesting acronym, each of them is a 5%, 10%, 15%, some of them 20% uplift on the capacity of the network and the performance of the network. So we look at it. We look at spectrum. We look at features. We look at density as the kind of enabling layer. And then on top of that, what 5G brings is this idea of network slicing, essentially the fact that you can separate elements in the network and deliver the individual elements or currencies, so I can feature latency as a specific enabling for an application, an application that may not need massive bandwidth, but needs latency. So small time-critical messaging that needs the latency, but doesn't need massive bandwidth. I can give burst capacity for things that lead at particular times. Massive capacity may not need it every single day, but at certain times, you need that massive capacity. So think about 5G on pre-dimensions, substantially greater capacity. 10 to 100x capacity enhancement for a business like ours with the positioning that we have in millimeter wave. Think about efficiency of battery life being 10x, so that actually the features that we can deliver in things like IoT or other things that you can substantially enhance the places that you can deploy these applications. Think about burst speeds that can be 100x what we're used to today. And think about the fact that you can dimensionalize those elements and deliver them uniquely to a customer, to an application. Think about edge computing and latency. Think about the ability to push more of the smarts to the edge of the network, and not only reduce the over-the-air latency, but actually reduce the length of the return path and, therefore, significantly reduce the overall latency end-to-end from kind of 200 milliseconds to, in some examples, below 10. So that is game-changing, and it's a capability. But the fact that you can then apply those to discrete applications, discrete user preferences and needs is what makes it so much more. It's fungible capability that allows you to address it to the specific needs and opportunities.



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And when will customers get to start to see the benefits of this?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So our plan is -- and we've talked about this, the first opportunity that we have is actually an expansion of our addressable market, which is a residential broadband that's at the northeast footprint, where obviously we have our Fios business. So the very first way you will see 5G come to life with Verizon is our initial commercial launch. We've announced 3 cities that we will launch before the end of the year. There will be a fourth, which we will announce in due course. I don't have any new news for you this morning. But that will be the first opportunity, where people will see the opportunity to have a high-speed experience in their home, which is wireless end-to-end. And then quickly, we will move to the overall 5G mobility play. So we're moving from our original technology for a more TF initiative, which has accelerated the development of 5G globally by probably 12 to 18 months. And that will be our showcase. And then we will move as the industry moves to the NR new radio standards during the course of 2019. And then over the next 3 years, there will be 3 deployments of at least 15, 16, 17 on the standards, which will bring increased capability in 5G. So evolving over the 2019 to kind of 2021-time horizon, you will see increased capability and applications for 5G. But people will start to experience -- the very first mobility experience that people can have is, we announced in conjunction with Motorola the other day, the first device that will actually be 5G upgradable. So by springtime of next year, there will be a device out there that will start to leverage the capabilities of 5G in a mobility device.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And building on top of that, what do you mean by network as a platform? That's kind of a...

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So for me, network as a platform is, again -- so I have my core Verizon brand, which is very clearly positioned in the marketplace. But my network is a national network that serves every geo, but also serves or has the potential to serve every segment. So the way I look at that is I have the opportunity to use that capability either directly for the Verizon brand or in partnership with others. So I have a wholesale business. We have a very early-stage initiative called Visible, which is looking at creating a pure digital-only space out there. So my ability to take my scale and deploy it, really what I'm saying is I don't simply have to deploy it as a one -- in one channel, which is the Verizon branded channel. I have the opportunity to use my scale in network and distribution and other things. Distribution is a good example partnering with our sister business in Oath, the ability to use our distribution channels as a way of distributing Yahoo! and other brands that Oath has. So that's what I'm looking at is this idea of the platform allows me to have multiple ways to go to market.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

So it sounds like you're looking for more partners on the application side?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Yes. And I think in a 5G world, it will be about building ecosystems. It will be about the carriers being very clear which parts of the ecosystem they want to own and which parts they want to partner in. And that's part of the secret sauce.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And can you maybe just step back a second from a high level? What -- I know it's hard to predict, but what kind of new uses or applications or what are people going to be doing with this new network?



