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VZ - Verizon Communications Inc at Citi Global TMT West Conference

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CONFERENCE CALL PARTICIPANTS

Michael Rollins *Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst*

PRESENTATION

Michael Rollins - *Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst*

Good morning. For those of you in the room and on the webcast, we do have disclosures on site available at the registration desk. And for those via the webcast, I'm Mike Rollins. I cover the telecom category as well as the communications infrastructure category here at Citi.

It's my pleasure to welcome our next keynote speaker. We're joined today by Verizon's Chief Technology Officer, Hans Vestberg. Hans, thank you so much for joining us today.

Hans Vestberg - *Verizon Communications Inc. - EVP and President of Global Networks and CTO*

Thank you for inviting me.

QUESTIONS AND ANSWERS

Michael Rollins - *Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst*

Well, maybe to get us started, maybe you could start with the update of what your strategic and operating priorities are for 2018.

Hans Vestberg - *Verizon Communications Inc. - EVP and President of Global Networks and CTO*

Yes. But I'm going to start with this one, the safe harbor statement. So we're clear on that. We are around the time for the earnings call, a couple of weeks from now and so whatever we say here. So we just want to have that behind us, okay?

And if we talk about the priorities, I mean, first, maybe reminding everyone in the room, not sure how much you know, I joined Verizon some 8 months ago as I've been working a lot with the technology department, and I will come back to that. So I'm pretty new to Verizon. Of course, I worked in the industry for the last 28 years, so I'm not new to the telecom industry.

When it comes to the priorities for the company, I think that, first of all, the network performance and excellence of our network is still a high priority. And we have that as our #1 target, and we will continue to have that. The other thing that we have that's in high priorities, of course, to deliver on the digital promise with all the connectivity for all our types of customers. And I think that the last one, if we're on a high level of priority, of course, the execution on the fundamentals. And then what I mean with that, I mean, we have now assets all the way from AOL to Yahoo! to telematics enterprise and, of course, it's an execution to get all that together and see that, I would say, leveraging 2 things that I think Verizon have. It's leveraging the scale of the company because we have scale as a carrier and then, of course, not less important, leverage the skill. We are ranging from sort of experts in search engines, AI to engineers all the way down to crafting the network. So leveraging that skill in a world where basically everything collapses in the platform, the connectivity and the services. That's enormously important. I think those are the high-level priorities which we're working with. Then, of course, that ripples down in the technology with the things I'm doing.



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Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So as you think about structuring the technology and the operations of the company, can you help us understand -- give us kind of a view into that boardroom and the operating team? What does Verizon view as how the customer's going to purchase services in the future? And how are you architecting everything around that?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. So I think this is very important. I spent, I would say, a fair amount of time the last 4 -- the first 4 months, 5 months to design sort of the architecture or the future architecture of the Verizon network. And you -- to make it simple, and I'm not sure how deep I should go in technology even, you can think about that Verizon have several different vertical networks because of history, technology, legal reasons. We had a joint venture with Vodafone for many years. What we know our architecture is a horizontal network where basically are we using much of technology all the way up to the edge. So think about it like this: from the data center, from the transport, the fiber, the core network, the routers, they are all the same. And then at the edge of it, then we take the decision on what type of access you're going to give. If it's a card that needs connectivity, it might be 3G or 4G. If it's a FiOS customer, it's going to be a fiber or if it's a 4G customer, it's 4G. So that decision we make at the Edge. So that's very different. And that we worked for 3 months, 4 months how we're going to do it. Then, of course, a lot of things why we're doing it. There are 2 main reasons. One, in the new world of technologies where everything that benefits from being connected, you need actually to have a clean line of sight of technology all the way from the data center to the customer. And that means that in order to deliver these types of new services, low latency, things like that, you need to have this architecture. There are others, of course, that we can take out the local cost. So those are the 2 pillars in what we call the Intelligent Edge Network that we now are executing on, 2 pillars. One is to be able to deliver new types of services all the way to the customers. The other is to take out cost. And then in the bottom sort of the platform, how it is, to keep the Best Network, keeping the leadership of network in the U.S. market. So that's sort of my 3 pillars that I'm working around right now. We have changed the structure of the company. We have changed the governance of the company in order to execute on that.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Is there any ambition in the company where there's just an internal view that you want to do all of the access solutions for customers in the U.S., whether it's home, mobile, IoT, that you -- it's just the United States is your market, you want to do everything for everybody? Or is it more refined from that?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I think it's a little bit more refined, but we create that optionality with the different access types that we have and the assets we have. And it's -- we have a very unique set of assets all the way from fiber, what we are building, the core network, transport layers that we have and the breadth of our distribution. And then, of course, you can decide this is a small and medium customer here, what type of access do you need for that? It's a big enterprise, what do you need? It's a residential customer, what type of access is best for that? So we will have a totally different possibility to dynamically allocate sort of the capital to those areas where we see this is good return on investment, and then we do it. And then we have a core of the business where we're going to be as lean as possible operationally and technology-wise in order to bring out costs and being able to deliver those services with the right type of customer experience.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So you talked about the opportunity to cut costs a couple of times.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes, I have.

