REFINITIV STREETEVENTS

EDITED TRANSCRIPT

QCOM.OQ - Qualcomm Inc at Arete Virtual Semis Conference

EVENT DATE/TIME: MARCH 03, 2021 / 4:30PM GMT

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

CORPORATE PARTICIPANTS

Cristiano Renno Amon *QUALCOMM Incorporated - President*

CONFERENCE CALL PARTICIPANTS

Brett William Simpson *Arete Research Services LLP - Senior Analyst*

Harrison Barrett *Arete Research Services LLP - Analyst*

PRESENTATION

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Really appreciate you coming onboard this morning.

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Good to see you, Brett. My pleasure to be here. Happy to participate.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Yes. Great. Thank you. I'm going to jump straight in, if that's okay, because there's a lot to get through. And hopefully, we can squeeze in some questions from the audience in the last 10 minutes or so, if that's okay.

QUESTIONS AND ANSWERS

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Before we get into some of the longer-term drivers in the business, I wanted to talk a little bit about the new role that you're going to have at Qualcomm. I think you're starting in June, Cristiano. I think you're the fourth CEO in the history of the company. And I know you've been heavily involved in the strategy in the last years. But just keen to get your perspective in terms of the next 3 to 5 years. What do you think the priorities are for Qualcomm under your leadership? And what should expect -- what investors should expect from your time as CEO?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Well, thank you for the question, Brett. Look, it's an incredible privilege and an honor for me to be CEO of this company. I've been in the company for a long time. Joined as an engineer, been with the company more than 25 years. And it is an incredible company, which has always been setting the pace of innovation within wireless and low power processing. And as we think about the company into the future, it's very clear to us that the priority really #1 of the company is to execute on this 5G opportunity.

5G is one of the biggest opportunities we had in the history of Qualcomm. It's the first time that our -- that technology is not unique to the telecommunication sectors and is creating this opportunity for the company to diversify and have more than one growth factor. So the days that you talk about Qualcomm having growth at the ramp of 3G or ramp of 4G, now we're looking at the ability to grow in a number of different industries and kind of been reflected how we started to communicate to investors about a company that has multiple business, and that will continue as we go forward.

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Great. Makes sense. And I know you've had a terrific December quarter at Qualcomm. And I wanted to maybe just hit on the head some of the concerns during the runs of late around Qualcomm. I mean shortages, certainly, 5-nanometer, I think, there has been challenges. And obviously, we've seen this power outage in Austin in Samsung's fab. I think there's also maybe a lack of Android flagship right now. But can you maybe just give us your thoughts in terms of the shortages, the extent of the shortages and particularly the power outage. Is there any major impact on the business going forward?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

No. This is a great topic of conversation. And I'd like to separate this in 2 areas. One is the macro environment, which I believe is like a temporal issue we're dealing with it. The other one is how we think about the long term and the permanent opportunity that exists for Qualcomm. It's important to have this distinction. So as I'm sure you heard, we have a broad industry base shortage of semiconductors. And I'll touch on this very briefly. The reason that happened is you have the V-shape recovery across the board for an industry that assume at the beginning of the pandemic that we're going to -- awards going to go into recession and all the CapEx were pulled out in terms of investments. So you have a mismatch on the growth of the opportunity and the capacity that was in place.

On top of it, the pandemic accelerated the role of digital across the board, from enterprise transformation of the home to acceleration of digital transformation at enterprises. And that's -- get overlay on top of that. And then you have the automotive industry, which has been trained over decades to operate just in time as soon as the car sales was brought to its historical low at the beginning of the pandemic. They brought inventories down. And then unique to mobile, but given the size of mobile, then you land an entire Huawei, about 200 million units a year, when a supply chain that was not ready to support Huawei. So then you have this perfect storm.