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

So I think what you'll see is you'll see the first adoption from a device's point of view in mobility during the course of 2019, where people would just see significantly enhanced speeds. I think then latency will be thing that will start to play in next. And a lot of that will be B2B to start with. So we're talking about real-time enterprise. We're talking about retail environments. We're talking about high-precision manufacturing, where those low, low latencies can be important. Think about now you build a campus, a factory, and you wire up everything, and you have particular production set up. And then you want to change product. You want to iterate something. You've got a substantial challenge in going and reconfiguring. Think about that in a wireless environment where you have a much more flexible, agile, manufacturing environment, changing product in and out on you because you're able to move everything. And you still have that ability to be connected with ultra-low latency whatever configuration you're in. Think in a real-time enterprise environment for retail, where you can deliver both the quality of insight and information about your customers that you might previously have only assumed, that an online retailer can have in real time, in a physical retailing environment. And think how you can potentially augment that with things like AR/VR, which can enhance the experience. So those are the sort of initial things that we will see. I think there's also interesting personal applications for the low latency that will start to develop. So health care, the monitoring of long-term health conditions. Things like gaming, I think, will be really, really interesting. We're already talking right up the stack to gamers, who are building the next generation of games, and how 5G features can be enabled. That's probably where you get this extra level in your game. But only Verizon's 5G customers are able to access with the extra capability there. But also things like, for example, trading. The sort of latency that you will have on a mobile network means that perhaps in partnership with our colleagues in Yahoo Finance, which is massive personal finance portal, that ability to deliver a trading experience on your mobile in conjunction with Yahoo!, which is best-in-class, and perhaps even your ability to trade nanoseconds faster than somebody who's on a wired platform.

**Tim Horan** - Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst

And on the manufacturing platform, is there going to be lower latency that WiFi right now?

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

Yes, it will be. In fact, in many instances, WiFi's the slowest thing around. And so I think you will see a transformational shift there. And because of edge computing, you're talking about moving effectively the return paths where -- with our distributed network kind of C-RAN hubs. You're thinking about distances of a few hundred miles maybe that the data has to travel rather than a few thousand miles to 4 or 5 national data centers of a big company, and the over-the-air link being significantly lower as well. So that means that we can think about providing at campuses localized environments the sort of ultralow latency that's going to be better than a fiber application.

**Tim Horan** - Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst

So to just one new application. I mean, long distance truckers would seem to me be like a perfect way to have some self-driving trucks. I mean, you'd still need the truck driver, but it would make things help a lot safer. Just one example. Or it sounds like this network would be able to handle that.

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

Yes. And I think -- so smart cities is undoubtedly right in the heart of that. And I think the edge compute piece is particularly interesting there. So the ability to do facial recognition at the Edge in the network, so that you can put high-definition cameras without a unit cost that's much more reasonable for significant deployment, traffic management certainly. I think in autonomous vehicles, it's absolutely one of the applications. But that will be a combination of sensors in vehicles and the 5G network and sometimes, when people talk about latency, you think, "Well, okay. How fast is fast? And does it really make a difference?" Probably, the best descriptions that I've had of latency is between a 4G network in an autonomous vehicle and a 5G network. The signal response time for a response to brake or something like that is, in a 4G network, with a vehicle going at 60 miles an hour, the response time, the vehicle has moved 4 feet. On a 5G network, the vehicle has moved 4 inches. Now if you've ever driven a



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

vehicle, and you suddenly hit the brakes, there's a huge difference in the outcome between 4 feet of response and 4 inches of response. So that's sort of helps to give you a sense of how important that latency is.

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**Unidentified Company Representative**

Well, just as a total aside, we've brought in somewhat to run the New York MTA -- New York subway system from London. I don't know if you noticed, but our signaling system on the subway is like still 100 years old. London has a wireless signaling system that the train seem to come every 2 minutes as well. You know you lived in London for a long time.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

Yes, I did.

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**Unidentified Company Representative**

And in New York, they come like every 5 minutes. But the signaling system is going to cost a couple of billion dollars to put in a new one. But if they just wait a couple of years, it sounds like you could probably help them out with this technology.