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Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

And the company has set an expectation, \$10 billion over the -- to get to \$10 billion in 4 years. Is that the right way to...

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. \$10 billion in 4 years is the right way to say it, yes.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

You know what, I realize that you're newer to Verizon but as you've worked on this cost-cutting aspiration for the company. What's different about this cost-cutting campaign than maybe what Verizon has done in the past?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

As a first of all, I feel responsible for the big part of that \$10 billion because, I mean, only doing that flip on the network going from vertical network to horizontal, I mean, it is a big, big push potential of real estate passive assets, et cetera. So of course, that's what -- so we are shipping in a lot of that. And we have already our plans in the works. We are full execution on it. It's going to take years when you retire equipment with the new virtualized equipment, et cetera. We -- we're on our way. But from an execution and taking out costs point of view, we have already started.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Are there some big-ticket items or categories that you could help us with to put some color around the opportunity? And how this is going to play through over the next 4 years?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Can you share those, please?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I think that, of course, given that virtualization equipment being smaller is taking away real estate. The other is, if we have a converged core, we're very techie here, but converged core, meaning that a core network that can handle fixed mobile enterprise, whatever. I only need one of those, then I can take its maintenance cost, its software and hardware, that kind of goes away. Unified transport, one transport network that can have a fiber network that is used for all the business units in our company. So yes, you see a lot of those type of things where it can retire operational costs and avoiding investment as well.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So to get to this \$10 billion number, which I understand is both OpEx and CapEx. Is that right?



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Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I would say, cash expense, as I talk about it. Ultimately, we want to get to free cash flow. So whatever it comes from, I think, is not the main issue. But, of course, OpEx is big in the focus as well.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Is there a large investment that's required to achieve these savings?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Not outside the normal. We always do investment to go to a virtualized world. With the cloud there, you'll always need to invest to get there. So it's a balance between sort of negotiating with third parties that are interesting to get us onto that bandwagon at the same time as moving over their technology. So -- but it's nothing so well, now we need then a huge investment to get to the savings that I'm aspiring for. It's a -- this is usual.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Another area you've been talking more about over the last few months is 5G and the...

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Have I?

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Just a little, right?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Okay.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So can you share with us your thoughts on what's different this time and what you find compelling about deploying 5G? First as a fixed wireless business and then what that also enables you to do?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Now I think that, first of all, coming from the industry where I come when I worked with all the standardization of all the technologies 2G, 3G, 4G, when we started in 5G, we had a totally different focus than any other technology we have ever developed before. And the reason was that 2G, 3G and 4G is mainly for consumers. That was how it was designed, meaning speed and throughput was always better between 2G, 3G and 4G. 5G, from the beginning, was designed to be the industrial Internet sort of impacting our society. Of course, there's going to be benefits from the -- from consumers, but low latency down to milliseconds, throughputs over gigabits on the wireless networks, battery life up to 10 years, in some cases, 5 years to 10 years. Those type of things were designed for use cases that not typically might be the consumer use case. Then consumers always will consume it. So that's a huge difference. And how it's designed the 5G is that it slices all the network that you will do this for. You can



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say that, that table, they need low latency because it's gamers. We'll only give that table low latency. We don't give them the throughput, the battery life nor the bandwidth. We don't need that. That table, they need a lot of enormous throughput because they are doing something, I don't know, sending pictures to someone, we'll only give that. The latency is not important for them. That is a huge difference in 5G. So when we now started with our first slice, that was actually to use one slice to residential broadband. Meaning, we use that slice to say, "Okay, we do wireless the last mile based on the 5G design." And of course, we're doing it a little bit ahead of the game. The standardization is just happening. And I think we have benefited tremendously from it competence-wise, knowledge-wise, how the technology is working. But remember, we are sharing sort of the totality of the network and then we do one slice here. We're, of course, expecting that many other slices on 5G over time even for consumers, of course.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

And when does 5G get to mobile?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. I ask myself the question. I think that the standard -- it was an important date, the 21st of December. You remember that?

