2021 KeyBanc Technology Leadership Forum

Company Participants

- Suresh Kumar, Executive Vice President, Global Chief Technology Officer and Chief Development Officer

Other Participants

- Edward Yruma, Analyst, KEYBANC CAPITAL MARKETS

Presentation

Edward Yruma {BIO 4940857 <GO>}

Good afternoon, everybody. Thanks for joining us. My name is Edward Yruma. I'm KeyBanc's Internet Retailing Analyst. We're really excited today to have this fireside chat with Suresh Kumar, the Chief Technology Officer and Chief Development Officer for Walmart.

I know many of you are familiar with Walmart. But I think this is a fascinating business that really has been about innovation since its inception. They've innovated with concepts like the superstore with innovations internationally, and now really in our opinion becoming a real innovator in future technology and being an omnichannel leader.

Suresh has a fascinating background and I think as you guys are going to hear with this fireside chat, he is to bring a lot of energy to the business. There is the standard disclaimer that's provided, I think that is also on the IR website. And just as a note, we will be taking some questions via Q&A using the Zoom chat feature. We would ask though that this is really technology focused discussion today, and that we not touch on the quarter right now.

So with that, Suresh, thank you very much for joining us.

Suresh Kumar {BIO 21073281 <GO>}

Ed, thank you so much for having me. Really excited to be with you virtually.

Edward Yruma {BIO 4940857 <GO>}

Yes, that's great. We'd love to hear a little bit about your background. I know, we saw you at Analyst Day, and I've heard your background, but maybe for the broader

audience, I think your background as a technologist at heart is super interesting and important asset to Walmart, we'd love to hear a little bit about it.

Suresh Kumar {BIO 21073281 <GO>}

Sure. I've been with Walmart now for about 2.5 years, really loving it over here. I've been in technology all of my career. I actually did my Ph.D. in aerospace engineering and then being in Computer Science ever since then. I started off first with IBM, then spent a bunch of time at Amazon, then I managed the cloud infrastructure for Microsoft for a few years for about five years and then I was at Google when -- when the Walmart opportunity came by, it was so compelling, and so interesting that I decided to come and be at Walmart, and I've been here ever since. I manage all of the technology for Walmart across all of its segments.

Edward Yruma {BIO 4940857 <GO>}

I guess just to start and certainly I think it is a good segue from your background, you guys have made some significant shifts, you moved to cloud, can you talk about your overall data lake and cloud strategy, and then kind of broadly speaking, how should we think about your datacenter footprint?

Suresh Kumar {BIO 21073281 <GO>}

Absolutely. So, the cloud is central to our digital strategies, the foundation on which we are building our customer experiences, foundational to our data and analytics, and it's based on which we are building all of our ML and AI models which are really impacting every aspect of our -- every aspect of our business.

So if you actually take a step back, there is a lot of changes that are happening in retail many of them are disruptive. In fact, I like to think of this as sort of the third innings or the third disruptive cycle in retail, and it's technology led, and we really want technology -- we want to position technology so that Walmart is a leader in this retail disruption, that's not only already happening, it's actually accelerating because of COVID and cloud really becomes a central part of that. It's the foundation, like I said, we have actually built a very unique hybrid cloud. We have got our own private cloud and we combine that with sort of the best of public and we've also got a very extensive edge network and we bring it all together, in this layer that we call WCMP, the Walmart cloud native platform that allows us to be able to workload and to be able to seamlessly move them around this mix of public and private clouds.

And so we believe that this is something that gives Walmart a very unique edge, because it's purpose-built for what we are trying to do. We talked a little bit about data, we have actually moved over 150 petabytes of data into the cloud, and this is allowing us, not just to go a lot faster and to get deeper inside, but it's also allowing us to unleash the potential of AI and ML on all aspects of the business.

So it's very, very exciting, cloud is really the underpinnings off all the digital transformation that we are pushing through.

Edward Yruma {BIO 4940857 <GO>}

Can we click[ph] down on that a little bit more and kind of thoughts around public versus private cloud, and then maybe just stepping back, I think it was publicly disclosed that Sam's and E-com have moved to cloud, I guess what's still left are international and U.S. superstores.