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Yes. And I do think there are certain scenarios in which people will simply leave fiber and other solutions and just go straight to a wireless-enabled 5G capability. And I think that's one of the things, is about -- it's about the economic value add because that's what I think about 5G. It's not just doing what I did slightly more efficiently. It's about a fundamental enabling. It's one of these GPTs, general-purpose technologies, that can start to transform ecosystem's economic models.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And how much -- what does this mean for the wireless industry in terms of longer term revenues or ability to improve productivity and really help out the whole wireless ecosystem?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So look, I think it makes it significant. The one thing I would say is, today, I'm very confident that we have line of sight about how we grow. My orientation is very, very clear. It's about enhancing our network positioning. It's about positioning us to be first, best, biggest in 5G. But it's also about how we leverage the capabilities that we have today. So what's important to say is this is not a question of we're waiting for 5G. I'm already building capabilities in my network, which means that I have a natural all-around for customers and experiences moving from 4G to 5G. So we're already significantly enhancing the service that the customers get, and that's reflected in the fact that we're seeing growth in our consumer business and in our B2B business. And I see line of sight for that continuing as more customers adopt unlimited. As more -- as customers bring more connected devices on to each account, more of our existing customers step up from our major plans and new customers coming in. So I see a lot of growth potential there. So it's not really a question of there's a hiatus and we're having to wait. And then I think the phasing over time is that what we will see is that we will see a growth in not just the connectivity use cases themselves, but I think we will see the growth in the layer of value above the connectivity. And that's where things like the smart cities, IoT, our Verizon Connect business, but it's also where businesses like Oath and the range of brands we have there. In RYOT, we have world-class capabilities in the AR/VR space that will significantly enhance our ability to expand services to customers.





## AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

So historically, the industry, the communications industry broadly speaking, has not really shared much in the application revenue or even device revenue over time. Is there a way to partner with certain new applications where you can get some of that revenue now?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Yes. So in New York, we're already -- we have the alley in New York, where we're already bringing in young businesses that are innovating around the space. So I do think that the challenge and the opportunity for the industry is to participate in more of the value add that's created around the next generation of the technology. And I think in fairness, in 3G, we didn't do a great job. In 4G, we found a better job. And 5G, we're positioning ourselves to do more. So we're already at this very early stage talking across our enterprise base as well as through innovators in the overall ecosystem. We're talking to a lot of people about where are the areas that are of particular interest? And how might we partner to accelerate those ecosystems? By the nature of that, some of it is proprietary and commercially sensitive. So less of the detail. But it is absolutely our expectation that we will participate in not just the expanded connectivity offering, also an expanded addressable market from our wireless business as I go into residential, but also the ability to participate in the layer above.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

So one of the issues for the industry has been it's been very hard for networks to differentiate versus their competitors. Can you talk about maybe some of the intellectual property that you have, the operating system or the platform layer that you think will be sustainable and managed? And maybe you can't give a lot of details, but do you think that will be the case?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So one of the things that I think we have done really, really well at Verizon is looking at there's a relatively small group of handset manufacturers there. There's a relatively small group of network equipment vendors out there. So what we've done is we focused on how we optimize and, therefore, how we take the products and services that are out there, and how we make them better on Verizon. So my optimization and other tools, we have built internally. So I'm not using them necessarily from another vendor. So my IPs and around how I take product that's available to others deployed in my network and give an enhanced experience. I also have, within the network, the capability to look at the actual experience of every single individual customer in a way that I'm not just simply dealing with averages. I can actually look and go down through the network and look at all of the features and see how they are creating a specific experience in other geo, in a cell or actually at an individual user level. And that's what's allowing me to kind of optimize the experience. And that's why, consistently, in the independent testing and in the credit score testing is the experiences that are measured, the experiences on the Verizon network are the best-in-class.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And do you think we can move to more thin devices? In 5 years, instead of having to buy thousand-dollar phones or \$3,000 computers, I'd get a lot more of the processing in storage? In the network, if you have such low latency, is that part of the game plan?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Look, I think, broadly, the device ecosystem, as we understand it today, is going to be the same in the next few years. Where I think there may be some interesting Edge use cases is things like in the B2B2C space. So for example, our exposure to sport, I think, in-stadium experiences is a really, really interesting one. So it may well be with AR/VR, with the opportunity to create more immersive experiences that you might have an application in a stadium environment or in a specific retail environment, which might be enabled by the business itself or by the brand. And therefore, it might be using a thin client-type application in the environment. And then you slot that back into the back of the seat in front of you when you're finished.





AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

So I think that can be quite interesting. I'm not calling out the fact that people won't be having high-function devices in their pockets in the foreseeable future. I think that's business as usual.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

But in the short term, what are you seeing from consumer devices? Broadly speaking, are you seeing maybe add-on products?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So look, I think we've seen a number of years where there's been a lot of development. I think it's fair to say that for all the carriers in the U.S., the upgrade rates in the market have slowed down. And one of the reasons for that is the high quality of devices that are out there. So the step-change from generation-to-generation is perhaps not as obvious. What I would say is that the internal smarts in the devices are enhancing their ability to leverage the capabilities of the network increasingly. So there is, undoubtedly, innovation and development there. But not all of that is as visible to the consumer. So what will be interesting, I think, over the next little while is kind of the stabilization of form factor. There's still a little bit of debate about where that goes. I think foldable is something that -- we'll see how that potentially evolves.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

So just taking this back to a really, really high level, what do you think this means for the overall economy, and just the compute cycles that we're going to see? And how impactful is this going to be to our lives and the economy?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So I think there -- there's an important call-out, is we need a coalition of the willing to make this happen. Because I can build the technology, the network, but I still need to go on poles. I still need to get wayleaves. I still need to get access. So I think it's really important that we make that case very clearly, both as an industry and as a company, to say that we have a genuinely transformational technology opportunity that can be significantly impactful to our local economies and our local communities to civil society to reduce the digital divide. And therefore, we have to make sure that we've put all of the pieces of the jigsaw together, so that we get out there fast, and we get U.S.A. as a -- not just as national, but actually as a global champion setting the standards for this next generation of tech.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And I know we've talked briefly last night. It's a little bit out of our realm of the discussion here. But with this type of wireless capability, with robotics and with AI, we could potentially have massive productivity improvements for the overall economy.

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Yes. And look, I think that's really interesting. I think we're only scratching the surface of the capabilities of AI machine learning. The combination of 5G and the capabilities it has links to deep analytics and the ability to really serve customers' needs, and meet them how and where they would expect. I think it's hugely, hugely significant. Within that, I think it's going to change the nature of work. I think there's a lot of things, the more mundane things where we can use a robotic process or automation. But what it also does is create space, I think, for a lot of creativity. And that's what I'm really excited about, is we automate the boring stuff and the simple repeatable stuff. But doing that will actually give higher-quality replicable experiences to customers. And actually, from an investment point of view, will actually reduce our cost to serve, while actually increasing the quality of the service we offer. So from a customer point of view, that's a real gain. And also, I think from the space of focusing on the creativity spaces, the platform that 5G enables means that the more we're focusing on the creativity of what we use this for rather than all of the grunt that



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

we're just building it for the sake of building. And so that's why I'm really excited about this next phase, as I think it will liberalize potentially a next kind of revolution in creativity.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

So tell your children to study art?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Exactly. I think it could be -- this is new renaissance.

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**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

Yes. Very good. We'll open up to a few questions because I can talk for hours here. Yes. We have 2 over in this end over here. We do -- well, you shut him out. We'll repeat him.

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**Unidentified Analyst**

Going back to your concept of slicing a 5G network, what are the capabilities that you see for the applications that drive the greatest margins? Those for low latency, those for bursting bandwidth, any thoughts on that?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So at this early stage, I think the answer is yes. It is that each of them -- and the key here is the ability to isolate the individual components, and enable them in a way that can significantly enhance and then service. So we see as much interest in -- the low demand on battery can be a significant feature in how we get in the IoT space, how we can get units to a lower cost to the cost to install and, therefore, how long they can stay in the field. That could be a real game-changer and broaden out addressable market. I think the ability to drive the latency will do 2 things. It will move some things that are currently on wired networks, but what it will also enable in a B2B2C space a lot of features that wouldn't otherwise have been viable because the only way you can do them is in a wireless environment. So I think it will create new use cases, particularly, I think, in retail, in precision manufacturing, but also, I think, in the health care and management of long-term conditions. So I think it's sector by sector. Different elements of these new features will have more significance. Clearly, in a gaming world, it's the latency, no question about it. Because they're not necessarily that bandwidth-hungry, but they're absolutely latency-dependent, getting their retaliation in first. And the gaming app is all that matters.