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

I do.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. It was not the tax reform. It was the approval of Release 15 of the 5G standard. That's what I was more excited over. That means that we have the first set of standard technologies agreed upon with all the vendors, operators and all of that. That means that you can start doing equipment and handsets. From there on, it is a year before you have something at least and -- until you have it commercially as well. Maybe a little bit more than that when it comes to wireless. So -- but we, at Verizon, we have pushed our own standard in the beginning. So that means when we launched in 29th of November, we launched our -- that we're going to have 3 to 5 cities up on residential broadband in the second half of 2018. So we are not waiting for it. We are pushing it, preparing and then think about the Intelligent Edge Network again. We can do so much to prepare in order to get the last mile then on the 5G. And we will be there -- as soon as the standard and the commercial equipment is there, we want to be there having mobile as well.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So the whole industry is talking about 5G now. Is your 5G going to look fundamentally different than your competitors if you look at your spectrum position and the plans of your competitors?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes, I think so. And that's not saying that's anybody's doing it right or wrong. I mean, I worked with all -- all carriers in the world through my life. What I've learned is you need to build it from your assets you have and the position you have in the market. And that means that in the early 2010, we started to see a divergence between carriers because, historically, a carrier was a carrier. Everybody was doing the same. You can just map them up. From 2010, when all these connectivity platforms and services start to emerge, we saw a distribution among operators how they were addressing the market. So it's not strange that I believe that we're going to have a different setup than other carriers in the U.S. We have basically all customers from enterprise, small and medium to wireless consumers to Internet of Things in our portfolio. Our big network. We're going to design for that. Other competitors might only have one of those, and they will design for that. So I think we're going to have a difference there. We have a spectrum



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position that is different than others. We have millimeter wave. We have -- we've got the XO millimeter wave. And we are in the process of acquiring a Straight Path millimeter wave, which is very different from a couple of others, which we think is very valuable for us. So yes, we're going to see different deployment on 5G. And it's not saying that somebody's right or wrong. It's just we have different assets, different positions and customer bases.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So if we narrow in on the mobile market for a few minutes and continue the conversation of Verizon versus its competitors. If we kind of accept that any carrier can use the same technology, they could densify their network with macro cells and small cells. When evaluating the long-term competitiveness for a mobile provider, does it make sense to look at spectrum per customer and look at customers as more -- or look at carriers with more spectrum per customer as having advantage over those that might have less?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

So being in the wireless industry basically all my life, I would say there -- what is defining a mobile network is 3 components. One is the spectrum; second is how you densify the network because there is an offset; and thirdly, it's what technology you're deploying in the network. And let me just talk about the spectrum, I think we understand. Densification, you have a trade-off of buying spectrum or densify the network. That's a trade-off. You just make the cell rings smaller or you have more spectrum and they propagate bigger. So that's a trade-off. And lastly, then depending on how good you are deploying consistently of the network, you can infuse new technologies. Think about something called carrier aggregation. Carrier aggregation is -- think about you're on a highway. And on the highway, you have one lane. And you can only drive in that lane, and it's a red car there. And there's a blue car in the other lane, and they can only be in those 2 lanes. In carrier aggregation, you combine those 2 lanes and you can go in between them. In that case, for example, we can combine our AWS spectrum together with millimeter wave, and that becomes one lane suddenly. So that's just one technology. But you need to be fairly consistent how you deploy it. You need the handsets in the network, you need the equipment in the network that can handle it. So it requires a lot of engineering, a lot of planning to do it right. The same goes for antenna technology. The most, I would say, what is gaining the most capacity right now in performance in networks of 4G is antennas. We have -- had 1 antenna. Now, we have 2 antennas. We go to 4 antennas. So that combination is defining. So making a -- sort of a definition on subscribers per spectrum, yes, it gives you a number. But to go on this, you need to think about is there densification strategy at the same time? And have you -- what type of technologies are deploying? How consistent have they been with their different type of spectrums, et cetera?