Now what I want to highlight is while this has been impacting, to some extent, even though we have historically high performance in QCT, it is still the demand is being placed by supply. That's -- we look at that as a temporal issue. The big story, when we think about on a permanent basis, is we just saw an expansion of our addressable market. The Huawei opportunity -- they used to be served by HiSilicon. Now is an expansion of addressable market for Qualcomm within the premium Android, which we're very well positioned with Snapdragon 800, Snapdragon 700. And on top of that, there is a higher base of the size of digital in terms of IoT, in terms of networking, et cetera, which has basically been as a result of the pandemic. So it create growth vectors for the company over time.

Now having said that, you specifically asked about 5-nanometer, and I'd like to answer the following. 5-nanometer is a new technology, and we're ramping 5-nanometer, actually, according to expectations. If I give you a data point, which the ramp in the first quarter is the highest we ever had in the new node. The issue is not necessarily that we don't believe there's 5-nanometer ability to ramp. It's just the demand is much higher because now we have to serve into the Huawei addressable market, which would -- nobody has planned for that situation. But as we go to the next product cycle, we did say in the earnings call that we're very happy about design activity for the next premium. And we expect that demand is going to meet supply towards the end of 2021. We're very excited about that.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Got it. Okay. That makes sense. And I guess, looking at the landscape -- the chip landscape for Qualcomm, I mean you have 40,000 -- over 40,000 employees now. You're the largest fabless chip maker in revenue by some ways. You have doubled the headcount of any other fabless chip maker and you're sort of driving the leading edge with real demand expertise in wireless. I guess when you look at the smartphone market, it's obviously very concentrated with large powerful OEMs. But they seem intent on building their own sort of vertical platform. And Huawei is an example, and Samsung is an example, and now we have Apple. How do you think -- given you're coming out with a new version of 5G, at least, sort of 18 months, release 15, release 16, release 17 and you have so much resources applied to this road map, how do you think about the sort of the vertical business models out there today in smartphones? Can this really survive as the complexity around 5G and millimeter-wave kicks in?

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Look, we get this question all the time, and we get this question now. We got that at 3G. We got that at 4G. And I think that's probably one of the benefits I have with being with Qualcomm for a long time as to go through those things. I have many things to say, and I'll start with something very simple. As long as you believe that in the area of cellular modems as well as other technologies that go around the cellular modem in the computing device that you carry in the palm of your hand -- and it's going to evolve to the next computing platform. That, that road map continues to change at a fast pace. There's always going to be room for a company like Qualcomm. You started your conversation talking to me about being a largest fabless. The reason we -- even though at a scale, we never built an IBM or a semiconductor manufacturing is because we don't have that expertise. We're very focused and very good at what we do. It's normal when OEMs get large -- and this history of the cellular industry has ups and downs, as you see.

In the 3G was Motorola had their own chip, Samsung had their own chip. With 4G, it changed. At some point, BlackBerry had their own custom chip with Marvell. Motorola had their 4G chip and Samsung had a chip. Huawei's had a chip. As long as you get scale, it's logical that OEMs try to develop their own chip for supply chain efficiency. But if the technology is changing in a very fast pace, the premium experience is driven by the companies that are big first to market. And if you look at our relationship with Samsung over the years, I will argue that of all the companies going vertical, Samsung has the biggest number of assets. They have an infrastructure business. They have a memory business. They have semiconductor manufacturing. And they had been doing not only 3G and 4G, but 5G even during the launch. And our relationship with Samsung is stable, and I would argue that we have upside momentum in share. And that is because, as you pointed out correctly, the complexity of cellular or for RF in a scale, and the standard is becoming more complicated because now has the input to serve automotive, to serve industrial and et cetera.