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**Unidentified Analyst**

With respect to the wireline broadband substitution or overbuild, what's the customer premises deployment look like? How expensive is that? And is self-provisioning potentially in the -- on the horizon?

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**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

Yes, sure. It's a great question. So the first thing to say is our 5G strategy is a mobility strategy, and the opportunity to do residential broadband is a byproduct of our mobility strategy. So I'm not building 2 5G networks. I'm building a single comprehensive 5G network that enables an end-to-end mobility play, but also enables a fixed wireless play in certain areas, where the node density allows us to do that. So the experience that we're anticipating is therefore that the cost per home passed is lower, and that the experience that the consumer gets is as good, if not better, than the alternative. From a professional install and truck roll to a self, we absolutely expect that over time, increasingly, it will be self-install opportunity.



AUGUST 08, 2018 / 12:15PM, VZ - Verizon Communications Inc at Oppenheimer Technology, Internet & Communications Conference

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And will we collapse the different wireline, wireless network divisions you have maybe 5 years, 10 years?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So since Hans has come in, in the last 14, 15 months, we've already made great strides in that space. So in my transport layer, in the way we deploy One Fiber, a whole series of things, think about that as an integrated core network, transport network that is serving all of our needs. So I'm the sort of main customer for one fiber, but it also drives the VES business. It drives other parts of ABM and other businesses. But it's effectively -- so for example, inside the call today, my wireless calls and my wireline calls are all going over the same infrastructure. So in some respects, I have a single infrastructure layer already. When I face out to the customer, I do that through my separate go-to-markets in my separate business units.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

And should we think about a kind of combined almost wireless, wireline go-to-market strategy, a quad-play? And maybe you're adding video on top of that, and you're the one go-to company?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So for me, if I go outside the northeast part, I don't really participate inside the home today. The opportunity for me is to on the cable-to-cable guys.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

Yes. And when should we think about you having an over-the-top video product to go to market with this new bundle?

**Ronan J. Dunne** - *Verizon Communications Inc. - EVP & Group President of Verizon Wireless*

So look, our core proposition is seamless exquisite experience from a connectivity point of view. What we're seeing is an evolving nature of how people are consuming content, more people. The balance has shifted there to more being consumed on mobile platforms than on a desktop or a fixed. But for a significant number of customers, the content bundle is still an important component of their residential connectivity. So we will respond to that. What I'm not going to do is get myself into a principal position in linear TV. I'm not going to repeat and replicate the old business model. But I absolutely recognize that customers, whether they want to bring their own content or whether they want to have choices that are enabled by us, we will certainly do that.

**Tim Horan** - *Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst*

I think we have time for one more question.

**Unidentified Analyst**

How do you plan to use the CBRS band?



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**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

So we have...

**Tim Horan** - Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst

The question is around how do you plan to use the CBRS band?

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

So the -- any business in our space is interested in any addressable spectrum, particularly interested in the opportunity that unlicensed does as we enhance the carrier aggregation capabilities. So certainly, we've been working in the forum and working with the industry in that. And we see that as an interesting opportunity. Our principal focus is -- at the moment is with just a little over 50% of our low- and mid-band deployed from an LTE point of view. And the next wave is clearly bringing in the 28 and the 39-gig. But the idea of carrier aggregation means that increasing flexibility to bring in unlicensed to other things, and therefore optimize the overall solution. So working closely with the industry bodies to evolve that capability and certainly interested in how we can deploy that efficiently.

**Tim Horan** - Oppenheimer & Co. Inc., Research Division - MD and Senior Analyst

Great job. Thank you, Ronan. Great day.

**Ronan J. Dunne** - Verizon Communications Inc. - EVP & Group President of Verizon Wireless

Thank you very much. My pleasure. Thank you.

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