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

And how has unlimited...

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Was it fine, that answer?

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Well, you tell me.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Just checking.



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Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So when you look at unlimited, what's happened to the network? And what have you learned about unlimited?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. So I started, basically, off as unlimited was launched, so I can only rewind and listen what happened. So I think that -- let's talk from the technology point of view. I mean, of course, with unlimited, the growth in the network went up. I think the engineering team of Verizon prepared them extremely well. They didn't want to have a degradation of the network in the moment, and they prepared them well. So I think the preparedness was very good. So, of course, the network grew in certain areas. But more important, the distribution of the growth went a little bit different than normally. I mean, normally, peak hours can be between 4 and 5 in the afternoon. And suddenly, with the unlimited, it moved around different places, locations and different times. So suddenly, it was not only that we were able to handle the higher loads in that moment where we have the peak, but it was also that we get the better usage on the network. So -- but you need to be very attentive. You need to be very close to see where the movements are happening. So I think I can only say that the engineering team of Verizon did an enormously good job before launching it and being prepared for it.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So as you look at the densification strategy that you outlined, what should investors expect in terms of this, the mobile spectrum needs for Verizon in the future?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I think that what we see right now with the spectrum we have and we're in the process of acquiring, I think we're sitting on a good position. What we will also -- we will add in a lot of carrier aggregation on top of that. And adding also, I would say, shared spectrum like the CBRS, the 3.5 gigahertz, which is a shared spectrum in the U.S. soil. So we're going to use that as well. So I think that, that combination puts on a good trajectory to handle our traffic, including then the densification and including the technology advancement that is coming. So -- now remember, every technology, I mean, 2G to 3G, probably 10x better to handle data and 3G to 4G 10x at least. And minimum, I would say, 4G to 5G is the same. So you have the step changes of technology improvement when you change technology. So with the portfolio of tools that I have, I think we're in a good position.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

There are things like MIMO. Can you drive another investment cycle for the company in the mobile network and drive significantly more capacity than you have today?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. Now MIMO is one of the tools that we have. We're just going from 2 antennas to 4 antennas. And of course, enormously, capacity improvements. The important is, of course, that these little babies also can handle it because it's an ecosystem. So if you deploy things in a network and you don't have the handsets there, it doesn't really matter. But now we see handsets coming out with MIMO, (inaudible) and all these fantastic acronyms. But all of them are doing capacity enhancements of the network. Now remember now, I mean, if you think about the 6 billion or 5.5 billion subscribers in the world, I mean, 3 billion of them are on 4G. So the investments in 4G in the whole ecosystem will continue for the foreseeable future to use improved 4G as well.



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Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

When you think about -- coming back to the 5G side, when you think about the future capital needs for that business, when Verizon was doing FiOS. The company shared a cost to pass a home. And it became fairly arithmetic to figure out how many homes are going to be passed in a year, how much CapEx that's going to drive. Is there a similar formula that you could share with us on the 5G side? So if the trials go well, how we can contemplate the future capital needs for that business.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

First of all, I mean, remember now, we're in the moment where we'll have earnings call in 2 weeks from now and Matt will, of course, come out with the guidance for 2018. But the most important, we are consistent on our -- and methodical in our capital allocation. We have, over the years, if I look back, I mean, enormous swing inside the sort of the CapEx amount. And that's the work we should do, moving it to new technologies, et cetera. So we have a good grip what we need to do. And I think that not only do we have a good process for it, we're also enhancing our capital process. Think about that we have now the Intelligent Edge Network where we have a big port defined. And then we're going to do ROI on the front and where we have business cases if it's for a region or a city or for a certain use case for a certain customer group, we will be able to have a return on investment on that because that's going to be the separate investment. I think that's going to greatly enhance our way to have capital efficiency as well. So when I look at -- come back to the \$10 billion, I look at capital efficiency, OpEx efficiency and all of it because all cash out is, of course, what I'm looking at. So I think we have been consistent on our way of allocating capital. And I don't see anything that we shouldn't continue being that.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