Now the other way to look into this is companies that trend to do vertical, they try to have a common denominator. So if you think some of our largest customer today, they have watches to cover. They have tablets, computers, phones. Phones that go into emerging markets, which are more price sensitive, we end up prioritizing where you put it in. And we never make heroic assumptions that we're going to be 100% supplier. If you think about relationship with Samsung, it's a very good proxy of how we think about the future, which there's a room for Qualcomm and there's a room for a commodity modem as well. And another way to think about it is our business in China, which we have been competing in a market which is very price sensitive. And we have carved out a good space for Qualcomm, which is actually now growing with -- at the premium tier with the exit of Huawei.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Got it. Yes, makes sense. Maybe switching gears, Cristiano, to automotive. And I think you've talked in the past about this big opportunity to build an automotive chip business. And you've got a healthy order backlog. Can you maybe talk us through -- when you look at the sort of future of the car, what is the sort of content you can address? I mean, we see the RF business, the 5G modem opportunity, what's happening in DASH, et cetera. But how do you quantify the content you can address in a car? Because really, the business, I think, it's doing a little over $600 million a year today. The addressable market changes dramatically as this -- over the next 3 to 5 years. So any perspective there would be very helpful.

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Absolutely. We're very optimistic about what's happening in the auto industry. And this is going to be a growth and a success story for Qualcomm. And especially because in the auto industry, you have both a transformation of business models as you connect the car to the cloud or you build electrical car, a process of electrification. And as we look into that transformation, you still have all the attributes which are important for Qualcomm technology. It has to be power efficient. It has to have high performance. It has to be reliable.

So here's the crescendo, how you think about our automotive business. We started with connecting the car to the cloud, the C box, the telematics, we're doing very well. I think Qualcomm became the platform of choice for all the telematics and the C box within the car. And we see a road map for that silicon to expand as you add processor to the telematics, and then you add 5G cellular V2X, which will connect car to car, car to infrastructure, car to pedestrian.

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Then we have silicon for the digital cockpit transformation. And that is starting with infotainment and dashboard, expanding to rear seat entertainment devices, smart mirrors, it's -- head up display. And then the ability to add capabilities to it, like cameras, they are front facing, looking at the driver and integrating all those things as a system. And you can see that as those things go hand-in-hand, if you can see the role of the telematics connected with the role of infotainment, think about a map today. And one of the key navigation capabilities -- once you have the driver still behind the wheel, you have the streets, you have your car moving, and then you have maybe color index for traffic. Now think about populating now with cellular V2X technology, that infotainment with every pedestrian, every other car, the traffic lights, you look at direction of moving with AI calculation in real time, whether that's a warning or not, and you integrate with warners in the dashboard for how you -- the camera looking at the driver. Those things are integrated as a system, a lot of system technology potential for Qualcomm.

From there, we see growth also coming in addition to the digital cockpit and telematics for the general computing in the car. And I'll make a very simple description to you. If you're a carmaker and you've been developing a car platform, you specialize in doing, for example, a unibody, and you have a lot of microcontrollers in the car that today is served by the traditional microcontroller company from NXP and Renesas and Infineon. Now if you're now building a brand-new electrical car, the chassis can -- it starts with a chassis with the skateboard, completely different. And then instead of having all those microcontrollers, you have a general computing and all those things run this application. Just think about a Tesla computer on wheels. That creates opportunity for Qualcomm for a hard performance computing to go into cars as they get redesigned for electrification. That creates a vector of growth, number three. And we did some inroads into ADAS in autonomy. We had a partnership with GM that got announced. And we have a strategic partnership with Veoneer, taking their stack into our silicon for ADAS. So we're just at the beginning of what we expect to be a very successful growth opportunity for Qualcomm.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

And if you had to put numbers around that content, are we talking about a couple of hundred dollars of potential addressable market for car? Or is that sort of going a bit too aggressive here?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

I think it's -- look, we don't want to make a disclosure, but it's higher. Especially if you look at all of those things combined, you have several hundreds of dollars of silicon opportunity in the car.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Right. Understand. And from a QTL perspective, should we expect specific license platforms to address this? Or how do we...