Suresh Kumar {BIO 21073281 <GO>}

Right. So, the way to think about public and private cloud is that ultimately we want to create an environment, where we take our workloads whether they are data-intensive workloads, whether they're ML workloads, whether they are customer-facing workload and we want to put them in those environments that are best suited for that particular type of system or that particular type of a workload. So we use the best of the public cloud for things like elastic capacity, to be able to burst up and down. We are actually getting into the holiday season, so we need a lot more capacity. We use the public cloud to be able to do that. We also use the public cloud for a lot of the best of the fast capabilities like specialized hardware for ML and AI, as an example.

And then we use our own private cloud to be able to run a lot of the steady-state workloads, the static workloads and we use edge to be able to push all of the (Technical Difficulty) sensitive workloads. So that's how we think about sort of the difference between edge, private, and public and in terms of migration, it's an ongoing -- it's an ongoing process. You're right, all of our e-commerce today runs on the cloud, all of Sam's runs on the cloud. The main focus really is to start building out a lot of new capabilities on this stack, and that's why we really focused on making sure that our entire data estate lives on the cloud because we can then use that to run advanced analytics, we can use to run ML and AI, that whole thing is going to be done by the end of the year and then beyond that we are going to be looking at, opportunistically, what are the things that really need to reside on the cloud because we don't necessarily want to move everything just for the sake of moving.

Edward Yruma {BIO 4940857 <GO>}

And to that end, I believe at Analyst Day you were kind of highlighting some of the early wins, the machine learning. I think you talked about (inaudible)optimization, I think you highlighted facilities maintenance.

Suresh Kumar {BIO 21073281 <GO>}

Right.

Edward Yruma {BIO 4940857 <GO>}

I guess just stepping back from that though how can you create a more personalized consumer experience with machine learning and then over time, do you think that if

they have a personal experience will drive better sales and profitability for the business?

Suresh Kumar {BIO 21073281 <GO>}

Yeah. There is absolutely no about it, I think ML and AI, are going to profoundly change the way in which we not only serve our customers and the customer experiences, but it's also profoundly changing the way in which we actually do business on the -- on the back end. So for those of you who -- who are not there, the two examples that I talked about around using ML for markdown that one particular effort alone saved us over $30 million and that is really an example off ML and AI helping us do our business better.

Same thing with facilities maintenance also and that particular thing actually saved us over $40 million a year. But when it comes to personalization, I think one of the power of ML and AI is that it can -- it can allow you to create personalized experiences at scale, is something that back we had not been able to do even just a few years ago. Like the kind of things that we are now able to do using ML and AI, using the models, this would have been unbelievable even just five or 10 years ago, but I think really speaking what makes it powerful is not just the models, right. So we can, I'll give some examples about sort of the personalized experiences that we are able to create, we do something called predict the baskets. So grocery customers typically they go, they buy 30 plus items, right. So sometimes when I go to shop, I forget a few things, and then my wife says, hey, you forgot the avocado. I actually don't eat avocado but my daughter does. But this is where ML and AI actually come in, because we can look at your history, we can look at the preferences, we can -- we can know the fact that you typically shop for avocados and then predictively, we can -- we create this quick add on experience.

It's all possible, not just because of models, but it's possible because of the power of the data, and Walmart is uniquely positioned more than anybody else because we have sort of that end-to-end view of the data, right. So we know you as a customer, your shopping habits not just online, but also inside the store, and we are in a unique position to be able to pull all of that to create that personalized experience that is tailored for you, that actually cuts across all of these different channels, that is where really the power actually comes in.

And -- but it models also, for example, we just announced that we bought a company that is into virtual fitting, so just think about it, you can take a piece of clothing or an apparel and using ML, we can virtually drape it on different types of models and in fact you can put your own -- you can put your own photo and ML will actually drape the clothe on you. It uses similar technology to terrain mapping. But it becomes powerful because you combine that with Walmart data, and I think that is the exciting part of it -- it's going to have a very profound effect. Now it's already having that and it's going to continue to have that going forward.

Edward Yruma {BIO 4940857 <GO>}

You know, Doug has always impressed us with his embrace of technology and being kind of forward-thinking, but as a technologist is it hard to get by other operating partners, given that so many of them are merchants that have work their way up the rank. How do you help them balance kind of the art of retailing versus the science and particularly as you start thinking about things like AI.