As you look at the -- kind of structuring the way you look at technology and some of the things that you mentioned, are there assets that you feel no longer fit in the Verizon portfolio or at some point could get revisited in terms of maybe other value-enhancing paths for those assets?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I think that, I mean, first of all, no, there's nothing. On the other hand, as a company, you review constantly what type of assets you have and what is fitting in, in the moment and matured and all of that. But there's nothing at the moment that hey, whether we shouldn't have this or that. But in a responsible leadership team that we are and working with Lowell, I mean, we have -- you look all the time and how it is -- do we need to add something here? Do we take away something? So I don't think that's something different for any company that I worked with before. I only worked for one, but anyhow. So no, nothing new there or saying that this we shouldn't have or something like that. But that we are a responsible team that continuously are assessing where we are and how we're going to continue to do right for our shareholders. That's obvious.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Can you discuss Verizon's strategy to go after the IoT and telematics category? And maybe what you're doing differently than some of your competitors?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. I think that what we're -- if you have followed us, and it has been quite a lot of acquisitions in the telematics, I mean, think about us -- I mean, you have connectivity in the bottom. You have platforms and you have applications. Those are the 3 things you can address. And then you can choose verticals. In the telematics case, we have the connectivity, we have the platforms and we have the application with telematics. So we have gone all the way to offer service end-to-end to a new customer group. And the reason we did it? We thought that telematics, of course, is a growing business. We're going to see more and more connectivity between cars, both from the passive way of managing them, meaning what type of information on the car, but also from the active way of doing it all the time when it comes to autonomous steering, [tat] tuning and things like that.



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So we saw a great opportunity. We have the assets in the connectivity. We added platforms, and we added application. So that's how we can think about and, of course, if you have the whole value chain, you have a greater chance to address a bigger profit pool. On the other hand, it's also a big accommodation then if you're in connectivity or in your platform or in the application. So I think that's what we've done. I think Andres and the team that is leading it have done a great job to integrating it because I think we have bought 8, 9 companies there. I'm looking at my IR team. Remember, I'm only 8 months in the company, bought some 8, 9 companies, and he is integrating that. So I think they are doing good work in addressing customer. And that's a global business as well. We need to remember, that is not a U.S. business only.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Can you spend a little time on the enterprise and the wholesale business? And what you're seeing in terms of the ability for your network to be competitive? And how the fiber needs of the wireless business might fit with the fiber needs of this enterprise business?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

No, that was much in my thinking when I came in, and I saw that we had the enterprise business. We have FiOS business. We have the small and medium business, we have wholesale partner business in the whole set of building. And one of the things that Lowell decided or we decided was I now have all networks, all IT and all technology in one place. So of course, I can transform so I get benefits for all my business unit. That means that the small and medium business or the enterprise business will enjoy also the unified transport, the fiber investments that before has been a little bit separated. And I think that I see a great opportunity to strengthen our enterprise offering. There are small and medium offering and then we decide what type of access do we need for the small and medium? Is it 4G? Or is it 5G? Or is it fiber? Or is it a DSL or whatever? That is a decision on that spot with that market competition, et cetera. So I think we can definitely give good support to those type of businesses, and that's what we're trying to do, and that's the whole Intelligent Edge Network. You're going to see, I'm going to repeat that name. It's important to remember it in order to sort of get benefit for -- leverage the scale and the skill of the company. And remember now, I haven't talked about that, but as Yahoo! and AOL come in, their knowledge about machine learning, artificial intelligence that we need in the network now. So of course, we're using those people and we're leveraging that skill. And when I came in and saw that, wow, that's great. There's few companies in the world that actually -- are ranging from a Yahoo! to sort of field operations and can actually pool that together. And it's a work to be done, but that's a great asset.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So one thing I realized, you mentioned that guidance for 2018 is going to be left up to Matt and the company when you...

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Matt is a great CFO. He will manage that, yes.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

But going back to December 21, when it became pretty clear that the tax reform -- well, Release 15 and tax reform. I mean, is that an opportunity for your organization to talk to the broader management team about accelerating investment if Verizon through tax reform might have more cash flow and advantages like bonus depreciation to spend capital sooner?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Quick answer is probably no. I mean, you don't want to get inefficient. I mean, you don't want a change in the hurdle rates on the capital allocation, the return on investment because of it. You probably don't want to have big spikes in the capital allocation because, I mean, then it drives inefficiencies. We want to be consistent. We have a plan. We're working with that. But, of course, again, we're going to look at everything. But as a