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

QTL has been successful licensing standard essential patents into the car with our telematics business. A lot of the business we provide today -- it's a license modems. So I expect that to continue to be a very stable part of QTL, and it's a growth opportunity. As you think about every new car coming out of the line is going to have to be connected to the cloud.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Maybe one thing you mentioned is about the compute opportunity in cars, but I wanted to get your thoughts just on the wider compute market. You obviously acquired NUVIA recently, I think, really interesting acquisition. And you've been investing in Microsoft ARM -- Windows on ARM. I think there's certainly -- we can see, Apple's doing ARM on the Mac. It seems like there's a lot changing here in terms of your market opportunity broadly in compute. Can you perhaps just talk a bit about what you're going to do with NUVIA? What changes? Is this about differentiating in the mobile compute predominantly? Are we going to see Qualcomm get into the data center with NUVIA? I know they had engagements with Google and the like. How do you take that strategy forward with this asset?

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

It's -- this is a topic I think we have a lot of passion about it because we believe the vision is very clear. So I'll start this conversation by saying, we always believe that the end state is mobile and compute are going to converge into the same architecture, and the future of computing will be provided on a mobile SoC. We always believe that. And the reason is it just pointed to the fact that smartphone's largest development platform ever created by mankind. The scale of mobile -- it's already surpassed that. And that's where the application development is much more pronounced. And as we go to the cloud era, everything is connected to the cloud. So we always believe that it's going to be the case. And I'll point to a lot of trends that gets accelerated with 5G.

About 4 years ago, we started this journey with Microsoft to run full Windows, not a different class of Windows, full Windows on ARM. And we know it's early. We went to this process. We started with, first, repurposing mobile chips. Then we have dedicated chips for computing, which end up showing up in the surface with JCX. And we've been on this journey because we believe that's going to be an opportunity. Then 2 things happened, and they're very important for me to point it out. One, Apple launched the M1. And that's an outstanding tailwind for this conversion. Because not only Apple validates that opportunity, they show up with the M1 exceeds Intel i9, showing the possibility to lead in performance, and they move the developer ecosystem now at a much stronger pace.

You have Microsoft doing it. You have Apple doing it. You already have Google doing it, ARM with Chromebooks. So now all the application developer is likely moving to ARM first, and you're going to start to see that shift. Then the pandemic happened. And as the pandemic happened, the PC changed. I'm incredibly excited to see this stuff that you and I are doing right now. Your PC became a communicator device. PC is doing telecommunication calls as frequent, if not as frequent, as doing your phone. So that creates a connected experience. 5G coming, PC will become -- forget about having a dedicated gaming PC. With streaming, whether you think about it's going to be xCloud from Microsoft, Luna from Amazon, Stadia from Google and so forth, streaming of gaming make it a mainstream gaming device. Maybe the next console or this last console, who knows.

Then you're going to -- in addition to what you already have. And then as you started to look of attributes in the PC, camera became very important. Uplink become very important. Audio and multimedia become very important. So we put all of this together, it's very clear that the transition of computing is really another growth factor for Qualcomm. One of the first things I did after being named CEO elect, we acquired NUVIA. And we saw ourselves in exactly the same situation we had back in 4G. So in 4G, we knew that 4G mobile broadband will require a computing power of our hand. And the ARM road map could not provide aptly the performance required. So we developed our own CPU. You may remember, the ones that have been following Qualcomm around, we have a CPU called Scorpion, was the very first gigahertz clock CPU in a better power device.

Eventually, ARM [as in toe] and just a simple make versus buy, we decided to leverage the ARM road map and customize. And that's what we've been doing right now in mobile. But now it's a different story. We see ourselves in the same exact position we were back in 4G, when, as you think about conversions with the PC, the ARM road map doesn't get it there. We acquired NUVIA with the intent of developing the benchmark of performance of a computing CPU, and we did apply that for the computing space as well as premium mobile. Not planning to look into the service space. We're being very focused on device, and it's going to be focused on the computing, premium mobile and automotive, as I talked to you about this general computer on wheels opportunity as we evolve the automotive space.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Clear. Okay. That's really helpful. And I guess, every time I meet with you, Cristiano, I always bring up millimeter-wave. I think it's -- certainly, it's a hotly discussed topic amongst investors. But I think it's pretty clear with what's happened with the iPhone in North America that this technology is here to stay. But we haven't yet seen a dramatic rollout plan develop. And now we have Verizon investing so heavily in C-band spectrum, in excess of $90 billion for the North American U.S. market. Can you perhaps share with us your thoughts? Does anything change in your mind with the rollout of millimeter-wave as a result of how much U.S. operators are paying out for spectrum?

