

5G, Digital Inclusion and the Future of Communication

Speakers:

Lowell McAdam, CEO, Verizon

Moderator:

David Kirkpatrick, Chief Technologist, Techonomy

(Transcription by [RA Fisher Ink](#))

David Kirkpatrick: Lowell McAdam is CEO of Verizon, which he has been doing for about six years. He's been at the company's constituent entities for decades. Exactly how to quantify it, given the way everything's been rolled up over the years, is hard to say, but he's doing a lot at Verizon. You're going to hear quite a bit about the technology approach that he's taking at the moment.

Quite notably, he has acquired a number of content assets now aggregated under Oath. The most well-known recent one of course is Yahoo, AOL, TechCrunch, and other elements that have been combined into this Oath business, which is an interesting participant in the digital ecosystem at a time when, as he and I were discussing backstage, Facebook and Google are really getting raked over the coals, just now on the stage, in the next session after this.

[LAUGHTER]

Really, it is quite striking. We've made it part of our theme this year to look at what the relationship is between society and the net giants. Even I'm sort of surprised about the sudden shift in sentiment that we're seeing and I think it's being displayed here time and time again—in several of the breakouts I've heard it also.

Anyway, Lowell is well positioned because of that, in fact. I mean, what's interesting, and I was saying this to him also Verizon is a tech giant, but it doesn't get painted with that brush. You know, so you're kind of lucky that way, right?

McAdam: Well, it's kind of good and bad, David. The thing that always amazes me, when we meet with a large customer and we talk about all the different services that we offer, everything from 150 countries around the world, our footprint on broadband and what we're doing around

5G, which we'll talk about shortly, they all go, "Boy, I had no idea Verizon did that." In some ways, that's sort of good to go below the radar in some cases, but obviously we want people to know what our capabilities are.

Kirkpatrick: Well, you know, I know one of the things that is sort of core to the thinking you have about your company right now is extending your platform more broadly in the United States. Talk about that and how you're going to do that.

McAdam: Well, there are two ways to this. We are known—the core of our company is to be the best, most reliable network. And so our fifth-generation technology, we call it 5G, will dramatically change the way people use wireless devices going forward.

I've been in this industry for almost 30 years. I don't think I've ever seen anything that will change peoples' lives like this new technology. So big investments going there.

But then as you mentioned, we got a little tired of, in our past lives, we would put all the capital on the ground and provide the highways that these smartphones and everything operated over but the Googles and the Facebooks made all the money off of it. Eric Schmidt said to me once, "If you make one penny over your cost of capital, I'm a pretty happy guy." So I don't want to be that—I don't want to do that for them anymore. So that's why we're investing in things like Oath and bringing these different, whether it be millennial media, or as you mentioned Yahoo and AOL, we think that we can provide a great core connectivity service and then offer a few of these things on top of it that customers want. They're looking for an alternative to Google and Facebook, as you said, and we think we can provide it.

Kirkpatrick: You've also got five million people with Fios. How many wireless customers do you have?

McAdam: Almost 120 now.

Kirkpatrick: 120 million wireless customers, that is quite a few. So you really are kind of indispensable to the infrastructure of the United States. Interestingly, also, you're highly regulated.

McAdam: Yes, parts of us.

Kirkpatrick: We've been talking about how unregulated those other people are.

McAdam: People don't know this, David, but just one of these "I didn't know Verizon did that." Literally 60 percent of the world's internet traffic touches our network every day.

Kirkpatrick: Now, is that partly outside the United States? How much?

McAdam: Yes. It's being in that 120 countries and we have huge undersea cables and we're into Asia and Europe, so that's the number.

Kirkpatrick: But outside the U.S., you're more of a B-to-B player, right? You're not really a branded company except through Oath potentially.

McAdam: Yes. In the past, it's been an enterprise solution. But now Yahoo and AOL have significant presences throughout Asia and Europe.

Kirkpatrick: But aside from that, what are some of the businesses you have in those regions?

McAdam: Outside the U.S.?

Kirkpatrick: Yes.

McAdam: That's really about it. Now, we're just going in, in telematics. We've bought a couple of fleet businesses, Hughes Telematics, and built on that. And so we do actually provide services in China, for example, for Mercedes Benz. We have many of the car companies in Europe and we're getting into more supply chain management by taking that vehicle platform and extending it out into the warehouse and to the delivery.

Kirkpatrick: Okay, well, there's plenty we could talk about globally, but I think there's so much interesting stuff happening here at home. Talk more about 5G, because I think that's something that, even in this audience, not that many people understand. We're fortunate we've had some good work with Ericsson over the years and Ericsson has explained to me a lot about it and every time they do, I go, "Wow, I didn't know that." Explain why you're so excited about this next generation technology and how soon it's going to be here.