Suresh Kumar {BIO 21073281 <GO>}

Yeah, I think, Ed, the power of AI is to actually help you whether you are a merchandiser or whether you are a operator makes your job that much more effective and that much more efficient. So I'll give you an example, we are starting to build out the ability to be able to do assortment planning in an omni way across -- just think about the complexity of this problem, right. So hundreds of thousands, in fact, millions of SKUs that you now have to figure out which product needs to be in which location, how many of them per (inaudible) and then how do you manage that in a much more dynamic way. Of course, the art of retailing but what ML and AI allows you to do is to bring all of that information together and to be able to synthesize it and to be able to gain insights into that, that you can act on, and I think that mix, our merchandiser is much more effective and that much better at what they're doing and they love it.

We are starting to roll out tools and tools and experiences, we rolled out something Me@Walmart for our associates, we are doing something very similar for other corporate associates as well and as people start seeing the power that these systems can bring them, they just become better at the jobs that they are doing.

Edward Yruma {BIO 4940857 <GO>}

Zooming out a little bit and thinking about it from a senior management perspective, how do you think technology and data tools have enabled you and the other senior managers to better manage the business and I guess, we think a lot of agility, do you think that this is helping Walmart become more agile?

Suresh Kumar {BIO 21073281 <GO>}

Absolutely. I think, we have been able to unleash the power of data, not just to better serve the customers, we are able to make a lot more decisions faster, ultimately, we are a lot more -- we operate a lot more efficiently. I told you about the Me@Walmart, this is an all-in-one mobile app that we have rolled out for our store associates. It combines ML, it combines voice, it includes camera and vision and it basically simplifies tasks for our associates, so that they can spend more time helping our customers.

So if this is out in the field and this is one example of how we can -- we are using technology to go faster, but it's not just over there. It's an areas that normally you would not think off. We are now closing our financial books in three days, almost half time that it used to take us before and you can imagine the amount of complexity that we have got across Walmart, right. So being able to pull out that together and to be able to -- to close our books basically means that we get better insights into our

business and we are able to make decisions a whole lot faster. So efficiency, productivity, and insights, I think ultimately is making us be a lot more nimble, and we can react and we can serve our customers a whole lack better than what we were able to do before.

Edward Yruma {BIO 4940857 <GO>}

I'd love to dive down a little bit into the tech stack, I would love your perspective on e-commerce software strategy and particularly as it relates to kind of what you want to do in-house versus your partnerships and examples, like using (inaudible) and LatAm and then kind of broadly speaking, your push to integrate other e-commerce providers, software providers in the Walmart marketplace, Shopify e-commerce, (inaudible) commerce?

Suresh Kumar {BIO 21073281 <GO>}

Right, exactly. So, look we have built a world-class technique. We want to make sure that we build all the strategic part of the technology all by ourselves, because we believe that -- that's a competitive differentiator for us.

So as part of leading retail disruption, we have been building out our technology organization, all of our U.S. e-commerce business is on our own platform. We talked about the whole product platform. So, this whole notion about build versus partner, it really comes down to a few things, right. So given our scale, we want to build and we want to focus our tech on areas that are core to our business, where ownership actually gives us the agility to be able to adapt the software to our business needs. And especially where there are really no good commercial (inaudible). So, on the converses that been rolling out our own software is prohibitively expensive in some areas or markets because they have got some very, very specific market requirements, then we'll leverage commercial software and assuming of course that software that can actually scale to what we need. So, but having said all of that, where we are taking the technology stack is that we are building our software in a such a way that we build these to do usable services that can be leveraged in multiple markets, so Spark chocolate[ph] is one example. This was built as software as a service. It was actually deployed in Mexico first and then it was used in the U.S. We have now in ruled out in brand new customer facing app that combines sort of the traditional shopping with the online grocery shopping and pick up, all in a very seamless and way that platform, that foundation is now going to be reused and leveraged and customized for Mexico and for Canada.

So the technology stack that we are starting to build out is more around modular services and by the way, you talked about Accel[ph] Partners that is what allows us to actually take our technology and now offer it for others as well. The Adobe partnership that we announced, very, very exciting is something that I'm particularly very excited about, in not only the brand new recognition for us because we are now taking our technology, and we are now offering it for others, but we have done it such a way that through the Adobe partnership, not only other retailers can make use of that we have build order online pick up inside the store and those types of omni-solutions, but that also allows other retailers to quickly come on Walmart

Marketplace and to participate in the Walmart marketplace. So it's not just about building our technology and it's not just about taking the technology, modularizing it, (inaudible) it and making it available for others, but it's also kind of creating the overall ecosystem.