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Nothing changed. Absolutely, nothing changed. And maybe it's important to make a clarification, and I'll give you like a technical data point. If you look in the United States, for example. There's 5,000 megahertz of spectrum available for mobile operators in millimeter-wave compared to 280 megahertz available in the C-band auction. So when you think there -- unfortunately, right, the CDMA days are over, which means when we could get a lot of bits per hertz. We are improving bits per hertz and spectrum efficiency, but not at the pace that we had in the days of CDMA. So therefore, there is no solution around it. But as you get more speeds, the channel needs to get wider.

So if you think of what every carrier accumulates of low sub-6 spectrum across 3G, 4G, you can basically put 1 or 2 channels of 5G. So you don't have the ability to really deliver on potential 5G without more spectrum. And the lay or take is how you should think about the 5G network. You have the very low frequencies for coverage. And then you do that DSS. You convert and maybe get 1 or 2 channels. You get more channels with the C-band or the 3.5, and then you have a millimeter-wave that comes on top. Millimeter-wave takes time to deploy because you have to densify the networks, meaning new site permits, new sites, new fiber backbone. But at the end of the day, millimeter-wave in a dense network will make the difference between differentiated carriers and non-differentiated carriers.

The other way to think about that is as you have traction with the C-band. And remember, only 100 megahertz of C-band will be available by December '21. The other 180 won't be clear until late '23 or later, right? So as you have that spectrum, you continue to deploy millimeter-wave. And I think Verizon just launched 3 new markets with millimeter-wave. It remains a requirement for 5G phones, but the exciting data point is China. And I wanted to point out. We have said about -- we kind of forecast China have a millimeter-way by 2022. We just had MWC Shanghai. And if you look at what Qualcomm and China Unicom did, you have a lot of activity with China Unicom and demonstration of millimeter-wave getting ready for the '22 Winter Olympics. When China turns millimeter-wave, the scale, given the role of China in the mobile ecosystem, is going to be an order of magnitude change, and we'll carefully monitor that. That's going to be the incredible opportunity for Qualcomm.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

And in terms of calendar '21, Cristiano, do you see other regions launching millimeter-wave? Do we see flagship phones or other devices in other regions outside of the U.S. for millimeter-wave?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Yes. So look, right now, you have U.S. and Japan and Korea getting ready to scale. Those will be the traditional markets. A couple of new interesting developments. Italy started with millimeter-wave. And Germany, in the beginning of the year, published -- had the auction for millimeter-wave. And we also saw a millimeter-wave launch in Singapore. So we're starting to see traction. Two, that we're monitoring very carefully because you can see how it will change dramatically the business for Qualcomm is Western Europe as well in China. And we look with excitement. The activity in Italy and Germany is the beginning.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Great, great. Maybe switching gears a little bit to the IoT division. I think there's some good businesses -- great businesses in IoT that perhaps don't get a lot of visibility inside Qualcomm. One of these businesses will be Wi-Fi, where I think there's a pretty interesting transition to Wi-Fi 6 and Wi-Fi 6E that's coming. I think this is a business that certainly scaled a lot since you acquired Atheros all those years ago. Is there anything you can share with us in terms of the Wi-Fi business today? How are you positioned for 6E? How meaningful is this business today? And any thoughts there?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Yes. If you don't mind, I would like to spend a few minutes talking about this IoT space because it's much broader than Wi-Fi, but I will talk about Wi-Fi. Look, this is another area that is misunderstood of the Qualcomm business. As we have said in the beginning, we're excited with demand for our technologies across a number of industries, and we have more than one growth vector in the company. And we did have like record $1

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

billion in the fiscal quarter in the newly minted IoT category, 48% year-over-year growth. And there's a lot of things in there. One of the misunderstood elements when you think about the mobile space -- and I remember your questions early on about a smaller number of players, some going vertical. In the IoT segment, we have 13,000 customers. It's very diversified and across a number of industries. And we have multiple elements of growth.