McAdam: Well, let me give you a couple of factoids about this. A typical wireless network today delivers about 200 milliseconds of delay. So you hear a lot about autonomous cars and virtual reality, augmented reality. They need around 50 to 90 milliseconds of delay. 5G will deliver less than one millisecond of delay. So when I talk to the pure hardcore tech developer people, their eyes just bug out. I was with the Bose folks a few days ago and their eyes just lit up when all the things they could do around virtual reality with a millisecond—the gaming company companies do. So that's one swim lane.

The battery life on a 5G-enabled device for the Internet of Things, can have a 10-year battery life. So you think about what you could do—we literally are working with companies that want to embed chips into the striping that goes into a parking lot or down the road because you'll always be able to see what the traffic flows are, whether traffic is available—

Kirkpatrick: And you only have to change the battery once every decade?

McAdam: Once every ten years for that sort of an application. Most phones today get about 10 megabits of throughput. This will deliver a gigabit, so a hundred times more speed on your device. We'll also be able to connect a hundred times more devices to the network because of the way it's architected. So our capacity goes up literally by a factor of 1,000 in our network.

Kirkpatrick: One of the things—5G kind of configures itself based on the device it's connecting to, which then doesn't waste bandwidth that might be needed elsewhere.

McAdam: Yes, we call that network slices. So if you're medical and you're sending a lot of CT scans and that sort of thing, you need a big pipe. We can do that, but you don't care about latency. If you're doing an autonomous car, you don't do huge loads to the car while it's driving down the road, but boy, it better be there in that less than a millisecond. In the cities—just up the road here in Sacramento, we're doing an intelligent city application with them, deploying a lot of fiber. Their big thing is traffic management, security cameras—so literally every lamppost as we go down the street will have a small, looks like a coffee can on the top of it and you'll be able to manage your city that way.

Kirkpatrick: Okay. We'll come back to that because I know that sort of architecture is very important. But how soon are we going to have this 5G?

McAdam: Well, we have 200 cell sites up and operating right now. And you know, the biggest challenge we have—

Kirkpatrick: That's not very many in your—

McAdam: No, I mean we have literally 60,000, I think, was the last count of cell sites. But this technology was not supposed to be available until 2022. And we said, you know, there's too many opportunities to help people with the problems that we all see. We could put our shoulder behind this and we can bring it in. So we're in a lab out in field trials right now. We'll be commercial next year, you know, probably in just a handful of cities. And then we think by 2019 and into 2020 we will be rolling this out in major cities across the country.

Kirkpatrick: But our own vaunted smartphones won't be capable of receiving 5G for how many—like three or four years, probably.

McAdam: No. Qualcomm has been a great partner with us over the years and we announced about three weeks ago that they're going to be delivering a chip in first quarter of 2018. So six months, nine months to get it into the handset and get it tested and integrated into the network. But as you go into 2019 for sure, maybe late 2018, you'll have them available. And Samsung and LG and others have already committed to do this. I'm sure there will be others.

Kirkpatrick: So a lot of phones will be multi-banded and they would be capable of handling it when it shows up?

McAdam: Yes.

Kirkpatrick: Wow. Now, talk about the architecture that you're going to go to down the road for home computing and home connectivity. You've famously pioneered fiber to the home, with Fios, and now that's widely accepted as the way to get high-speed connectivity. But that's going away. Tell us why.

McAdam: Well, I think it will diminish. And I know you had John Chambers out here the other day and he and I have noodled around different architectures that we could have—we call what we're developing now the intelligent edge. So rather than the big cloud that sits back in the network, we will have intelligence in hubs that are out in the network. I've been around long enough, it's a little bit of—you know, my life's a circle here. We're going kind of back to the future. But you will have those computing hubs out in the intelligent edge and then you'll go wireless into a home. So today, if you listen closely to the ads, you'll hear cable companies and Fios offering 100 megabits or maybe 500 megabits or even a gigabit in very limited cases. But this 5G technology will routinely do a gigabit and we can see three gigabits or more to a home. So right now the biggest problem we have right now is generating enough load so we're giving away 4K TVs and other services in the home to really load these networks up and see how they perform.

Kirkpatrick: In other words, there will still be a ton of fiber, but it won't go all the way to the home. It will go to a node near the home that will then broadcast wirelessly the final distance.

McAdam: Yes. That's the plan. Now, if somebody still wants fiber into their home, we can do that for them. And obviously, a lot of the businesses and enterprises will have that. But your average consumer will be what I call a fixed wireless player, wireless fiber.