So everything kind of builds on itself and everybody gets a benefiting from that.

Edward Yruma {BIO 4940857 <GO>}

Clearly COVID has changed all of our behaviors. So many of us are working, shopping from home. I guess what are some of your priorities in transforming your consumer experience management system. Are you trying to engage with consumers more through social media and then how do you gauge kind of consumer sentiment and usage of digital services?

Suresh Kumar {BIO 21073281 <GO>}

Absolutely COVID has changed a lot of things. As we -- but our focus really in terms of listening to our customers that has not changed. And clearly, what has happened, as we went through -- as have been going through COVID actually, is that the things that our customers particularly care about, whether it is around great merchandise, value, convenience, those things don't change, right, whether COVID or no COVID customers really want great merchandise, great value and they want convenience. The thing that has become more important, as we have gone through COVID is that customers also care about safety, and they want to make sure that the place that they shop and the base in which they shop, safety becomes an important part of it.

So our focus and through technology has really been in terms of listening to our customers also to provide them mechanisms, where the safety aspect of convenience also gets highlighted using the payment capabilities for our fuel pumps, we rolled out more Scan and Go in the Sam's Clubs; all of these things we have put our capability to be able to do pickup for pharmacy. These are all stuff that we have heard from our customers in terms of things that are important for them, and so we keep constantly listening to our customers and we use that to close the loop in terms of the features that we roll out. And we do that every place, so it's not just listening to customers when they shop online, it's not just about listening to customers when they shop inside our stores or on our clubs.

We look at what's going on outside of Walmart properties as well. We look at trends inside social media and again it's a part of data, right, so we collect all of that, we synthesize it, we've got modules that run over it and that informs us in terms of what the next thing to do is.

Edward Yruma {BIO 4940857 <GO>}

One of the questions we received from the audience and you can talk about your data commercialization initiatives and how you can monetize the data, maybe just

zooming out even a bit more, advertising that was a big deal for the business, even Doug talked about that a lot. How does the relationship with Trade Desk work?

Suresh Kumar {BIO 21073281 <GO>}

Absolutely, so, advertising is a key component of our flywheel, right. Our strategy is actually to offer performance-driven advertising that is very, very unique to our advertisers and its unique because we are the only players where we can combine insight from, in terms of what our customer preferences are and our customer behavior is, not just online, but also offline inside of our stores. Nobody else can do that, right. And what this allows us to be able to do is to be able to allow our advertisers and our suppliers to be able to connect with our customers and to be able to draw insights in terms of their shopping behavior, what products work -- what products don't work in ways that nobody else can do. And o that's the reason why advertising becomes a very important part of how we allow our advertisers to be able to connect to our customers and we've talked a little bit about -- about DSP and about Trade Desk. Trade Desk is our -- is where we are launching on demand side platform or DSP with Trade Desk and this basically allows advertisers to be able to reach customers on properties outside of walmart.com as well.

And so I think of it -- let's say, that you are Pampers and you want to be able to reach of your customer, your typical customer is a the young mom with a small child, you might be going to some other location like in Scary Mommy and before you want to be able to reach out to your customer through that and to be enabled through things like the Trade Desk partnership. Data obviously, I keep talking about it, becomes a very, very key part of being able to do all of this, and our data insights are very key for our advertiser or partner on suppliers to be able to figure out the shopping -- the needs of our customers and to be able to therein also figure out how to better craft their products, to be able to -- to be able to best serve them, and so that's how it's all coming together and it's really just part of the Omni flywheel, if you would.

Edward Yruma {BIO 4940857 <GO>}

How hard is it to attract top technology talent to Walmart and how do you become kind of high in the stack of employers choice?

Suresh Kumar {BIO 21073281 <GO>}

We are already very high in being a top talent attractor. We are able to attract really great talent from pretty much all parts of the industries, different locations and I think the main reason why we have been very, very successful at being able to attract really great tech talent is that people get excited about the commitment to the purpose of save money and live better.