One is networking, which I'll address your question in a bit. In the networking, we have our Wi-Fi business. We have our 5G fixed wireless. And in the future, we're going to have our open RAN, virtual RAN infrastructure business. We also have consumer from the computing, we talk about it, tablets and computing, consumer enterprise, but we have also wearables. We have ear buds with Bluetooth, and we have augmented reality, virtual reality. And we have industrial across retail, utilities, transportation manufacturers. So there's a lot of things in there. And I think we're just scratching the surface. Your specific question on Wi-Fi, we saw a major tailwind for our Wi-Fi business because of the enterprise transformation of the home. Acceleration of mesh, we're the #1 provider of mesh Wi-Fi, acceleration Wi-Fi 6 and Wi-Fi 6E. This is another one of the business that is based by supply as we have a broad industry shortage across every node, but we're optimistic about the inroads we're making and the potential accelerates of the transition to Wi-Fi 6.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Great. Great. Well, I know we're -- we have about 10 minutes left. So maybe this is a good time to open up to the audience for Q&A, if you don't mind, Cristiano. So Harrison, maybe if you can give us the first question, please.

Harrison Barrett - *Arete Research Services LLP - Analyst*

Yes, sure. So I think you just touched on this now in relation to IoT, but we've seen some press releases recently around 5G RAN opportunities for Qualcomm, mostly in India. But could you talk us through your aspirations in this market? Are we going to see Qualcomm pursuing mainstream 5G RAN silicon into your macro base stations? Or are you more looking to fill gaps in some of the newer markets and applications like small cell and open RAN configurations?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

No, no, this is -- thank you for this question. This is where we believe in our ability with an industry transition to open RAN and vRAN to become a mainstream supplier. The reason I like about this because this is right into the Qualcomm core competence. I'll argue. We probably have more cellular modem capabilities than any other industry. And we see this opening that is happening because of 2 reasons. One reason is the -- what happened with Huawei had accelerated the need for operators to think about infrastructure 2.0. You're going to have to replace and you need to think about what is the new model. You have trends of virtualization and multi-vendors of open RAN. But there's another one which is even more powerful, which is the enterprise , the CIO, and the operator, CTO, they have different networks over the year. The operator will build the cellular network, and the CIO will build a Wi-Fi network as PBX or as a voice-over-IP system.

But now the CIO is going to bring 5G. And as you think about that, the CIO will need a network that can move his space for his particular use case, whether it's industrial robot, whether it's the future of the enterprise, connecting physical and digital spaces, but also there's need interoperability with the operator for the public network. So that is driving this transition to open RAN. I'm sure you're going to hear operators like Vodafone and Deutsche Telekom, the Europeans have taken the forefront, but even Verizon talking about this transition to open RAN. That creates an entry point for Qualcomm. We're very well positioned because we can do the baseband. We can do the RF. We announced a solution for the radio unit, the digital unit and the combined digital and radio unit. And we're targeting new entrants. Companies, they are going to be focused on private networks as well as public networks. And I think that's another growth opportunity in the networking category within our IoT segment.