Kirkpatrick: Okay. But that's going to be cheaper to deploy, obviously, than fiber to the home. We do have this interesting issue today in the United States where we think of us as a digitally enabled nation, but I think the number of households that don't have broadband is still shockingly high. Do you happen to know how many that is?

McAdam: You hear numbers from 40 percent and even higher in some cases but it depends on how you measure it. Is it 25 megabits, is it 50 megabits? It's a little bit of a mover. But this sort of technology I think is going to help get the services out into these areas. One of the key things, David, we need to do is get the cities to work more closely with companies like ours that are trying to deploy these networks. And unfortunately, it's a bit a money maker for them. Some cities literally want \$3,000 for every light pole that you put an antenna on. What that means is you go to the next city. You can't afford to deploy. But places like Sacramento—Boston is another example. We worked with the mayor there, we got access to a lot of the city infrastructure. We just put \$300 million into Boston to completely revitalize the way they do telecommunications in the city. So I think that's such an engine for people that want to innovate and solve all the different problems that you've been talking about at the conference so far.

Kirkpatrick: So Rahm Emanuel is another person who kind of gets it, right?

McAdam: Yes. Rahm came to me at another conference and he'd heard about Boston and the next week we were in the city with them and he's been incredibly supportive and that's going to be on our list. Seattle is another one that's working closely with us.

Kirkpatrick: So really, the difference is some cities see it as a source of tax revenue and other cities see connectivity as a source of growth.

McAdam: Yes. They see it as an innovation engine. New York City is an example where we're working with the city and Cornell Tech, we just opened up a new campus there. And between that and our ability to deliver that high bandwidth—

Kirkpatrick: We're proud of that, actually. Yes.

McAdam: Yes, we're very proud of it. So I think that's going to be an innovation engine. So more people are seeing that without a strong telecommunications infrastructure, you don't have a vibrant economy.

Kirkpatrick: I wanted you to mention that number of how much fiber you're buying though, because it's kind of mind blowing.

McAdam: Yes. We announced the deal three to four months ago with Corning, who creates most of the fiber in the U.S., that we're doing 12.5 million miles of fiber a year for the next three years. So Wendell Weeks did the math and said that's actually enough to run a fiber cable all the way to Mars. So when Elon Musk lands up there, we'll have fiber ready to support him.

[LAUGHTER]

Kirkpatrick: Okay. Now, one of the things that you are passionate about and that Verizon is committed to is trying to bridge this digital divide by getting this to more people. Now, how is that going to happen? Where is the money going to come—even with the inexpensively deployed 5G, I assume it's still going to cost a lot and who's going to pay for it?

McAdam: Look, there's going to be a number of models here. We did a documentary with Rory Kennedy called "The Digital Divide in America" that talks about how people that grow up in the right zip code have access to these sorts of services and people that grow up in a different zip code don't even have a computer or any access to the internet. And so we've put a lot of effort behind education for decades. So I think there's got to be a technology piece to this.

Our preferred model is, if we go into a city, we can go take care of consumers, we drop off free service to every school in the city. By the way, there are some cities that don't allow you to do that. But I think there's going to be that sort of a service and then we're going to have to work with the federal and the state education departments, and in some cases—New York right now is doing subsidization, Governor Cuomo is doing that to subsidize to get—they call it CAF funds, but it's an education incentive fund that they help subsidize the cost.

Kirkpatrick: Do you have a figure for the rough cost per home on average under a 5G architecture vis-à-vis what we would pay now for what we would consider broadband?

McAdam: The analysts would love me to tell you that number right now, but until we really get out in much larger scale deployments, I can't. But look, I'll be disappointed if it isn't like half of what it costs us today to pass—

Kirkpatrick: Well, that will be great for our country, and the world. Quickly, should Facebook, Google, and Amazon be subject to more regulation, or some regulation?

McAdam: Well, we're not a fan of regulation, as many of you in the audience would expect, so I don't call for a lot of regulation. I think transparency is important and that's the thing that people are a little concerned about right now. The key for me is a level playing field and we have said that time and time again. Fewer regulations, but anybody that's in the Internet ecosystem should be regulated the same. And in the past, there's been this "let's regulate the cable companies or the telephone companies and let the Googles and the Facebooks do whatever they want," and I think that's how you get dominant positions and that's how you get in some of the trouble we're in today.

Kirkpatrick: Okay, well, that was an interesting answer. Who has a question or a comment?