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general term from me saying it, and we're more than me in the company. But from an execution point of view, you want to be consistent -- plans very, very structure in this one. And it's not helpful then to go up and down in capital allocation because it's ramping up/down resources, money, waste, et cetera. So that would be my principle but again, we're, of course, always debating and we should debate in an -- in the leadership team of the size of Verizon.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

And how do you choose which markets to do 5G in -- you announced Sacramento. You're going to do some trials in 2018. What's the selection criteria?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

So the selection criteria has, of course, been well thought through. We have only announced one of the cities. I think we also announced at the same time that we have a private partner partnership with the city. I think that's important because think about it again, I mean, think about the wireless technology and mobility and broadband being the 21st century's infrastructure. Now you can think about it at -- from a people point of view, we've done it. I mean, here, all of us have a smartphone, and we are using it. The industry is just starting. Society has not even gotten the benefit from the 21st century's infrastructure. So that means that, of course, cities will have a great gain all the time with smart cities, efficient waste management with a good sort of connectivity in the city. So I think that that's why we see that interest. And, of course, in the beginning here, we're probably focused a little bit more on the ones that are interested.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

There's a focus for broadband companies for 100 megs, gigabit Internet. You see it both from a fiber side, copper side, enterprise. What's driving usage? And what's the experience that leads companies like yours to focus on these milestones of 100 megs or 1 gigabit in terms of what you want to deliver to the customer?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Two things. One is, of course, when you have more capacity, --you can get a better service to anyone. So you always drive better capacity because that's always giving you better experience. Secondly, what I have learned, working in this industry with innovation so long is that my problem is that -- it's my imagination, I can never imagine what people, industries will do with all the capacity. But I can tell you, they always come up with it. And I worked with 3G with the killer applications for years with teams thinking about it. There was a throughput -- that was the killer application. So analog 5G, we're going to see totally different use cases and things to be used. So I think that creating even better performing networks, higher quality will enable new type of services, more digital disruptions. But I don't have all the answers. But I can tell you, it's a whole ecosystem that we're thinking about.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So you mentioned network quality. That's a core platform for Verizon.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes, yes.



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Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

How do you keep your edge as your competitors are investing and investing more upgrading technologies? What does Verizon do? And what can the company do to continue?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

It has a lot to do with how you engineer the network. [Enormous] a lot and how you measure it, the KPIs you're following up, how close you are to the network business. I think that's -- and what I've seen at Verizon, and again, I'm 8 months in or 7 months in, that is the key difference. And so the engineering here is super important. And again, thinking about the spectrum, thinking about the densification, think about the technology infused, doing that in a planned way, all that creates the ultimate customer experience and that the network is superior. And that's our work. I mean, Verizon has been on the leading position for a long time. And our work is just to continue to have that lead. I mean, my team is thinking about that every day, what are we doing next day, next week, next month all the time. What are we doing to keep up that lead?

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

And can you frame for us how you look at the decision when to build fiber versus buy fiber versus leasing? And how you approach that in the future?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. So in the whole Intelligent Edge Network, there are a couple of key components. Fiber is one because there with the data loads you have, you want latency and things like that, you need fiber. So basically, you have a three-pronged decision process. You can lease, you can acquire or you can build yourself. Those are the 3. And of course, you're always looking to how you do it yourself and what type of economics is for that. You look at buy. You -- if the buy is meaning in the same level, I mean, you will get the access much quicker than you would buy. And then you lease ultimately when there's nothing to buy and building yourself wouldn't make sense. So we constantly have that evaluation for any city we will do it, but ultimately, we need fiber to our sites. But not only that, we have a wholesale business. We have an enterprise business. We have a small and medium business that need fiber as well so we can share that. So when we look at a business case for building, we look at, okay, so how will we benefit the 5, 6 units we have. If that is a better economics than renting or leasing or buying, we do it. If we find better ways, we're going to do it. So it's a very methodical way of doing financial engineering and seeing that we do the right thing with the capital that has been allocated to us.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Great. We've got some audience poll questions. So you've got the remote controls in front of you. Feel free to participate, if you like.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I wouldn't like to disturb the results here.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So if we poll the first question, please. Is vertical integration necessary to compete within the category more effectively? And so first, yes, with short-form content; second, yes, with long-form content; third, no; four, unsure. And we're going to have some mics roaming around the room. So if you have some questions, just raise your hand and we'll get to you in a moment.