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Harrison Barrett - *Arete Research Services LLP - Analyst*

Great. I think we have a couple of questions here around NUVIA. So I think I'll lump these together. So first of all, how quickly can you build a software ecosystem in high-performance compute with NUVIA to take on Intel and AMD in a manner that ARM is unable to? And then maybe what kind of time frame do you think you expect the adoption of NUVIA cause into your mobile products?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Good questions. Let's separate hardware and software. Software, we're well underway. So we already run full Windows today in all of the x86 Win32 apps, are running on ARM today. And Microsoft announced that around the summer time frame they are going to have the ability to run 64 bit. So at that point in time, when you think about the second half of the 2001 (sic) [2021], everything that you can do on Windows, on an x86, you can do on ARM. And also, we saw significant growth on Chrome OS which is already native on ARM. The other thing that I like about what Apple is doing on M1 is the convergence of applications across the phone space and the computing space. So the software ecosystem is well underway. Then your question about hardware. Look, we are still waiting for the approval on the NUVIA deal, and we're going to communicate road maps after that approval. But we're very optimistic about our ability to intersect the ramp of conversions of PC and mobile, and that will be an optionality on Qualcomm of yet another growth vector.

Harrison Barrett - *Arete Research Services LLP - Analyst*

Great. And I think you touched on a lot of the different sort of new subdivisions that you have in the adjacencies in QCT. But this question is, which are the biggest device categories you're thinking about in that new space, whether it's autos, PCs, IoT? And what's your view on the opportunity size relative to the sort of incumbent business that Qualcomm has?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Yes. So if you look at how we break down our business, which we talk about handsets, front end, automotive and IoT, we'll single out automotive because it's the 1 that is starting to get significant scale. So definitely, for -- outside of the phone space, automotive is the one that we already single out and reported separately. Within the IoT space, there are a number of opportunities that could get scale there. We talk about the upcoming conversions in the computing, which can create a high-end computing opportunity. Another one that is worth pointing out is augmented reality -- virtual reality. Quest 2 from Facebook Oculus is the first time that this is really getting a scale. We're talking about multiple millions of units and is getting the developer ecosystem really ignited. We are very, very passioned that augmented reality could be the next computing platform, and that could be another one that has a lot of potential to grow as well. But we like that we have options of multiple growth vectors within our IoT segment.

Harrison Barrett - *Arete Research Services LLP - Analyst*

Great. And just moving on to the next one. So can you talk about how deeply Qualcomm might get into productizing some of the areas like open RAN, Wi-Fi access points and other sort of infrastructure components?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Yes. Today, we're the #1 for retail and the #1 in enterprise and Wi-Fi access point silicon. We're -- base in our position in mesh and Wi-Fi 6 and 6E is really increasing their lead. Open RAN, it's new. It's a new transition. We expect to be a significant player because unlike what's done today in that space, Qualcomm has the ability to do hardware-software and integrate the digital and the RF. So it's really a system-level solution. It's a little bit early, but we're optimistic that within the next 12 months, it's likely that we're going to see significant traction in this area.

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Cristiano, I think we're running out of time. We've got about 3 or 4 minutes left. And I just wanted to ask one final one from my side. And it's more around sort of U.S. government support for semiconductor. A lot of news around this of late. And I think there's also been a lot of commentary about the U.S. government looking to bolster 5G capability, build much stronger ecosystem around 5G in the U.S. as well, particularly with the Huawei situation that we see today. What do you think the U.S. government needs to be doing to sort of accelerate all this? And given your domain expertise in cellular, in particular, and the whole kind of standardization process on 6G, what sort of -- do you see an opportunity for increased financial support around long-term research here? Or how do you think that sort of government mandate might play out for Qualcomm specifically?

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Look, we're super happy about both of those initiatives. We applaud the administration for doing this. We are encouraging it. We're going to support it, and for the obvious reasons. Let's talk about 5G, and then I'll talk about the semiconductor supply chain. 5G, we have said since the very beginning when we were talking about accelerating 5G, 5G will be an essential ingredient for the digital economy. When you think about connecting everything to the cloud 100% of the time, that's the elevator pitch in 5G. There will be a difference between the competitive economies and the ones that are not. Whether you have the mentality, the 5G is critical infrastructure. If you look at what China is doing, the number of base station on 5G dwarfs any other country. And it's about thinking of 5G as critical infrastructure as you think of electricity and railroads and roads and ports and all of that. And that's an incredible opportunity for the country as well for Qualcomm because this will expedite a lot of the use cases of 5G for other industries and could spur a lot of investment in R&D to create those use cases. This is very important.