But it's also about the scale, having -- being a technologist at Walmart means that you get to work on problems that are very hard, that are -- I keep talking about data, ML all of these things, these are not just hard problems, but they are problems where working on those can have huge impact and you can have huge impact at scale,

right. And you combine that with purpose which is really about save money live better, that combination is magic and I was attracted to it. That's the reason why I came and that story is very, very compelling. We can attract and we continue to attract talent from all different -- from all different parts, right whether they are data scientists, whether they are full stack developers, whether they are front end developers, you name it. Walmart is a fantastic place to come and work and we are seeing that all the time.

Edward Yruma {BIO 4940857 <GO>}

In one of your comments you mentioned Walmart Pay. I know I used it, you guys were kind of early in implementing digital wallet in store. I guess just assessing it though what's worked and what hasn't, how can you increase usage, how does the firms fit in and would you ever use Apple Pay?

Suresh Kumar {BIO 21073281 <GO>}

So, look, I think when it comes to whether it's -- whether it is financial instruments, whether it is payment instruments, the primary thing that we focus on is what do the customers want and one thing is very clear, our customers want a lot of choice, right. And that's -- and some of them want to be able pay immediately, some of them want to be able to pay in instalments, some of them want to make use of a different payment instrument. So that is the reason why we offer Walmart Pay, we offer Affirm, all of these things are new ways in which we serve our -- we server our customers in terms of what they -- what they want.

So overall, we continue to keep looking at opportunities based upon what our customers want, but it also needs to make sense in terms of the overall ecosystem that we are trying to build and largely it is the business strategy that we continue to follow which is really starting with the customer -- focus on the customer and make sure that it also works in terms of the -- in terms of the larger strategy. So, you will hear us as we continue to evolve, we will continue to make changes to it and that we make changes you will -- you will hear about it.

Edward Yruma {BIO 4940857 <GO>}

You also touched a little bit about in-store checkout technology. I know you guys were also early in using mobile checkout. I remember doing this at the Sam's prototype number of years ago. I know in some instances of a Superstore at Walmart Plus you have mobile checkout. I guess what prevents you from using it more broadly and then I guess, do you think that cashier-less stores are the future?

Suresh Kumar {BIO 21073281 <GO>}

So again, I think the main thing is really about listening to our customers and reducing friction. And as far as checkout is concerned, we are trying to make checkout as easy as possible where the customers want it. So taking customer-first lens in technology, whether it is in Sam's or in Walmart, one thing became very, very clear, customers don't like to stand in long lines -- at the checkout lines. So that's the

reason why we deployed -- we built and deployed Scan and Go and it solves a very, very big customer pain point that is available in Sam's Club and it is also now available for Walmart plus customers and you can use this to check out you're shopping and then when you come to the checkout line, you don't have to stand in these long line. It's a great benefit to our customers, they love it. Not everybody wants to always use all of the different technologies. And so when you think about cashier-less store versus that having cashier, different customers end up having different preferences.

So to the extent that mobile option -- checkout options resonate, those things we are making it available. There are other options that still involve cashiers and we are trying to -- we will have that, we are making our associates more effective, so that they can spend more time helping our customers. We will continue to have all of these pieces.

Edward Yruma {BIO 4940857 <GO>}

Can you talk a little bit about blockchain. I think you guys even touched on that at the shareholders meeting over the Analyst Day. But how has the use of blockchain helped the supply chain and the warehouse and the enterprise when you apply blockchain technology?

Suresh Kumar {BIO 21073281 <GO>}

So, blockchain is another technology that I am very, very excited about. We use that primarily in terms of food transparency. It's actually for leafy greens during the production phase and basically what it allows us to do is to be able to transparently track the entire, from production onwards. And so if there are industry recalls, you can very quickly identify if Walmart received products from the impacted source and so doing (inaudible) investigations, recall, we can narrow the scale -- we can narrow the scope on those customers and we can very quickly take action.

So that's a very common area and we will continue to double down on that, but we are also starting to look at Blockchain in multiple different areas as well, where we can look at blockchain as a mechanism to be able to automate the transactions between suppliers, carriers, logistics, those are all areas where we will continue to use blockchain regeneration as another one right so that we can calculate the carbon footprint. Sustainability is a big thing, factory audit, sourcing -- ethical sourcing, surplus supply chain, lots and lots of different areas where traceability, transparency and ability for us to be able to chain together multiple different events around a particular product or a particular item becomes very, very important. Blockchain is going to continue to evolve over there.

Edward Yruma {BIO 4940857 <GO>}

The questions we got from the audience is about how has digital transformation changed your technology choices in data and analytics. (inaudible) databases and analytics moving to the cloud or shifting in your types of data architectures?