(Voting)

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Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Okay. So 10% said yes, short-form content; 22%, yes, long form; 59%, no; 10%, unsure. How's Verizon looking at it these days?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I have no answer. I haven't got an answer. No, I think that content is important. I mean, remember that many of our offerings, we need content. But again, do we need to own the content? That's another question. I guess that was a little bit the question here. I think again, when you come to residential broadband offering, you come with a good superior performance or the connectivity, but you also need to have some offerings. That doesn't mean that you need to own it. So I think yes. I can only say that yes, it looks like we have a distribution on nowhere.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Second question, please? Does Verizon need more spectrum for its existing mode of business?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Okay. I got to vote on this one.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

One, yes; two, no, they have enough spectrum; three, no, they can build more macro and small cells; four, unsure.

(Voting)

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

It's interesting because I have answered that question.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

You have?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So 69% say yes; 15%, no, they have enough; 15% no, they can build more with cells; and 2%, unsure.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Yes. No, and I think that again, I come back to the position we hold today and where we're going. We feel comfortable about that. But again, I mean, we will always look to the market if there's something we need so we're going to do with. But in general, with the densification and the spectrum



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we have, including the technology development, I think we're in a good position. We have a lot of spectrum incoming here. So yes, that's where and how I see it.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Okay. Next question. Do you believe 5G fixed wireless will be an effective competitor fixed broadband services? One, yes; two, no; three, maybe?

(Voting)

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

And we do have mics roaming around, so please raise your hand if you have a question. So 35%, yes; 43%, no; 22%, maybe or undecided. What do you think is the biggest misperception on this?

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I think the biggest -- and, first of all, I have a great respect for the people in the room, so I don't say that they misunderstood that. But the big difference is when we have discussed sort of wireless broadband to residential before, it has been a one-slice solution, meaning you have done it only for that. Remember now, in the beginning of my conversation, I talked about 5G where we talked about slices, one slice is doing residential broadband. We use all the other assets there are common. And that's, I think, is a little bit misunderstanding. I think that we have seen historically, I mean, where we've all been competing. Hey, we can do wireless competition here with the fixed broadband and dedicate one line. That has been very tough even though it's a bonus. Right now, we see a lot of cord-cutting and people are using 4G already. So it is happening. We have to be -- I have to be very clear on that. So I think that might be the misperception, how 5G is designed that, basically, the core network, the transport network, the fiber network all is the same, is one slice out of that software and the antenna that is doing broadband. And the rest is the same investment, which means that the economics can be different, which I think has been. And the second is, will you get the speeds they get. And as we showed on the 29th of November, I mean, we get up 1 gig in throughput on 1,000 feet, 2,000 feet distance. And of course, that's massively, massively cheaper than having a fiber all the way to the home to have sort of a beam in the air going to the home.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So is that one of the keys? Is that the cost per home? Well, you didn't specify today. It should be significantly cheaper than fiber.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

That's the -- the cost should be -- the cost and the speed as well, meaning, the deployment speed. So I think those 2. And then that we can share the investment as 5G is defined like that, which was not the case when you did fixed wireless before because then it was a dedicated competitor, which usually had an inferior speed because of fiber or DSL or whatever had a great speed. So I think it is different. And we need to work for it. We need to do it hard. We have worked on it for 1.5 year to prove the technology. We're now going to launch 3 to 5 cities in 2018. So we -- but again, the engineering team -- I have a lot of confidence in the engineering team here.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

So going back to the room for our question. Do we have one back there? Okay. Maybe just to finish this up then. If we're sitting here a year from now, what are the things that investors should focus on for Verizon?



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Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

I think that what we should see, of course, is we're going to see 5G from the technology point of view. We should have seen advancement on the Intelligent Edge Network. We should see advancement or execution on the fundamentals where we bring together our assets even more. And I'm not sure if you looked at CNBC this morning. Tim Armstrong from Oath talked about how we're bringing together assets, how we work between the wireless and the Oath and all of that. I think that's what we should see. We should take care of the investments we have done for the shareholders and see that there are -- we're leveraging the scale that we have and leveraging the skill that we have across the platforms.

Michael Rollins - Citigroup Inc, Research Division - MD and U.S. Telecoms Analyst

Hans, thanks for joining us today.

Hans Vestberg - Verizon Communications Inc. - EVP and President of Global Networks and CTO

Thank you very much.

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