Levy: Hi, Steven Levy, Backchannel. I found it telling, the idea that maybe the rural places aren't getting broadband; you answered in terms of cities. I have a place in Western Massachusetts and Verizon has not only refused to connect the places it serves in a monopoly with any kind of low speed Internet, like DSL, they've sort of pulled back, and in other parts of the country, they are involved in efforts to suppress municipal broadband. There is a very huge problem in rural areas of not getting any Internet at all, let alone the speeds you talk about. Could you make a commitment to doing something about rural America that so far I haven't seen from Verizon?

McAdam: Yes, well that's clearly what we're hoping to see out of 5G. It's just a little bit too early to say that we can do it. But DSL is not a technology of the future. You know, twisted pair copper has all of the maintenance issues that I'm sure you experience. So putting more money into that versus putting more money into fiber and advanced technology—you can do better with a 4G LTE unlimited service than you can a DSL. And so we'll push farther and farther out into the rural areas, but as I said, I think it's going to require the government in those areas to say, "Here is a fund. We're going to subsidize one carrier to build it and everybody rides on that infrastructure." That's a far better model than being out there with poor quality technology.

Kirkpatrick: So there are a lot of parts of the country that don't have either wireless or any kind of wired alternative broadband right now.

McAdam: I'd argue with the wireless part. I mean, we've got 4G LTE coverage—

Kirkpatrick: Western Mass, I had a place there too and we had nothing. There was no wireless or any—unless you had a satellite, that was it.

McAdam: Well, I'd love to have the address. Give it to me, because when I—

Kirkpatrick: Steven will give it to you.

McAdam: I'll bet you nine out of 10 times when I hear this story, I go in and it's because the town has blocked a cell tower because somebody has said cell towers—

Kirkpatrick: That did happen in the town I'm referring to, by the way.

McAdam: Yes, cell towers cause cancer, even though that's been debunked for decades. And so they block the ability to get at a tower.

Kirkpatrick: Okay. Who else has another comment or question?

Audience 1: So with AT&T's impending merger with Time Warner and other potential combinations of distribution and content, like Disney reportedly talking to Fox about their piece of Sky, do you see Verizon needs a path to the living room in all of that kind of content, not just the web services moves you've made with Oath?

McAdam: Well, this is going to be a very interesting debate. And for the first time, you've seen Verizon and AT&T take very different paths, with their purchase of DIRECTV and if Time Warner is approved. We believe that digital content is what's going to win in the future and the 300 channel bundle is breaking down. You see virtually every operator lost video subs in those bundles during this last quarter and that's a trend that's been accelerating. So we like the idea of digital content and we make investments in those with Hearst Media and others. So that's our play versus the streaming media. We could end up being wrong. There's a few other good assets that are still out there. We'll see, but for now that's our play.

Kirkpatrick: What about the Sprint and the T-Mobile mergers failure, is that a good thing for you?

McAdam: Well, our stock went down by 4 percent today, if that tells you what the market thinks. We never take a position on a merger like that because you'll just have people come back and oppose your merger. So our view is you compete with whoever is out there. There's a view that, quote, "market repair" goes on when it goes from four to three and that the three remaining carriers are healthier. But look, they've been two months away from a merger of some company with Sprint for the last 10 years. So we don't wait up nights waiting for the press.

Kirkpatrick: Okay, one last chance for the audience.

Audience 2: Thanks for your nod on the digital divide. I've been working on it for 25 years, starting with my days with Bill Clinton. In your documentary and in things around it, you've talked about the need for a coordinated effort, including connectivity, teacher training. Are there things that Verizon's doing with regard to the content and teacher training part of the digital divide question?

McAdam: Did Rose Kirk ask you to ask me that question?

Audience 2: I know Rose, but I have not talked to her recently.

McAdam: Okay. [LAUGHS] Our head of foundation is Rose Kirk and she's developed a whole program. She's just done a fantastic job in this area. We're very proud of her. It's the Verizon Innovative Learning Schools, VILS. And we have literally hundreds of schools that we come in, we give them the connectivity, we give them the laptops, and we give the teachers the training on these agendas and the curriculum for the school. Because we found that in that past just giving connectivity or just giving an iPad really doesn't help. It's a different way of teaching in a digital environment, as you probably know. So we work closely with the schools and we've seen significant—60 percent improvement in scores and comfort with the Internet and their ability to excel in classes. So it's an investment well worth making and we literally do hundreds of millions of dollars of investment in that area.

Kirkpatrick: Well, it's been great to have you. I wish we could spend more time because there's so many more things I'd like to talk about, but we did run out. So thanks, Lowell, I hope to have you at Techonomy again soon.

McAdam: Thank you.

[APPLAUSE]