The other one that we like is the supply chain. The United States has the largest fabless semiconductor industry today. And the semiconductor industry in the United States -- it's second to none. United States lead as a strategic segment, and that industry is fabless. And this crisis that we're dealing with right now it kind of underscore the importance of having a robust supply chain, which goes hand-in-hand over the conversation we had about 5G, which is you're going to need more capabilities for the future digital economy. This could create funding of R&D and building foundries with onshore in the United States, building foundries that could be available for the fabless and new players come into the industry as well as R&D in semiconductor manufacturing. And that's -- we're very happy about that and that we cannot think of something more important.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Great. All right. I think we're out of time now. So Cristiano, really appreciate you coming on today and supporting us with our event. Thanks very much for your time. I think our next speaker -- you mentioned O-RAN. We've got the Head of Networks at Vodafone talk about O-RAN, and he'll be on in about 5 minutes. So if the audience can click through, we'll be interviewing Santiago Tenorio Sanz about the O-RAN opportunities at Vodafone.

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

So I will take -- I'll probably go out on the limb here and take the opportunity, Brett, to tell you a question to ask Santiago. You can ask Santiago, did Qualcomm entering the O-RAN space -- did it change anything for the future of O-RAN? It will be very interesting to see his answer.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

I will -- I'll e-mail you what he says.

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

All right. Very good. Thank you so much for having me here. My pleasure. Good seeing you all, and hopefully, this was helpful to you.

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

REFINITIV

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Very helpful. Thanks, Cristiano. Appreciate it.

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Thank you.

Brett William Simpson - *Arete Research Services LLP - Senior Analyst*

Cheers.

Cristiano Renno Amon - *QUALCOMM Incorporated - President*

Cheers.

DISCLAIMER

Refinitiv reserves the right to make changes to documents, content, or other information on this web site without obligation to notify any person of such changes.

In the conference calls upon which Event Transcripts are based, companies may make projections or other forward-looking statements regarding a variety of items. Such forward-looking statements are based upon current expectations and involve risks and uncertainties. Actual results may differ materially from those stated in any forward-looking statement based on a number of important factors and risks, which are more specifically identified in the companies' most recent SEC filings. Although the companies may indicate and believe that the assumptions underlying the forward-looking statements are reasonable, any of the assumptions could prove inaccurate or incorrect and, therefore, there can be no assurance that the results contemplated in the forward-looking statements will be realized.

THE INFORMATION CONTAINED IN EVENT TRANSCRIPTS IS A TEXTUAL REPRESENTATION OF THE APPLICABLE COMPANY'S CONFERENCE CALL AND WHILE EFFORTS ARE MADE TO PROVIDE AN ACCURATE TRANSCRIPTION, THERE MAY BE MATERIAL ERRORS, OMISSIONS, OR INACCURACIES IN THE REPORTING OF THE SUBSTANCE OF THE CONFERENCE CALLS. IN NO WAY DOES REFINITIV OR THE APPLICABLE COMPANY ASSUME ANY RESPONSIBILITY FOR ANY INVESTMENT OR OTHER DECISIONS MADE BASED UPON THE INFORMATION PROVIDED ON THIS WEB SITE OR IN ANY EVENT TRANSCRIPT. USERS ARE ADVISED TO REVIEW THE APPLICABLE COMPANY'S CONFERENCE CALL ITSELF AND THE APPLICABLE COMPANY'S SEC FILINGS BEFORE MAKING ANY INVESTMENT OR OTHER DECISIONS.

©2021, Refinitiv. All Rights Reserved.

©2021 Refinitiv. All rights reserved. Republication or redistribution of Refinitiv content, including by framing or similar means, is prohibited without the prior written consent of Refinitiv. 'Refinitiv' and the Refinitiv logo are registered trademarks of Refinitiv and its affiliated companies.