Suresh Kumar {BIO 21073281 <GO>}

Absolutely. I told you right, data is one of the key things that we are actively moving to the cloud. We've already moved, 150 petabytes of data. We want to make use of the capability that cloud allows us to be able to leverage. So in particular by moving data to the cloud. We can run our normal analytics a whole lot faster, 23% faster and gives a better experience as well. It's because it's scalable, it's elastic, it costs less because we don't need to have these massive data footprint that we don't need it, but the most important thing in my mind is really the fact that we can run advanced analytics and we can run ML workloads on it a whole lot back than we can do it on in monolithic on-prem databases, so that's why, we have kind of all-in -- all-in in the sense that all the things that we need to run advanced analytics and ML workloads we are moving all of that to the cloud.

Edward Yruma {BIO 4940857 <GO>}

I know this is kind of a critical time of your business heading into holiday, the retail analyst community, we're all focused on markdowns and near-term conditions, but I guess just I'd love to get your longer-term position, thinking -- you're putting on your technologist hat when you think about what would be the most disruptive technology over the next 5 or 10 years, what do you think it will be, will it be voice, is it AR and then probably just as a final question from me, how do you help ensure that Walmart can have the foundational work done, so you are ready to meet some of these new challenges.

Suresh Kumar {BIO 21073281 <GO>}

Yeah. So I definitely think that any technology that ultimately end users friction for our customers makes it more convenient for them engenders more trust make it safer, these are the technologies that are going to continue to have an outsized impact that as far as retail is concerned, that's on the customer experience side. And any technology that helps us to be more efficient, be more nimble will allow us to generate insights faster and to be able to act on them, those are the technologies that are going to continue to have a big impact when it comes to how we run our business. So if you think about it in these two axes, on the first one. In fact, on both of these, I think ability to handle large amounts of data and to be able to reason over that data and that's where ML and AI comes in, I think that's going to continue to happen, right. So there is no dearth of the kinds of use cases that we can have with advanced ML and AI modules. When it comes to reducing customer friction making shopping easier, better even more enjoyable certainly voice is a very natural extension, right. So we started off in desktop and now we have got really, really powerful phones, but even that I think over a period of time, the most natural way in which you are going to interact with a system that's out there including for shopping is going to be -- to be through voice and voice is going to continue to become a very important part of it.

We are already seeing that with our Sam's, we rolled that out for our associates and our associates just allow that feature where they can -- whatever information they want, they can just ask, right. So they don't need to go into the back room and find

something and try to find an answer for it. On the shop floor, hey, how many items are there in the back room, and it will just tell you, and you know what to do about. So, anything that reduces friction is good and voice reduces friction. Therefore, I think that's going to continue to have a big impact.

AR-VR is very interesting. I think AR. We are already starting to see the impact of that with our associates, right. We deployed something where it helps our associate -- it guides our associates in terms of how the stock, restock items on the shelf and it guides to which shop and which location in the shop.

So it's again about reducing friction, and creating efficiency. With our customers, I think the example, that I gave you in terms of what you're fitting that's another example, where you don't have to actually go buy an item before you figure out how exactly it's going to work, think about AR for furniture, right, so you can take the furniture and you can place it in your living room. Let's say you are trying to buy a tent for your next vacation, you want to see how good it is, you don't want to actually buy and try to set it up and then find out that it's not working for you. AR-VR becomes very important for that. So I think these types of technologies, are going to continue to evolve, but I look at it primarily from, is it reducing customer friction, is it, making it easier for them to shop and on the back end, is it allowing us to drive insights better and faster and be able to reason our data more effectively.

Edward Yruma {BIO 4940857 <GO>}

With that, we and others, I'm sure on the call hope that your app and your analytics capabilities and all these great things you are doing in technology stack allow us to get all the toys and our kids Christmas dresses this Christmas without hassle, without friction as you guys always do. So, Suresh, thank you very much. For audience, thank you for the question. If we didn't answer your question, please feel free to email the Walmart IR team. And thank you very much for your time this afternoon.

Suresh Kumar {BIO 21073281 <GO>}

Ed, thank you so much for having me. It's great talking to you and to be on the call with you. Thank you.

Edward Yruma {BIO 4940857 <GO>}

Thank you.